UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064

April 26, 2000

Gregory M. Rueger, Senior Vice President
and General Manager
Nuclear Power Generation Bus. Unit
Pacific Gas and Electric Company
Nuclear Power Generation, B32
77 Beale Street, 32nd Floor
P.O. Box 770000
San Francisco, California 94177

SUBJECT: NRC INSPECTION REPORT NO. 50-275/00-05; 50-323/00-05

Dear Mr. Rueger:

This refers to the inspection conducted on February 13 through April 1, 2000, at the Diablo Canyon Nuclear Power Plant, Units 1 and 2, facility. The enclosed report presents the results of this inspection.

During the 7-week period covered by this inspection, your conduct of activities at the Diablo Canyon Nuclear Power Plant facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and good radiation protection support.

Based on the results of this inspection, the NRC has determined that five Severity Level IV violations of NRC requirements occurred. These violations are being treated as noncited violations, consistent with Section VII.B.1.a of the Enforcement Policy. These noncited violations are described in the subject inspection report. If you contest the violation or severity level of these noncited violations, 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; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Diablo Canyon Nuclear Power Plant, Units 1 and 2, facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if requested, will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

/RA/

Linda Joy Smith, Chief
Project Branch E
Division of Reactor Projects

Docket Nos.: 50-275
50-323
License Nos.: DPR-80
DPR-82

Enclosure:
NRC Inspection Report No.
50-275/0005; 50-323/0005

cc w/enclosure:
Dr. Richard Ferguson
Energy Chair
Sierra Club California
1100 llth Street, Suite 311
Sacramento, California 95814

Nancy Culver
San Luis Obispo Mothers for Peace
P.O. Box 164
Pismo Beach, California 93448

Chairman
San Luis Obispo County Board of
Supervisors
Room 370
County Government Center
San Luis Obispo, California 93408

Truman Burns\Mr. Robert Kinosian
California Public Utilities Commission
505 Van Ness, Rm. 4102
San Francisco, California 94102

Robert R. Wellington, Esq.
Legal Counsel
Diablo Canyon Independent Safety Committee
857 Cass Street, Suite D
Monterey, California 93940

Ed Bailey, Radiation Program Director
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732 (MS 178)
Sacramento, CA 94327-7320

Steve Hsu
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732
Sacramento, California 94327-7320

Christopher J. Warner, Esq.
Pacific Gas and Electric Company
P.O. Box 7442
San Francisco, California 94120

David H. Oatley, Vice President
Diablo Canyon Operations and Plant Manager
Diablo Canyon Nuclear Power Plant
P.O. Box 3
Avila Beach, California 93424

Managing Editor
Telegram-Tribune
1321 Johnson Avenue
P.O. Box 112
San Luis Obispo, California 93406

Robert A. Laurie, Commissioner
California Energy Commission
1516 Ninth Street (MS 31)
Sacramento, CA 95814

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-275 50-323
License Nos.:	DPR-80 DPR-82
Report No.:	50-275/00-05 50-323/00-05
Licensee:	Pacific Gas and Electric Company
Facility:	Diablo Canyon Nuclear Power Plant, Units 1 and 2
Location:	7 ½ miles NW of Avila Beach Avila Beach, California
Dates:	February 13 through April 1, 2000
Inspectors:	David L. Proulx, Senior Resident Inspector Dyle G. Acker, Resident Inspector James A. Sloan, Jr., Senior Resident Inspector, San Onofre
Approved By:	Linda Joy Smith, Chief, Project Branch E

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Diablo Canyon Nuclear Power Plant, Units 1 and 2
NRC Inspection Report No. 50-275/00-05; 50-323/00-05

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report documents a 7-week period of resident inspection.

Operations

- In general, the performance of plant operators reflected a focus on safety. Operators used self- and peer-checking. The utilization of three-way communications were good and operators responded promptly to alarms (Section O1.1).

- The inspectors concluded that operator response to the inadvertent load transient bypass system actuation and subsequent loss of automatic control of Feedwater Regulating Valve FW-2-FCV-540 was appropriate. Operators quickly reduced reactor power and effectively maintained the required water level in Steam Generator 2-4. The licensee implemented appropriate corrective actions (Section O1.2).

