



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005**

November 14, 2005

David H. Oatley, Acting Chief Nuclear Officer
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Diablo Canyon Power Plant
P.O. Box 56
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**SUBJECT: DIABLO CANYON POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000275/2005004 AND 05000323/2005004**

Dear Mr. Oatley:

On September 30, 2005, the U.S. Nuclear Regulatory Commission completed an inspection at your Diablo Canyon Power Plant, Units 1 and 2, facility. The enclosed integrated report documents the inspection findings that were discussed on October 11, 2005, with Ms. Donna Jacobs and members of your staff.

This inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

There were two NRC-identified and two self-revealing findings of very low safety significance (Green) identified in this report. These findings involved violations of NRC requirements. However, because of their very low risk significance and because they are entered into your corrective action program, the NRC is treating these three findings as noncited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Diablo Canyon Power Plant.

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Sincerely,

/RA/

William B. Jones, Chief
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50-323
Licenses: DPR-80
DPR-82

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and 05000323/2005004
w/attachment: Supplemental Information

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Dockets: 50-275, 50-323

Licenses: DPR-80, DPR-82

Report: 05000275/2005004
05000323/2005004

Licensee: Pacific Gas and Electric Company (PG&E)

Facility: Diablo Canyon Power Plant, Units 1 and 2

Location: 7 ½ miles NW of Avila Beach
Avila Beach, California

Dates: July 1 through September 30, 2005

Inspectors: T. Jackson, Senior Resident Inspector
T. McConnell, Resident Inspector
J. Nadel, Reactor Inspector
C. Stancil, Project Engineer
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Approved By: W. B. Jones, Chief, Projects Branch B
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000275/2005-004, 05000323/2005-004; 07/01/05 - 09/30/05; Diablo Canyon Power Plant Units 1 and 2; Maintenance Risk Assessment and Emergent Work Control, Operability Evaluations, and Permanent Plant Modifications.

This report covered a 13-week period of inspection by the resident inspectors, a visiting resident inspector, a reactor engineer, and a project engineer. Two NRC and two self-identified, Green noncited violations were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609 "Significance Determination Process." Findings for which the Significance Determination Process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. A self-revealing, noncited violation was identified for the failure to adequately assess and manage the risk associated with maintenance on startup Transformer 2-1, as required by 10 CFR 50.65(a)(4). Specifically, Pacific Gas and Electric Company failed to adequately evaluate the scope of startup Transformer 2-1 relay maintenance and its impact on startup Transformer 1-1. As a result, the protective relay for startup Transformer 1-1 was challenged but not to a sufficient magnitude to trip the power supply to the transformer. Corrective actions included reinforcement to staff on maintenance risk assessments for non-routine work and a caution note in the applicable work orders regarding the wiring configuration of the startup transformer relays. This finding had crosscutting aspects in the area of human performance for the failure to adequately assess and manage the risk associated with protective relay maintenance.

The finding impacted the Mitigating Systems Cornerstone and was determined to be more than minor using Inspection Manual Chapter 0612, Appendix E, Example 7.f. Specifically, Pacific Gas and Electric Company staff failed to appropriately implement Procedures AD7.DC8 and MA1.DC11 which called for a circuit isolation plan to identify any actions that may impact in-service equipment for medium risk maintenance activities. Using Inspection Manual Chapter 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, Flowchart 1- Assessment of Risk Deficit, the delta incremental core damage probability deficit was less than 1E-6 and the delta incremental large early release probability deficit was less than 1E-7 since the amount of voltage applied to startup Transformer 1-1 Protective Relay 86SU would not have caused a loss of startup power to either unit. The finding was assessed as having very low safety significance (Section 1R13.2).

Enclosure

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to promptly identify a condition adverse to quality. Specifically, Pacific Gas and Electric Company initially screened industry operating experience regarding the potential for containment recirculation sump valves failing to open following certain small-break loss-of-coolant accidents as not being applicable to Diablo Canyon Power Plant. Upon questioning from the inspectors, the industry operating experience was found to be applicable and the calculation concerning containment recirculation sump valves were determined to be nonconforming but the valves remained operable. Additionally, the inspectors questioned Pacific Gas and Electric Company regarding the need for a prompt operability assessment for the valves. For corrective actions, Pacific Gas and Electric Company planned to revise the calculation associated with the differential pressure across the containment recirculation sump valves and base future testing of the valves from the new calculation. This finding had cross-cutting aspects in the area problem identification and resolution.

The finding impacted the Mitigating Systems Cornerstone and was determined to be more than minor since it impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding affected the cornerstone attribute of design control, and the failure to recognize the applicability of the industry operating experience would allow the non-conservative design and testing of the containment recirculation sump valves to continue to exist. Using the Significance Determination Process Phase 1 Screening Worksheet of Inspection Manual Chapter 0609, the finding was determined to be of very low safety significance since the finding is a design or qualification deficiency confirmed not to result in loss of function per Generic Letter 91-18, Revision 1 (Section 1R15).

- Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to assure that appropriate quality standards are specified and included in the design documents and that deviations from such standards are controlled. Specifically, Pacific Gas and Electric Company failed to control the quality of work performed by contractors to ensure adequate cable bend radius for the newly installed vital battery chargers. Pacific Gas and Electric Company subsequently reworked to restore the proper bend radius. The quality control documents for cable terminations and installation have been modified to ensure that cable bend radius is assessed.

This finding impacted the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. It is more than minor since it is similar to Inspection Manual Chapter 0612, Appendix E, Example 3.a, in that all vital battery chargers must have their connections and cables reworked for long

term reliability. Using the Significance Determination Process Phase 1 Screening Worksheet in Appendix A of Inspection Manual Chapter 0609, the inspectors determined that 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. Therefore, the finding was determined to be of very low safety significance (Section 1R17).

Cornerstone: Barrier Integrity

Green. A self-revealing noncited violation of Technical Specifications 5.4.1.a was identified for the failure to implement adequate work controls for painting activities in the area of control room ventilation equipment. Subsequently, the conduct of painting in the supply duct for Control Room Supply Fan S-38 resulted in operating fans drawing in the paint fumes into the control room. The work planning did not identify that the established ventilation path would result in the paint fumes entering the control room. The finding has crosscutting aspects associated with human performance in the planning of the work activity.