- A violation of Technical Specification 3.6.3 was identified when operators inappropriately unisolated a containment penetration when the associated containment isolation valve was inoperable. Operators opened Valve FCV-762, inboard containment isolation valve for steam generator blowdown, while Valve FCV-157, outboard containment isolation valve for steam generator blowdown, was inoperable. Technical Specification 3.6.3 requires that, when a containment isolation valve is inoperable, a valve in the penetration flow path must be shut and deactivated within 4 hours. Although this action was initially met, operators reopened Valve FCV-762 prior to performing the postmaintenance test for Valve FCV-157 because of poor work coordination. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0502541 (Section O1.3).

- A violation of Technical Specification 3.4.4 was identified because operators inadvertently restored power to and opened a power-operated relieve valve block valve while the power-operated relief valve was inoperable. The total action statement had expired when this action was taken. These actions occurred because of inadequate coordination of a clearance removal. Technical Specifications require the power-operated relief valve block valves to be shut when the power-operated relief valve is inoperable; however, operators removed the clearance prior to restoration of the power-operated relief valve. Operators recognized and corrected the condition after 1 hour and 38 minutes. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0504167 (Section O1.4).

Maintenance

- Maintenance and surveillance items observed were satisfactorily performed (Sections M1.1 and 1.2).

- A violation of Unit 2 License Condition 2.C(1) was identified for exceeding the licensed power level of 3411 megawatts thermal. Reactor power reached 3541 megawatts thermal (103.8 percent power) because of an inadvertent load transient bypass at full power, which resulted from an inadequate nonsafety-related procedure. Technicians calibrated the condenser hotwell level controls using a procedure that required lifting leads in the load transient bypass system actuation circuitry. The procedure contained no precautions concerning the potential to cause a transient if performed while the unit was operating. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0503135 (Section M1.3).

- The licensee positioned a portable load center near a seismic target (2-inch component cooling water pipe) and failed to secure it in a manner that would prevent it from impacting and potentially damaging the target, contrary to plant procedures. The licensee promptly secured the load center and initiated Action Request A0505518. The licensee disagreed that this item was a violation because the licensee believed that there was no potential for the portable load center to damage the component cooling water piping. The licensee is performing further evaluation to determine if the impact energy of the equipment would have damaged the component cooling water piping. This item is unresolved so that the inspectors can evaluate the results of the additional evaluation and determine the significance of this deficiency (Section M2.1).

- A violation of Technical Specification 6.2.2.f. was identified for failure of maintenance management to review monthly overtime reports. Because of the difficulties in obtaining overtime records and the number of errors observed with the records, the inspectors concluded inadequate controls existed in the maintenance organization for routine oversight of overtime usage. Several maintenance craftsmen exceeded the Technical Specifications limits for overtime usage. Further, the licensee had questionable documentation and/or justification. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action system as Quality Evaluation Q0012181 (Section M6.1).

- A violation of Technical Specification 6.8.1.a was identified for failure to include commercial grade dedication activities required by plant procedures into approximately 20 work orders. The licensee determined that, although the commercial grade dedication activities were not performed, these errors were not risk or safety significant after performing evaluations that demonstrated the acceptability of the items. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Nononformance Report N0002109 (Section M6.2).

Engineering

- The auxiliary saltwater system was vulnerable to a single failure because both pumps took a suction from a single traveling screen. The inspectors concluded that the design of the auxiliary saltwater system intake was acceptable since failure of both auxiliary saltwater pumps was considered a low probability event (Section E8.2).

Plant Support

- During routine radiation protection observations, personnel donned protective clothing and dosimetry properly, and radiological barriers were properly posted (Section R1.1).

Report Details

Summary of Plant Status

Unit 1 began this inspection period at 100 percent power. Unit 1 continued to operate at essentially 100 percent power until the end of this inspection period.

Unit 2 began this inspection period at 100 percent power. On February 16, 2000, operators reduced power to 90 percent because of an inadvertent initiation of the load transient bypass feature. Following resolution of the apparent cause of the load transient bypass system initiation, operators returned Unit 2 to 100 percent power on February 16. Unit 2 continued to operate at essentially 100 percent power until the end of this inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (Units 1 and 2) (71707)

The inspectors visited the control room and toured the plant routinely when on site, including periodic backshift inspections. In general, the performance of plant operators reflected a focus on safety. Operator performance was generally characterized by self- and peer-checking. The utilization of three-way communications was good, and operator responses to alarms were observed to be prompt and appropriate to the circumstances.

O1.2 Inadvertent Load Transient Bypass (Unit 2)

a. Inspection Scope (71707)

The inspectors witnessed operator response and reviewed the planned corrective actions.

b. Observations and Findings

Both units at Diablo Canyon have a system for increasing feedwater flow to the steam generators called load transient bypass. The system monitors turbine impulse pressure, and when the system detects a specified reduction in turbine loading, the system starts the standby condensate booster pump and opens condensate valves to maximize flow to the suction of the feedwater pumps, in anticipation of a steam generator level shrink.

On February 16, 2000, the load transient bypass system initiated in Unit 2, with reactor and turbine power stable at 100 percent. Immediately following the system initiation, Steam Generator 2-4 Feedwater Regulating Valve FW-2-FCV-540 failed to manual. Operators responded to the actuation by controlling Steam Generator 2-4 level manually and by reducing turbine power to approximately 90 percent. After the plant was stabilized and the cause determined, operators returned Unit 2 to 100 percent power. The actuation resulted from a maintenance activity, which is discussed in Section M1.3 of this report. The licensee determined that the increased cold feedwater had caused reactor power to exceed 100 percent for 6 minutes and to peak at 103.8 percent.

The inspectors observed control room response to the actuation and discussed the system design with operations management personnel. Operations management stated that the load transient bypass system was originally installed at Diablo Canyon as part of the design for full load rejection. Since Diablo Canyon has had no recent history of being able to preclude a reactor trip after a full load rejection, the licensee initiated Action Request (AR) A0503137 to evaluate defeating this system.

The licensee reviewed the failure of automatic control of Valve FW-2-FCV-540 and determined that the increased feedwater flow at steady state conditions had caused the digital feedwater system to sense that there was a problem with automatic feedwater regulating valve control. When the digital feedwater control system sensed a problem, it transferred valve control to manual. The licensee observed that the conditions for the other three feedwater regulating valves were close to the values required to switch these valves to manual. The licensee observed that an inadvertent load transient bypass system actuation could cause all four feedwater regulating valves to fail to manual control. Licensee management stated that, if it was decided not to defeat the load transient bypass system, an evaluation would be performed to determine if the program for the digital feedwater control system could be changed to maintain the feedwater regulating valves in automatic during a load transient bypass system actuation.

c. Conclusions

The inspectors concluded that operator response to the inadvertent load transient bypass system actuation and subsequent loss of automatic control of Feedwater Regulating Valve FW-2-FCV-540 was appropriate. Operators quickly reduced reactor power and effectively maintained the required water level in Steam Generator 2-4. The licensee implemented appropriate corrective actions.

O1.3 System Restoration Before Completion of Required Testing (Unit 2)

a. Inspection Scope (71707)

The Unit 2 shift foreman directed that an inside containment isolation valve be opened while the outside containment isolation valve remained inoperable, inadvertently putting the unit in Technical Specification 3.6.1.1, which required action to commence a shutdown within 1 hour. The inspectors reviewed the investigation and corrective actions for this occurrence.

b. Observations and Findings

On February 9, 2000, at 4 a.m., the licensee initiated a repack of Valve FCV-157, the outside containment isolation valve for steam generator blowdown. Technical Specification 3.6.3 required that the affected penetration be isolated within 4 hours by deactivating Valve FCV-762, steam generator blowdown inside containment isolation, in the closed position. Valve FCV-762 was deactivated in the closed position.