This finding impacted the Barrier Integrity Cornerstone and was determined to be more than minor because if left uncorrected the finding could result in a more significant safety concern involving control of work activities that could affect the control room atmosphere. Using the Significance Determination Process Phase 1 Screening Worksheet in Appendix A of Inspection Manual Chapter 0609, the inspector considered that the issue represented an administrative control function for preventing paint fumes from entering the control room and the protection of the control room ventilation system charcoal filters. This issue was discussed with a senior reactor analyst and determined that the appropriate safety significance evaluation was through management review. The management review considered Pacific Gas and Electric Company's control of painting materials in and around the control room envelope, any potential impact on the charcoal filters used to maintain the radiological barrier in the event of an accident, and any potential impact on licensee personnel. Based on the introduction of paint fumes into the control room did not adversely affect the control room operators' ability to operate the plant, there was not an actual degradation of the control room boundary and the charcoal filters remained operable, the finding was determined to be of very low safety significance (Section 1R12).

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Diablo Canyon Unit 1 began this inspection period at 100 percent power. On September 10, 2005, operators reduced reactor power to 87 percent to support breaker testing in the Gates Switchyard. Following breaker testing, operators returned reactor power to 100 percent on September 11, 2005. On September 15, 2005, operators reduced reactor power to 25 percent due to approaching high sea swells. On September 18, 2005, operators returned reactor power to 100 percent following the high sea swells. Unit 1 remained at 100 percent power for the duration of the inspection period.

Diablo Canyon Unit 2 began this inspection period at 100 percent power. On August 9, 2005, operators reduced reactor power to 97 percent to repair a steam leak on Moisture Separator Reheater 2-2. Reactor power was returned to 100 percent on August 10 upon completion of the repair. Operators reduced reactor power to 50 percent on September 12, 2005, for planned cleaning of the circulating water tunnels and main condenser. Operators further reduced reactor power to 25 percent on September 15, 2005, due to approaching high sea swells. Following the high sea swells, operators returned reactor power to 50 percent on September 18, 2005, in order to complete circulating water tunnel cleaning. Unit 2 reactor power was returned to 100 percent power on September 18, 2005, following tunnel cleaning. Unit 2 remained at 100 percent power for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather (71111.01)

d. Inspection Scope

The inspectors performed one sample of a site-specific adverse weather inspection. The inspectors reviewed the design features, equipment, and plant preparation for protecting mitigating systems from the adverse effects of Pacific Ocean storms. These storms, in conjunction with kelp and other aquatic plants, can obstruct the intake traveling screens, causing a trip of the circulating water pumps and loss of the main condenser. In the past, these storms, also known as "kelp attacks", have caused the shutdown of both units within a short period of time due to a loss of normal heat sink. The inspectors reviewed the modeling software used to predict ocean swell energy and assessed the accuracy of the predictions. The following kelp mitigating systems and control room alarm procedures were reviewed this inspection quarter:

- traveling screens
- screen wash system
- kelp grinders
- 10 and 35 percent steam dumps

Enclosure

b. Findings

No findings of significance were identified.

1R04 Equipment Alignments (71111.04)

The inspectors performed six partial system walkdown and one complete system walkdown during this inspection period.

Partial System Walkdowns

a. Inspection Scope

The inspectors verified the alignment and capability of selected systems to perform their intended safety function. Specifically, the inspectors performed a partial system walkdown, which included observation of valve alignment, the availability of electrical power and cooling water, labeling, lubrication, ventilation, structural support, and material condition. The inspectors also verified that equipment issues had been identified, evaluated, and resolved. Partial system walkdowns were performed on the following systems during this inspection period.

- Containment Spray Pump 2-2 when Containment Spray Pump 2-1 was in a maintenance outage window on July 7, 2005
- Safety Injection Pump 1-2 when Safety Injection Pump 1-1 was in a maintenance outage window on July 14, 2005
- Startup Transformer 1-1 when startup Transformer 2-1 was in a maintenance outage window and startup power was cross-tied between Units 1 and 2 on July 14, 2005
- Units 1 and 2 spent fuel pool liners on July 15, 2005
- Unit 1 Vital 125 Vdc battery banks and chargers while Battery Charger 121 was in maintenance outage window on July 20, 2005
- Unit 2 Diesel Generator 2-1 while Diesel 2-2 was in a maintenance outage window on July 28, 2005

b. Findings

No findings of significance were identified.

Complete System Walkdown

a. Inspection Scope

The inspectors verified the alignment and capability of the firewater storage tank to perform its intended safety function. Specifically, the inspectors performed a walkdown of the firewater storage tank and observed videos to assess any signs of leakage, corrosion, or structural damage that could impact the tank. The inspectors also reviewed the abnormal/emergency use of the tank, associated corrective action documents, and outstanding design issues, temporary modifications, and operator workarounds.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (711111.05)

.1 Routine Observations

a. Inspection Scope

The inspectors performed five fire protection walkdowns to assess the material condition of plant fire detection and suppression, fire seal operability, and proper control of transient combustibles. The inspectors used Section 9.5 of the Final Safety Analysis Report (FSAR) Update as guidance. The inspectors considered whether the suppression equipment and fire doors complied with regulatory requirements and conditions specified in Procedures STP M-69A, "Monthly Fire Extinguisher Inspection," Revision 36, STP M-69B, "Monthly CO2 Hose Reel and Deluge Valve Inspection," Revision 14, STP M-70C, "Inspection/Maintenance of Doors," Revision 10, and OM8.ID4, "Control of Flammable and Combustible Materials," Revision 14. Specific risk-significant areas inspected included:

- Units 1 and 2, motor-driven and turbine-driven auxiliary feed pump rooms (Zones 3-T-1 and 3-T-2)
- Unit 2, piping penetration room (Zone 3-CC)
- Units 1 and 2, auxiliary building 100 foot corridor (Zone 3-X)
- Units 1 and 2, cable spreading rooms (Zones 7-A and 7-B)
- Units 1 and 2, safety injection pump room (Zones 3-M and 3-N)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

Internal Flood Protection

a. Inspection Scope

The inspectors performed one sample of an internal flood protection inspection and reviewed Pacific Gas and Electric Company's (PG&E's) flood protection measures for Units 1 and 2 to ensure that adequate precautions had been taken to mitigate internal flood risks. In particular, the inspectors reviewed the Units 1 and 2 intake structure and auxiliary saltwater system pump rooms.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