When the work was complete, the shift foreman had the associated tags removed and Valve FCV-762 opened at 6:46 p.m. on February 9. However, Valve FCV-157 had not

been declared operable, since a stroke time test had not been performed. This action was contrary to Technical Specification 3.6.3. The oncoming shift immediately recognized that Valve FCV-762 was required to be closed and deactivated. Operators completed testing of Valve FCV-157 and declared it operable within 1 hour. The licensee issued AR A0502541 to identify the error and track corrective actions.

Technical Specification 3.6.3 requires, with one containment isolation valve inoperable, restoring valve operability within 4 hours, or isolating the affected penetration within 4 hours by use of one closed and deactivated valve, or placing the plant in hot shutdown within 6 hours. Because the affected containment penetration isolation valve was not left in closed position following expiration of the total allowed outage time (10 hours) the provisions of Technical Specification 3.6.3 were not met. The failure to keep Valve FCV-762 in the closed position when Valve FCV-157 was inoperable following expiration of the action statement was a violation of Technical Specification 3.6.3. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as AR A050254 (323/00005-01).

c. Conclusions

A violation of Technical Specification 3.6.3 was identified when operators inappropriately unisolated a containment penetration when the associated containment isolation valve was inoperable. Operators opened Valve FCV-762 while Valve FCV-157 was inoperable. Technical Specification 3.6.3 requires that, when a containment isolation valve is inoperable, a valve in the penetration flow path must be shut and deactivated within 4 hours. Although this action was initially met, operators reopened Valve FCV-762 prior to performing the postmaintenance test for Valve FCV-157 because of poor work coordination. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0502541

O1.4 Power-Operated Relief Valve (PORV) Backup Nitrogen System Repair (Unit 2)

a. Inspection Scope (37551, 62707 and 71707)

The inspectors reviewed the actions in response to nitrogen leaks identified during postmaintenance testing of the backup nitrogen system for PORV PCV-456 on March 8, 2000.

b. Observations and Findings

The licensee cleared PORV PCV-456 on the morning of March 8, 2000, to repair Valve RV-355, backup nitrogen system accumulator relief valve. In accordance with Technical Specification 3.4.4, operators closed and removed power from the associated block valve.

After completing the repairs, maintenance personnel reported the clearance for the system to be repressurized for the postmaintenance test. During the postmaintenance

testing, which involved leak-checking the relief valve flange, some of the leak-detection solution dripped from the threaded connection for the outlet pipe of the accumulator. The licensee left the PORV inoperable, developed a repair plan for the emergent work, and promptly completed the repairs.

After identifying the leak on the threaded connection, the maintenance personnel checked the similar connection for PORV PCV-455C and identified a smaller leak. The licensee constructed a mock-up of the connection with appropriate instrumentation to assist in quantifying the leakage rate from the accumulator for PORV PCV-455C. The estimated leakage rate, including instrument uncertainty, was approximately 35 standard cubic centimeters per minute, or about 0.0012 standard cubic feet per minute. Calculation J-002, demonstrated that the allowable volumetric flow rate was 4.31 standard cubic feet per minute. Therefore, the licensee determined that PORV PCV-455C remained operable. Repairs to the newly-identified leak were completed on March 9 in conjunction with other planned maintenance on the backup nitrogen system.

The planned maintenance performed in the backup nitrogen system for both PORVs involved replacing o-rings on the relief valve flanges. The licensee determined, in January 2000, that the installed o-rings were not rated for the backup nitrogen system operating pressure. Action Request A0500312 documented an o-ring failure on Valve RV-355 that resulted from the use of an inappropriately rated o-ring. The installed o-rings were Series 70, as specified in the bill of materials. The vendor information available to the licensee did not include specifications for the o-rings. The licensee contacted the vendor who determined that, for the backup nitrogen system operating pressure, Series 90 o-rings should be used. The licensee determined that all the o-rings in these relief valves should be replaced as soon as practical.