Annual Inspection

a. Inspection Scope

The inspectors performed one sample of inspection on emergency diesel generator radiators. The inspectors reviewed the inspection results of Units 1 and 2 emergency diesel generator radiators, and the design information found in Chapter 9 of the FSAR – Update. The inspectors verified the cleaning efforts of the heat exchangers, jacket water temperature data during performance of Procedure STP M-9A, "Diesel Engine Generator Routine Surveillance Test," Revision 68A, and component work order history.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On July 26, 2005, the inspectors witnessed one operator requalification exam in the simulator. The scenario involved an instrument failure, main feedwater pump high vibration, an anticipated transient without scram, and a loss-of-coolant accident (LOCA)

outside of containment. The inspectors verified the crew's ability to meet the objectives of the training scenario, and attended the post-scenario critique to verify that crew weaknesses were identified and corrected by PG&E staff.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors performed two inspection samples of PG&E's Maintenance Rule implementation for equipment performance problems. The inspectors assessed whether the equipment was properly placed into the scope of the rule, whether the failures were properly characterized, and whether goal setting was recommended, if required. The inspectors also independently verified one example of PG&E's handling of structures, systems and components (SSCs) performance or condition problems in terms of appropriate work practices, condition monitoring and common cause failures. Procedures MA1.ID17, "Maintenance Rule Monitoring Program," Revision 15, and AD7, "Work Control," Revision 2, were used as guidance. The inspectors reviewed the following Action Requests (ARs).

- AR A0634201, "System 21B Maintenance Rule Performance Criteria, Goal Setting Review," for Diesel Fuel Oil Transfer System Train A
- AR A0645716, "Paint Vapors Evident In The Control Room"

b. Findings

Introduction. A Green, self-revealing noncited violation (NCV) of Technical Specification 5.4.1.a was identified for the failure to implement adequate work controls for activities that could affect the control room boundary.

Description. The control room ventilation system is comprised of fans, dampers, and ducts. Different modes of equipment alignment are used to provide fresh, cooled, and de-humidified air to the control room. When the system is in Mode 1, a percentage of outside air is mixed with re-circulated air. In Mode 2, the outside air provides for 100 percent replenishment of the air exiting the control room. Mode 4 is the safety-related mode of operation that uses filter media to remove airborne contaminants if present. The ventilation system is normally aligned in Mode 1.

On September 8, 2005, during routine plant tours, the NRC inspectors noted that the control room atmosphere contained an unusual amount of fumes similar to acetone. The inspectors questioned PG&E management regarding measures available to ensure control room personnel were not adversely affected by the fumes. The source of the

fumes was subsequently identified to be painting activities in the supply duct for Control Room supply Fan S-38. The painting activities were secured and the control room ventilation was realigned to Mode 2 to provide 100 percent fresh air to the control room. While in Mode 2, one complete air change takes approximately 10 minutes. After approximately 25 minutes, the control room atmosphere had not significantly improved, and the ventilation system was then placed in Mode 4. This mode isolates the control room and directs control room air through two charcoal bed filtration units. This ventilation mode was utilized for approximately 90 minutes and successfully cleared the fumes from the control room.

Pacific Gas and Electric Company's established work controls in Procedure AD7.DC8, Work Controls, Revision 20, which requires that when painting will be performed on or near control room ventilation equipment the planer shall include instructions in the work document to inform the shift supervisor of the work scope and the potential affect on control room habitability. The work controls also establish that the supervisor shall conduct a walkdown with the operator and/or the system engineer prior to beginning surface preparation of painting. These work controls were not implemented and the painting activity was conducted without adequate consideration of the paths available for the paint fumes to enter the control room. Pacific Gas and Electric Company staff subsequently determined that the work clearance boundary was limited to de-energizing the ventilation fan in the work area versus the isolation of Dampers 2-MOD-12 and 2-MOD-12A. With the discharge dampers open, the fumes were entrained into the control room by the running fans. The same flow path was part of the Mode 2 flow path, which was the reason for the fumes not dissipating as expected.

Pacific Gas and Electric Company industrial safety personnel sampled the control room air and determined that it was acceptable, according to Occupational Safety and Health Administration standards. Administrative controls for control room evacuation due to toxic fumes were contained in Procedure OP AP-8A, "Control Room Inaccessibility - Establishing Hot Standby," Revision 17. The control room is declared uninhabitable due to fire, smoke, heat, toxic gas, high radiation, explosion, credible security threat, or other occurrences as determined by the shift manager. The inspectors noted that there was not a procedural limit for the amount of paint fumes that would have required operators to evacuate the control room or don self-contained breathing apparatus. Pacific Gas and Electric Company sampled the charcoal filters and determined that the paint fumes had not resulted in the filters becoming inoperable as defined by the Technical Specifications (TS). This finding had crosscutting aspects in the area of human performance for the failure to adequately control work activities that coul affect the control room habitability.

Analysis. This finding impacted the Barrier Integrity Cornerstone and was determined to be more than minor because if left uncorrected the finding could result in a more significant safety concern involving control of work activities that could affect the control room atmosphere. Using the Significance Determination Process Phase 1 Screening Worksheet in Appendix A of Inspection Manual Chapter 0609, the inspectors considered that the issue represented an administrative control function for preventing paint fumes

from entering the control room and the protection of the control room ventilation system charcoal filters. This issue was discussed with a senior reactor analyst and determined that the appropriate safety significance evaluation was through management review. The management review considered Pacific Gas and Electric Company's control of painting materials in and around the control room envelope, any potential impact on the charcoal filters used to maintain the radiological barrier in the event of an accident, and any potential impact on licensee personnel. Based on the introduction of paint fumes into the control room did not adversely affect the control room operators' ability to operate the plant, there was not an actual degradation of the control room boundary and the charcoal filters remained operable, the finding was determined to be of very low safety significance (Section 1R12).

Enforcement. A violation of TS 5.4.1.a, which establishes that the applicable procedures in Regulatory Guide 1.33, Revision 2, Appendix A shall be implemented, was identified. Appendix A required procedures for the conduct of maintenance activities. Procedure AD7.DC8, Work Controls, Revision 20, provided for the control of painting activities. Contrary to the above, on September 8, 2005, PG&E failed to adequately implement the requirements of Procedure AD7.DC8, which resulted in the introduction of paint fumes into the control room. Because the failure to correct this nonconformance was determined to be of very low safety significance and has been entered into the corrective action program as AR A0645716, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275/2005004-01, Failure to Implement Adequate Work Control for Activities that Can Affect the Control Room Boundary.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

The inspectors performed four inspection samples of maintenance risk assessments and emergent work control.

.1 Risk Assessments

a. Inspection Scope

The inspectors reviewed daily work schedules and compensatory measures to confirm that PG&E had performed proper risk management for routine work. The inspectors considered whether risk assessments were performed according to their procedures and whether PG&E had properly used their risk categories, preservation of key safety functions, and implementation of work controls. The inspectors used Procedure AD7.DC6, "On-line Maintenance Risk Management," Revision 8, as guidance. The inspectors specifically observed the following work activities during the inspection period.

- (Unit 2) Preventive maintenance on Atmospheric Dump Valve MS-2-PCV-21 and Diesel Engine Generator (DEG) 2-1 on August 3, 2005

- (Unit 1) Preventive maintenance on DEG 1-3 and surveillance testing using Procedure STP-75, "4 kV Vital Bus Undervoltage Relay Calibration," Revision 28 on August 8, 2005

b. Findings

No findings of significance were identified.

.2 Emergent Work

a. Inspection Scope

The inspectors observed emergent work activities to verify that actions were taken to minimize the probability of initiating events, maintain the functional capability of mitigating systems, and maintain barrier integrity. The scope of work activities reviewed includes troubleshooting, work planning, plant conditions and equipment alignment, tagging and clearances, and temporary modifications. The following activities were observed during this inspection period:

- (Unit 1) Overcurrent ground alarm for startup Transformer 1-1 while startup Transformer 2-1 was in a maintenance outage window on July 13, 2005 (AR A0641539)
- (Unit 1) Circuit card failure in the main generator exciter while DEG 1-3 was in a maintenance outage window on August 11, 2005 (AR A0644083)

b. Findings

Introduction. A Green, self-revealing NCV was identified for the failure to adequately assess and manage the risk associated with maintenance on Startup Transformer 2-1, as required by 10 CFR 50.65(a)(4). Specifically, PG&E failed to adequately evaluate the scope of Startup Transformer 2-1 relay maintenance and its impact on Startup Transformer 1-1. As a result, the power supply to Startup Transformer 1-1 was challenged, but remained available.

Description. On July 3, 2005, maintenance technicians were performing protective and alarm relay calibrations on Startup Transformer 2-1. At that time, Startup Transformer 2-1 was out of service and startup power to Unit 2 was cross-tied from Startup Transformer 1-1. When technicians removed an electrical connection at Relay 50NXUT21, the control room operators received an overcurrent ground alarm on Startup Transformer 1-1. The technicians re-installed the electrical connection, and the relay work was stopped to investigate the reason for the overcurrent ground alarm.

Pacific Gas and Electric Company engineering staff determined that removing the electrical connection at Relay 50NXUT21 forced current to go through Relay 51XUT11, which is the overcurrent ground alarm relay for Startup Transformer 1-1. It also forced

current through Relay 86SU, which is overcurrent ground protection relay for Startup Transformer 1-1. Tripping Relay 86SU would result in a loss of startup power to both units. The inspectors observed, through analysis, a voltage drop of approximately 35.5 Vdc across Relay 51XUT11, which was sufficient to actuate its 24 Vdc relay coil. However, the voltage drop across Relay 86SU was observed to be only 13.5 Vdc, which was not sufficient to actuate its 125 Vdc relay coil.

Pacific Gas and Electric Company engineering staff performed an apparent cause analysis in AR A0642166. The protective and alarm relays for the startup electrical buses for both units are fed from a single power supply. The relays are arranged in a daisy chain, such that a break in the electrical connection at any one relay would disable any relays downstream from that relay. The engineering staff surmised that, in the past, during any relay maintenance on startup Transformer 2-1 relays, the downstream Startup Transformer 1-1 relays were disabled. The engineering staff determined that this condition had existed since initial plant operation. In Refueling Outage 1R12, new digital protective relays were installed on the Unit 1 startup bus. The installation of the digital protective relays provided a new circuit path when there was a break in an upstream electrical connection. The relay maintenance performed on July 3, 2005, was the first time upstream electrical connections were broken since the installment of digital relays.

The inspectors determined that this finding had a cross-cutting aspect in the area of human performance. Specifically, the apparent cause was identified as a human performance error in failing to recognize the impact of removing electrical connections to downstream electrical equipment. Procedure AD7.DC8, "Work Control," Revision 19, stated that any work with a performance frequency of greater than quarterly shall be considered as "non-routine" and should be evaluated against Procedure MA1.DC11, "Risk Assessment," Revision 5A. Procedure MA1.DC11 required that for work that imposed medium to high risk, that a circuit isolation plan be developed. The use of the circuit isolation plan would have added an opportunity to identify the potential impact to Startup Transformer 1-1 protective relays. Pacific Gas and Electric Company's corrective actions include reinforcing expectations for work order preparation and review for non-routine work and the use of the maintenance risk assessment procedures. Additionally, PG&E planned to place a caution note in the startup transformer relay maintenance work orders regarding the configuration of the relays and the potential for disabling them. This finding had crosscutting aspects in the area of human performance for the failure to adequately assess and manage the risk associated with protective relay maintenance.

Analysis. The performance deficiency associated with this finding was the failure to adequately assess and manage the risk associated with maintenance on the Startup Transformer 2-1 relays. The finding impacted the Mitigating Systems cornerstone and was determined to be more than minor using IMC 0612, Appendix E, Example 7.f. Specifically, PG&E staff failed to appropriately implement Procedures AD7.DC8 and MA1.DC11 which called for a circuit isolation plan to identify any actions that may impact in-service equipment for medium to high risk maintenance activities. Using

IMC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process, Flowchart 1- Assessment of Risk Deficit, the delta incremental core damage probability deficit was less than 1E-6 and the delta incremental large early release probability deficit was less than 1E-7 since the amount of voltage applied to Startup Transformer 1-1 protective Relay 86SU would not have caused a loss of startup power to either unit

Enforcement. 10 CFR 50.65(a)(4) states, in part, that before performing maintenance activities, the licensee shall assess and manage the risk that may result from the proposed maintenance activities. Contrary to the above, PG&E failed to adequately assess and manage the risk associated with protective relay maintenance on Startup Transformer 2-1, which challenged the power supply to startup Transformer 1-1. Because the failure to correct this nonconformance was determined to be of very low safety significance and has been entered into the corrective action program as AR A0642166, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275/2005004-02, Failure to Adequately Assess and Manage Risk Associated with Startup Transformer 2-1 Maintenance.