At approximately 1:16 p.m., while PORV PCV-456 was still inoperable, operators inappropriately restored power to and opened the block valve. Operators recognized their error and restored compliance with the Technical Specifications at 2:54 p.m. However, the action statement of Technical Specification 3.4.4 that had required the block valve to be closed or be in hot standby within the next 6 hours had expired. Operators needed to repressurize the backup nitrogen system in preparation for the postmaintenance test. However, the operators removed more tags than necessary and had reopened the block valve.

Technical Specification 3.4.4.b requires that, with one PORV inoperable for reasons other than seat leakage, within 1 hour either restore the PORV to operable status or close the associated block valve and remove power from the block valve. The licensee initially closed the block valve as required by this Technical Specification but reopened the block valve. When the PORV block valve was reopened, since the actions of Technical Specification 3.4.4.b. were no longer met, the licensee was required to be in Hot Standby within a total of 7 hours from the initial inoperability. The licensee exceeded the 7-hour period. The failure to close and maintain closed the PORV block valve when the associated PORV was inoperable in excess of the Technical Specification allowed outage time is a violation of Technical Specification 3.4.4. This Severity Level IV violation is being treated as a noncited violation, consistent with

Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as AR A0504167 (323/00005-02).

Operations management informed the inspectors that inadequate work coordination among operators caused this event, along with the failure to properly isolate a containment isolation valve (refer to Section O1.3). The inspectors noted that several events occurred in the last year in which an operator improperly implemented Technical Specifications and that this issue was indicative that improvement was still needed in this area. The operations manager acknowledged the inspectors' comments.

c. Conclusions

A violation of Technical Specification 3.4.4 was identified because operators inadvertently restored power to and opened a PORV block valve while the PORV was inoperable. These actions occurred because of inadequate coordination of a clearance removal. Technical Specifications require the PORV block valves to be shut when the PORV is inoperable; however, operators removed the clearance prior to restoration of the PORV. Operators recognized and corrected the condition after 1 hour and 38 minutes. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0504167.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments on Maintenance Activities

a. Inspection Scope (62707)

The inspectors observed portions of work activities covered by the following work orders (WO), temporary procedure (TP), or maintenance procedures (MP):

MP E-64.6A	Maintenance of BBC, ITE K-Line Circuit Breakers [Pressurizer Heater Circuit Breaker] (Unit 2)
WO C0166135	Rewire Load Tap Changer Automatic Controller Circuit in Startup Transformer 1-1 (Unit 1)
MP E-50.4	Change Setpoints for Startup Transformer 1-1 Differential Current Relays (Unit 1)
TP TB-0003	Startup Transformer 1-1 Load Tap Changer Alarm Time Delay Verification (Unit 1)

b. Observations and Findings

The work activities were adequately performed. See Section M1.3 below for a

discussion of maintenance activities associated with the load transient bypass system initiation discussed in Section O1.2.

M1.2 Surveillance Observations

a. Inspection Scope (61726)

The inspectors observed performance of all or portions of the following surveillance test procedures (STP)

STP M-16BA	Slave Relay Test Train A K604 (Safety Injection), Revision 9 (Unit 1)
STP M-9A	Diesel Engine Generator (DEG) Routine Surveillance Test, Revision 55 (Unit 1)
STP R-3D	Routine Monthly Flux Map, Revision 18 (Unit 1)
STP P-CCW-13	Routine Surveillance Test of Component Cooling Water Pump 1-3, Revision 7 (Unit 1)

b. Observations and Findings

The inspectors found that the surveillance tests were conducted properly and met the acceptance criteria. See Section M1.4 below for additional discussion of a failure of DEG 1-3 to start.

M1.3 Hotwell Make-up Calibration (Unit 2)

a. Inspection Scope (62707, 37551)

The inspectors reviewed circumstances related to the work that inadvertently actuated the load transient bypass system, as discussed in Section O1.2.

b. Observations and Findings

On February 16, 2000, technicians were performing Loop Test 2-7, “Hotwell Condensate Make-Up Channel LT-2 Calibration,” Revision 8. Loop Test 2-7, Step 8.5.2, required the technicians to lift a lead on Level Controller L-7. When this lead was lifted, it caused the inadvertent load transient bypass system actuation.