1R14 Personnel Performance Related to Non-routine Plant Evolutions and Events (71111.14)

Turbine Driven Auxiliary Feedwater Pump 1-1 Surveillance Test

a. Inspection Scope

(Unit 1) On July 21, 2005, operators and maintenance personnel performed a surveillance test of the turbine drive auxiliary feedwater pump. The pump failed to establish minimum recirculation flow on the first two attempts. Pacific Gas and Electric Company declared the pump inoperable and entered the appropriate technical specification action statements. Troubleshooting included repeated venting of the pump and associated piping, calibration of turbine driven auxiliary feedwater instruments, a review of past operability evaluations, and ultrasonic assessment of valve and check valve positions.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed four inspection samples of operability evaluations. These reviews of operability evaluations and/or prompt operability assessments (POAs) and supporting documents were performed to determine if the associated systems could meet their intended safety functions despite the degraded status. The inspectors

reviewed the applicable TS, Codes/Standards, and FSAR Update sections in support of this inspection. The inspectors reviewed the following AR's and operability evaluations:

- (Unit 1) Battery 1-2 ground (AR A0639049)
- (Unit 1) Personnel as containment recirculation sump debris (AR A0580651)
- (Unit 1) Abnormal governor oil samples for DEG 1-2 and 1-3 (ARs A0644735 and A0644924)
- (Unit 1) Non-conservative differential pressure against containment recirculation sump valves (AR A0643107)

b. Findings

Introduction. The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to promptly identify a condition adverse to quality. Specifically, PG&E initially screened industry operating experience regarding the potential for containment recirculation sump valves failing to open following certain small-break LOCAs as not being applicable to Diablo Canyon Power Plant. Upon questioning from the inspectors, the industry operating experience was found to be applicable and the containment recirculation sump valves were determined to be nonconforming but operable.

Description. On June 17, 2005, PG&E received industry operating experience regarding the potential for containment recirculation sump valves failing to open under certain small-break LOCA scenarios. The industry operating experience was first discovered at the Catawba Nuclear Station and involved a potentially higher than expected differential pressure across the containment recirculation sump valves. In the case of Catawba Nuclear Station, the large-break LOCA was assumed to provide the highest differential pressure across the containment recirculation sump valves. However, it was discovered that during a small-break LOCA, the residual heat removal (RHR) pumps would start, run for a short time period, and then be shut down by the operators, as directed by the emergency operating procedures. Following shutdown of the RHR pumps, the pressure built-up from running the pumps would equalize at the discharge and suction sides of the pumps. This pressure in the suction side of the RHR pumps could create a differential pressure across the containment recirculation sump valves that is greater than that assumed in the large-break LOCA scenario. Therefore, the concern is the ability of the containment recirculation sump valves to open against the higher differential pressure following a small-break LOCA scenario and provide for recirculation of water through the reactor vessel during the accident.

On June 29, 2005, PG&E evaluated the industry operating experience, as described in OEA Log Y5-137, and screened the operating experience as not being applicable since it originated from a plant that had an ice-condenser containment and Diablo Canyon Power Plant has large, dry containments. The inspectors questioned the applicability of

the operating experience, and PG&E initiated AR A0643107 on July 27, 2005, to further evaluate the applicability of the operating experience. On August 25, 2005, PG&E determined that the potential differential pressure across Containment Recirculation Valves 8982A/B for both units was greater than the differential pressure in Calculation –013, “MOV Limiting Process Conditions Evaluation for Generic Letter 89-10,” Revision 5. Specifically, the differential pressure was determined to be up to 370 psid, as compared to the differential pressure of 64 psid in Calculation –013. According to Calculation V-07, “Actuator Sizing and Setpoint Calculation for Rising Stem Valves With Limitorque Operators,” Revision 3, Valves 8982A/B are able to open against a 263 psid.

The inspectors observed that Calculation –013 was nonconforming according to Generic Letter 91-18, Revision 1. Although PG&E had initially discussed in AR A0643107 as to why they believed the pressure in the RHR system would decrease over a short period of time due to valve leakage, they had not completed a POA as required by Procedure OM7.ID12, “Operability Determination,” Revision 9. The inspectors questioned the need for a POA and, on September 8, 2005, a POA was provided in AR A0643107. The POA was later updated on October 5, 2005.

In the final version of the POA, PG&E considered the valves to be operable as a result of a change made to Procedure EOP E.1, “Loss of Reactor or Secondary Coolant,” Revisions 20 (Unit 1) and 14 (Unit 2). The procedures now establish component cooling water through the RHR heat exchangers during the small-break LOCA scenarios when the RHR pumps were shutdown approximately 15 to 30 minutes into the event response. The establishment of component cooling water would decrease the temperature, and therefore, the pressure of the RHR fluid below 263 psid. Additionally, small amounts of RHR system valve leakage and RHR pump seal leakage would decrease RHR system pressure, and PG&E engineers determined that, absent conservatism in Calculation V-07, Valves 8982A/B could open against approximately 400 psid. Conservatism in the calculation include a valve friction of 0.6 versus 0.44, an applied actuator voltage of 419 V versus 426 V, and temperature derating of the actuator motor of 37 ft-lbs versus 40 ft-lbs.

The inspectors determined that PG&E had failed to promptly identify the nonconforming condition of Calculation –013 when provided the opportunity through the industry operating experience. This violation of 10 CFR Part 50, Appendix B, Criterion XVI had problem identification and resolution cross-cutting aspects. Additionally, another problem identification and resolution cross-cutting aspect was identified when PG&E failed to document the bases for the operability of the containment recirculation sump valves through a POA.

Analysis. The performance deficiency associated with this finding was the failure to promptly identify a condition adverse to quality. The finding impacted the Mitigating Systems Cornerstone and was determined to be more than minor since it impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the

finding affected the cornerstone attribute of design control, and the failure to recognize the applicability of the industry operating experience would allow the non-conservative design and testing of the containment recirculation sump valves to continue to exist. Using the SDP Phase 1 Screening Worksheet of IMC 0609, the finding was determined to be of very low safety significance since the finding is a design or qualification deficiency confirmed not to result in loss of function per Generic Letter 91-18, Revision 1.

Enforcement. 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," states, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, PG&E failed to promptly identify the non-conforming condition of Calculation -013 when provided the opportunity through the industry operating experience. Because this violation is of very low safety significance, and it has been entered into the corrective action program (CAP) as AR A0643107, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275, 323/2005004-03, Failure to Identify Non-Conservative Containment Recirculation Sump Valve Differential Pressure.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors reviewed three individual operator workarounds and performed one cumulative-effects review during this inspection period. The inspectors also reviewed all "On-The-Spot-Changes" in effect on August 1, 2005 affecting any abnormal or emergency procedure. An operator workaround is defined as operator action taken to compensate for a degraded or non-conforming condition that complicates the operation of plant equipment. The cumulative effect review assessed the impact of all operator workarounds that could affect multiple mitigating systems, the potential for mis-operation of a system, and the impact on the operators to respond in a correct and timely manner to plant transients and emergency situations. The individual workarounds evaluated were:

- Manual draining of pressurizer relief valve water loop seals
- Circulating water pump discharge valve SW-1-FCV-492 local operation
- Manual seating of DEG pre-circulation lube oil check valves

b. Findings

No findings of significance were identified.

1R17 Permanent Modifications (71111.17)

a. Inspection Scope

The inspectors performed one sample of permanent modifications. On July 20, 2005, the inspectors observed maintenance technicians making a change to the bolting pattern for the connection of the vital battery charger output breaker to the feeder cabling to the switchgear. As part of the inspection effort, the inspectors reviewed the work requests, the design change packages, quality control procedures, and system schematics.

b. Findings

Introduction. The inspectors identified a Green NCV for the failure to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled, as required by 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, PG&E failed to ensure the appropriate cable bend radius for the vital battery chargers installed in Units 1 and 2, which could lead to long-term cable degradation.

Description. The vital 125 Vdc battery chargers supply DC power to various safety-related components and recharge the vital batteries. In 2004, PG&E contracted to have new vital battery chargers installed as part of their program to replace obsolete equipment. On July 20, 2005, the inspectors were observing technicians making a change to the bolting pattern connecting the battery chargers to the feeder cables. The inspectors noticed that the length of the cables connecting the charger were too long. The inspectors measured the cable bend radius of the flexible cables and determined that they did not meet PG&E's quality standards for minimum bend radius for 750 MCM aluminum sheathed cabling. The found cable bend radius was approximately 3.5 inches. Procedure MP E-57.2B, "Equipment Wiring and Terminations," Revision 33 requires that cables, in the absence of manufacturer's data, to have a bend radius of 5 to 7 inches, depending on the thickness of the insulation. Cabling that is configured and operated with less than minimum bend radius can have localized temperature increases or a breach of the protective insulation coating.

Inspections for extent of condition revealed that all vital battery chargers (10 total) have this condition adverse to quality. The inspectors also noted that this criteria of electrical system inspection was not part of the Quality Control checklist. Pacific Gas and Electric Company determined that the omission of this critical attribute occurred in 2002 when the inspection procedures for electrical maintenance and installation were merged.

Analysis. The performance deficiency associated with this finding is the failure to ensure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. This finding is more than minor because it is similar to IMC 0612, Appendix E, Example 3.a., in that all vital battery chargers must have their connections and cables reworked to be in compliance

with PG&E's procedures and applicable industry standards. Additionally, the finding impacted the Mitigating Systems Cornerstone and was more than minor because it impacted the cornerstone objective to ensure the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Using the SDP Phase 1 Screening Worksheet in Appendix A of IMC 0609, the inspectors determined that there was no loss of an actual safety function, no loss of a safety-related train for greater than the 125 VDC battery charger TS allowed outage time, and the finding is not potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event. Therefore, the finding was determined to be of very low safety significance (Section 1R17).

Enforcement. 10 CFR Part 50, Appendix B, Criterion III states, in part, that measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Contrary to the above, PG&E failed to ensure appropriate quality standards are specified and implemented to ensure the appropriate cable bend radius for vital battery chargers cables. Because this failure to ensure adequate cable bend radius was determined to be of very low safety significance and has been entered into the corrective action program as AR A0642617, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000275, 323/2005004-04, Failure to Assure That Appropriate Quality Standards Were Specified and Verified Such That Deviations from Such Standards Are Controlled.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed ten post-maintenance tests for selected risk-significant systems to verify their operability and functional capability. As part of the inspection process, the inspectors witnessed and/or reviewed the post maintenance test acceptance criteria and results. The test acceptance criteria were compared to the TS and the FSAR – Update. Additionally, the inspectors verified the tests were adequate for the scope of work and were performed as prescribed, jumpers and test equipment were properly removed after testing, and test equipment range, accuracy, and calibration were consistent for the application. The following selected maintenance activities were reviewed by the inspectors:

- (Unit 1) Dampers VAC-1-FD-43 and VAC-1-FD-45 corrective maintenance on June 28, 2005 (Work Order C0195463)
- (Unit 1) Eagle 21 protection system cable replacement on July 6, 2005 (Work Order C0192506)
- (Unit 1) Battery 17, Cell 31 disconnected for repairs to intercell coating on July 21, 2005 (Work Order C0194619)

- (Unit 2) ASW Pump 2-1 repair of damaged circuits in Conduit K0770 on July 26, 2005 (Work Orders C0194464, C0196598, C0196599, C0196600, C0196602, C0196603, C0196604, and C0196605)
- (Unit 1) Battery Charger 121 cable bolt pattern change on July 27, 2005, (Work Order C0194936)
- (Unit 1) Leak testing of containment personnel access hatch seals after solenoid Valves SV 2058 and SV 2059 were replaced on August 6, 2005, (Work Order R02430958)
- (Unit 1) Spent Fuel Pool Pump Discharge Check Valve SFS-1-62 evaluation of torque for gasket installation August 13, 2005, (Work Order R0251532)
- (Unit 1) DEG Priming Tank Solenoid Valve DEG-1-SV-714, leak-by repair on August 15, 2005, (Work Order C0198803)
- (Unit 1) Steam Generator 1-2 wide range level recorder spiking on July 20, 2005, (Work Order C0198348)
- (Unit 2) Auxiliary Saltwater Pump 2-2 Discharge Valve ASW-2-54 suspected to be throttled (AR A0645596)