Hotwell level control and load transient circuits receive a signal from turbine impulse pressure. This signal is routed to both the hotwell level control and load transient circuits by a single constant current loop of 4 to 20 milliamps. A precision 250 ohm resistor is located in parallel with both the hotwell level control circuit and load transient circuit, providing a constant load and a current path should either device fail. Loop Test 2-7 assumed that the precision 250 ohm resistor for the hotwell level control circuit was located in the panel terminal area, so that a lead on Level Controller L-7 could be

lifted without causing loss of current to the transient bypass circuit. However, the actual resistor was located on the terminal being disconnected. When the lead was lifted, the impulse pressure signal to the transient bypass circuit was lost, simulating loss of the turbine and initiating a load transient bypass system actuation.

The inspectors observed that, even if the resistor had been located where the procedure assumed, if the technician were to touch the lifted lead to ground, a load transient bypass system actuation would also have occurred. The inspectors reviewed Loop Test 2-7 and determined that the procedure did not contain a precaution concerning the lifting of the hotwell level control lead. The licensee issued AR A0503135 to address the difference between the procedure and the actual wiring. The licensee stated that they would no longer perform Loop Test 2-7 at power.

The improper performance of Loop Test 2-7 at power resulted in the licensee exceeding their licensed power level. Unit 2 License Condition 2.C.(1) states that the facility is authorized to operate at power levels not in excess of 3411 megawatts thermal. On February 17, because of inadequate procedure controls, reactor power exceeded 3411 megawatts thermal and reached a level of 3541 megawatts thermal, or 103.8 percent power. Operation of Unit 2 in excess of 3411 megawatts following an inadvertent load transient bypass system actuation is a violation of Unit 2 License Condition 2.C(1). This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as AR A0503135 (323/00005-03).

c. Conclusions

A violation of Unit 2 License Condition 2.C(1) was identified for exceeding the licensed power level of 3411 megawatts thermal. Reactor power reached 3541 megawatts thermal (103.8 percent power) because of an inadvertent load transient bypass at full power, which resulted from an inadequate nonsafety-related procedure. Technicians calibrated the condenser hotwell level controls using a procedure that required lifting leads in the load transient bypass system actuation circuitry. The procedure contained no precautions concerning the potential to cause a transient if performed while the unit was operating. This Severity Level IV violation is being treated as a noncited violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Action Request A0503135.

M1.4 Failure of DEG 1-3 to Start (Unit 1)

a. Inspection Scope (61726)

The inspectors reviewed the failure of DEG 1-3 to start during performance of Procedure STP M-16BA and observed corrective actions and retesting.

b. Observations and Findings

During review of testing circuit logic, in response to Generic Letter 96-01, “Testing of Safety Related Logic Circuits,” on September 15, 1997, the licensee determined that

Procedure STP M-16BA was not independently testing the safety injection signal parallel logic paths for DEG 1-3. The licensee issued AR A0443761 to resolve this issue. The licensee determined that the two parallel logic paths should be tested independently. However, the licensee concluded that testing the two paths together met the Technical Specifications. Therefore, the licensee assigned a low priority to modifying Procedure STP M-16BA to test both paths.

In January 1998, the licensee sent the NRC a letter, stating that the Generic Letter 96-01 review had been completed and all Technical Specification actions were completed. In March 1998, DEG 1-3 was tested using a revision of Procedure STP M-16BA that did not independently test the two paths discussed in AR A0443761. In December 1998, the licensee revised Procedure STP M-16BA to independently test both of the parallel logic paths.

On March 1, 2000, during performance of Procedure STP M-16BA, DEG 1-3 failed to start during performance of the first of the two independent logic tests. Troubleshooting identified that a wiring error had been made during installation of DEG 2-3. Prior to installation of DEG 2-3 in 1993, DEG 1-3 was a swing diesel designed to start upon receipt of a safety injection signal from either Unit 1 or Unit 2. When a third permanent DEG was installed in Unit 2, DEG 1-3 was dedicated to Unit 1 only and the safety injection start signal from Unit 2 was removed. The circuit was rewired to provide a redundant start circuit to the existing safety injection start signal from Unit 1. Although the circuit diagram was updated to show the new wiring, the wiring diagram used to perform the modifications left out one lead, so the redundant start circuit never worked.