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated six routine surveillance tests to determine if PG&E complied with the applicable TS requirements to demonstrate that equipment was capable of performing its intended safety functions and operational readiness. The inspectors performed a technical review of the procedure, witnessed portions of the surveillance test, and reviewed the completed test data. The inspectors also considered whether proper test equipment was utilized, preconditioning occurred, test acceptance criteria agreed with the equipment design basis, and the equipment was returned to normal alignment following the test. The following tests were evaluated during the inspection period:

- (Unit 1) STP I-91B, "Thermocouple Monitoring System Channel Calibration," Revision 6 on July 18, 2005
- (Unit 2) Pump Surveillance Test, STP P-CSP-22, "Routine Surveillance Test of Containment Spray Pump 2-2," Revision 9 on July 26, 2005

- (Unit 1) Reactor Coolant System Leak Detection System, STP I-19-L60, "Containment Structure Sump 1-1 Level Channel LT-60 Calibration," Revision 3 on July 27, 2005
- (Unit 1) STP —75, "4 kV Vital Bus Undervoltage Relay Calibration," Revision 28 on August 8, 2005
- (Unit 1) STP I-39-R14R.B, "Plant Vent Discharge Redundant Noble Gas RM-14R Radiation Monitor Calibration," Revision 8 on August 18
- (Unit 2) STP M-9A, "Diesel Engine Generator Routine Surveillance Testing," Revision 68A on September 8, 2005

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

g. Inspection Scope

The inspectors reviewed four temporary plant modifications during this inspection period to verify that they did not affect safety functions of safety systems. Temporary plant modifications may include jumpers, lifted leads, temporary systems, repairs, design modifications, and procedure changes which can introduce changes to plant design or operations. As part of the inspection effort, the inspectors verified aspects of the temporary plant modifications that include energy requirements, material compatibility, structural integrity, environmental qualification, code and safety classification, system timing constraints, reliability, cooling requirements, control signals, equipment protection boundaries, water flow paths, pressure boundary integrity, procedures, drawings, and tests. During this inspection period, the following temporary plant modifications were reviewed:

- (Unit 2) Splint on DEG 2-1 pre-circulating lube oil pump supply hose (AR A0640704)
- (Unit 1) Gas sample device located at safety injection pump/residual heat removal pump cross-over piping (AR A0630567)
- (Unit 2) Insulation removal on auxiliary feedwater discharge piping to Steam Generator 2-1 (AR A0628670)
- (Unit 1) Temporary power to Radiation Monitors 11/12 and the ATWS Mitigating System Actuation Circuitry during routine maintenance on Uninterruptible Power Supply EJUPS (Work Orders C081826, C081824, and C081821)

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Emergency Preparedness Evaluation (71114.06)

a. Inspection Scope

On September 14, 2005, the inspectors witnessed a full emergency preparedness drill that included emergency preparedness performance indicator opportunities for emergency classification and notification. The scenario involved a failure to bring the plant to a required operating Mode within the applicable TS Action Statement (for an inoperable turbine-driven auxiliary feedwater pump), a steam line break with greater than 10 gpm primary-to-secondary leakage, a steam generator tube rupture coincident with a steam release from a ruptured steam generator, and indication of failed fuel cladding. The scenario involved the classification and notification of a Notice of Unusual Event, Alert, Site Area Emergency, and General Emergency, respectively, for those scenarios listed above. The inspectors attended and verified PG&E's self-critique of the scenario.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Daily Reviews

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP. The review was accomplished by reviewing daily AR Review Team packages and attending daily Operations morning meetings.

.2 Containment Air Particulate/Gaseous Radiation Monitors RM-11/12

a. Inspection Scope

The inspectors reviewed PG&E's response to several ARs regarding Containment Air Particulate/Gaseous Radiation Monitors RM-11/12. These ARs are listed in the Attachment to this report. The inspectors ensured the following:

- Complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- Evaluation and disposition of operability/reportability issues;
- Consideration of extent of condition, generic implications, common cause, and previous occurrences;
- Identification of significant negative trends associated with human or equipment performance;
- Classification and prioritization of the resolution of the problem commensurate with its safety significance;
- Identification of root and contributing causes of the problem;
- Identification of corrective actions which are appropriately focused to correct the problem; and
- Completion of corrective actions in a timely manner.

b. Findings

No findings of significance were identified.

.3 PI&R Crosscutting Aspects

Section 1R15 identified a problem identification and resolution crosscutting aspect for the failure to identify the nonconforming condition of the containment recirculation sump valves given industry experience and the failure to appropriately evaluate the operability of the valves in a POA.

4OA4 Crosscutting Aspects of Findings

Section 1R12 identified a human performance crosscutting aspect for the failure to implement work control requirements for painting activities that could affect the control room ventilation system.

Section 1R13.2 identified a human performance crosscutting aspect for the failure to follow procedures to assess maintenance risk and perform a circuit isolation plan for relay calibrations on startup Transformer 2-1.

4OA6 Management Meetings

Exit Meeting Summary

The resident inspection results were presented on October 11, 2005, to Ms. Donna Jacobs, Vice President, Nuclear Services, and other members of PG&E management. PG&E acknowledged the findings presented.

The inspectors asked PG&E whether any materials examined during the inspection should be considered proprietary. Proprietary information was reviewed by the inspectors and left with PG&E at the end of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

PG&E personnel

J. Becker, Vice President, Diablo Canyon Operations and Station Director
C. Belmont, Director, Nuclear Quality, Analysis, and Licensing
S. Chesnut, Director, Engineering Services
J. Fledderman, Director, Site Services
D. Jacobs, Vice President, Nuclear Services
S. Ketelsen, Manager, Regulatory Services
D. Oatley, Acting Chief Nuclear Officer
J. Purkis, Director, Maintenance Services
P. Roller, Director, Operations Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000275, 323/2005004-01	NCV	Failure to Implement Adequate Work Control for Activities that Can Affect th Control Room Boundary (Section 1R12)
05000275/2005004-02	NCV	Failure to Adequately Assess and Manage Risk Associated with Startup Transformer 2-1 Maintenance (Section 1R13.2)
05000275, 323/2005004-03	NCV	Failure to Identify Non-Conservative Containment Recirculation Sump Valve Differential Pressure (Section 1R15)
05000275, 323/2005004-04	NCV	Failure to Assure That Appropriate Quality Standards Are Specified and Included in Design Documents and That Deviations are Controlled (Section 1R17)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather

Action Requests

A0590309	A0619222	A0641546	A0641942
A0601068	A0640209	A0641646	

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision/Date</u>
17385S04	Schematic Diagram Multi Drive Unit	March 2001
441289	Schematic Diagram Screen Drive System	11
441436	Diagram of Connections 480 Volt MCC Bus 24D	8
500782	Schematic Diagram Main Annunciator	40
500790	Schematic Main Annunciator Window PK2013-PK2025	34
501132	Schematic Main Annunciator Window PK1213-PK1305	43
503105	Diagram of Connections Intake Structure above El. 17-5'	8
663022	Diagram of Connections Panel 'P0SD' Wiring	1
663396	Diagram of Connections for Unitrol Screen Drives	1

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
AR PK-13-01	Bar Racks/Screens	7
AR PK-13-02	Intake Auxiliary System	3
O-28	Intake Management	9
OP AP-7	Degraded Condenser	31

Section 1R04: Equipment Alignment

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
443468	Spent Fuel Pool Underliner Drainage	2

Section 1R06: Flood Protection Measures

Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
Calculatio 1025	Intake Structure/CWP Conduit Free Volumes	9/11/97

Action Requests

A0184820

Section 1R07: Heat Sink Performance

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CAP 0-6	Chemical Additions to the Closed Cooling Water Systems	15A
STP M-9A	Diesel Engine Generator Routine Surveillance Test	68A
AR PK16-08	Diesel 11 Cooling System	10A
MP —21.20	Diesel Engine Radiator Fan Drive	8
MP —21.21	Diesel Engine Radiator Fan Drive Right Angle Gear Box	4
MP —51.5	Testing and Maintenance of Safety/Relief Valves	23

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
102021	Engine Jack Water Cooling System (Sheet 8)	62
106721	Lube Oil System Diesel Engine 1-1 (Sheet 6)	40

Documents

<u>Number</u>	<u>Title</u>	<u>Revision</u>
DCM No.S-21	Diablo Canyon Nuclear Power Plant Units 1 & 2 Design Criteria Memorandum	
S-21	Diesel Engine System	19A

Action Requests

A0642619 A0580356
A0580182 A0580344
A0580307

Section 1R14: Personnel Performance Related to Non-routine Plant Evolutions and Events (71111.14)

Action Requests

A0157280 A0184820

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
OP D-1	Auxiliary Feedwater System	8
OP D-1:l	Auxiliary Feedwater System Make Available	26A
STP P-AFW-11	Routine Surveillance Test of Turbine-Driven Auxiliary Feedwater Pump 1-1	20

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
224084	Feedwater System Aux FWP 1-1 Gov/Brg Clg Wtr In	3
106703	Unit 1 Feedwater System (sheet 3)	69

Section 1R16: Operator Workarounds

OPS Deficiency Tracking Weekly Report, dated 7/30/05
Operator Work Arouns and Burdens Tracked via Long Term Plans, dated 7/30/05

System Long Term Plans

2001-S02B-003
2002-S004-017
2005-S007-015
2005-S007-016

Action Requests

A0588228	A0606300	A0571422	A0601415
A0529313	A0612680	A0629385	A0632814
A0642373	A0612681	A0637275	A0501708

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
J-12	Annunciator System Training Scenario	7
LSIM025	Loss of Stator Cooling Water	3

Section 1R17: Permanent Modifications

Action Requests

AR A0642617

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MP E-57.2B	Electrical Wiring and Terminations	33

Section 1R19: Post Maintenance Testing

Action Requests

A0630109	A0641533	A0636386	A0643199
A0630671	A0634925	A0636480	

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
MIP —2.0	HVAC Duct and Equipment and Miscellaneous Sheet (DCP-502)	1
STP I-7-T421	RCS Loop 2 ΔT /TAVG Channel Calibration	7
STP M-70B	Inspection and Testing of Fire Dampers	9
STP M-8F1	ALRM Leakrate Testing of Personnel Airlock Seals	10
OM6.ID12	Electrical Safety Program	3
PMT 17.30	Test ASW 2-1 Circuits Replaced in Conduit K0770	1
MP —54.1	Bolt Tensioning	18
MP —54.4	Spiral Wound Gasket Installation	19

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
6000235-109-1	Atwood & Morrill Check Valves Vendor Manual	dated 4/24/86
6000235-102-1	Atwood & Morrill Check Valve	dated 4/24/86

Work Orders

R0260531	R0271437	R0251534	C0146744
R0243958	R0243954	R0251532	C0146622

Section 1R22: Surveillance Testing

Action Requests

A0640987	A031627	A0628119
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Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
102035	Incore Thermocouple Instrumentation	115
102036	Incore Thermocouple Instrumentation	114

Section 1R23: Temporary Plant Modifications

Action Requests

A0630567
A0628501

Drawings

<u>Number</u>	<u>Title</u>	<u>Revision</u>
495927	Electrical Diagram Chemical and Counting Room UPS	5
106709	Safety Injection, Sheet 3	58
108003	Piping Schematic - Feedwater System, Sheet 4	55

Other

Calculation —824, Controlled Combustion Loading Tracking Calculation, Revision 20

Procedures

<u>Number</u>	<u>Title</u>	<u>Revision</u>
CF3.ID9	Design Change Package Development	25
CF3.ID10	Maintenance Modification Action Requests	20
CF4.ID7	Temporary Modifications	18
MP E-65.2A	Maintenance of Chemical Lab and AMSAC UPS	4
OM8.ID4	Control of Flammable and Combustible Materials	14
OP J-10:VI	Instrument Inverter Systems Shutdown and Clearing	3A
OP J-10:V	Instrument Inverter Systems -Make Available and Energize	5A
STP I-92A	AMSAC Functional Test	6
STP M-70A	Inspection of Fire Barrier and HELB Penetration Seals	5
TS3.ID2	Licensing Basis Impact Evaluations	20A

Work Orders

C0195503
C0198001

LIST OF ACRONYMS

ADAMS	Agency Document and Management System
AR	action request
CAP	Corrective Action Program
CFR	<i>Code of Federal Regulations</i>
DEG	diesel engine generators
FSAR	Final Safety Analysis Report
IMC	Inspection Manual Chapter
LOCA	loss-of-coolant accident
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records System
PG&E	Pacific Gas and Electric Company
POA	prompt operability assessment
RHR	residual heat removal
SDP	Significance Determination Process
TS	Technical Specifications