The licensee installed the missing wire and completed Procedure STP M-15BA. The other half of the logic circuit worked without modification.

Because the missing wire was a licensee modification that paralleled a required start circuit, the inspectors considered that the testing performed was prudent but not required by the Technical Specifications. The inspectors observed the troubleshooting and retesting and considered that they were adequately performed.

c. Conclusions

The inspectors concluded that, although the licensee made a wiring error during a previous DEG modification, this error did not invalidate Technical Specification required testing**.** Licensee actions to identify and correct the wiring error were adequate.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Materials Not Seismically Restrained (Unit 2)

a. Inspection Scope (71707)

On March 7, 2000, the inspectors toured portions of Unit 2.

b. Observations and Findings

The inspectors identified improperly secured equipment in the Unit 2 100-foot containment penetration area, in the vicinity of designated seismic targets. First, an upright 6-foot step ladder was next to a 12-inch component cooling water pipe. The licensee determined that the ladder was too light to damage the pipe; nevertheless, the licensee promptly removed the ladder. Second, a portable load center (24-inches high, 12-inches wide, 12-inches deep, and weighing over 100 pounds) adjacent to a 2-inch component cooling water pipe was not secured in a manner to prevent the load center from tipping into the pipe during a seismic event. The load center was secured with one rope at its base. Had the load center tipped into the 2-inch pipe, it would have contacted the pipe in a location that was unisolable from the 12-inch component cooling water header.

Technical Specification 6.8.1.a required that written procedures shall be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2. Regulatory Guide 1.33, Appendix A, recommends procedures for Administrative Controls. Procedure AD4.ID3, “Seismically Induced Systems Interactions Program Housekeeping Guidelines,” Revision 3, step 5.1.1, required that individuals who bring transient equipment into the plant or who perform activities that result in transient equipment shall position or restrain the transient equipment so that it cannot impact and damage targets. Licensee personnel failed to restrain a portable load center in a manner that would prevent it from impacting and potentially damaging a seismic target, a 2-inch component cooling water pipe. The licensee initiated AR A0505518 and promptly secured the load center. Because the licensee was performing further evaluation to determine if the load center could have damaged the component cooling water piping, this is an unresolved item (323/00005-04).

c. Conclusions

The licensee positioned a portable load center near a seismic target (2-inch component cooling water pipe) and failed to secure it in a manner that would prevent it from impacting and potentially damaging the target, contrary to plant procedures. The licensee promptly secured the load center and initiated Action Request A0505518. The licensee disagreed that this item was a violation because the licensee believed that there was no potential for the portable load center to damage the component cooling water piping. The licensee is performing further evaluation to determine if the impact energy of the equipment would have damaged the component cooling water piping. This item is unresolved so that the inspectors can evaluate the results of the additional evaluation and determine the significance of this deficiency.

M6 Maintenance Organization and Administration

M6.1 Overtime Controls (Units 1and 2)

a. Inspection Scope (62707)

The inspectors reviewed the records for overtime usage during the October 1999 Unit 2 outage and compared those records to the overtime limitations specified in Technical Specification 6.2.2.f.

b. Observations and Findings

Technical Specification 6.2.2.f required that higher levels of licensee management approve use of overtime for key maintenance personnel who perform safety-related work in excess of 16 hours straight, 24 hours in 48 hours, and 72 hours in 7 days. In addition, Technical Specification 6.2.2.f required that higher levels of licensee management shall review monthly overtime reports to assure that excessive hours have not been assigned. The licensee implemented Technical Specification 6.2.2.f, using Procedure OM14.ID1, “Overtime Restrictions,” Revision 7.

The inspectors requested the individual overtime approval sheets for the maintenance organization for October 1999, while Unit 2 was shut down for refueling. The inspectors also asked for the monthly overtime report required by Technical Specification 6.2.2.f and implemented by Procedure OM14.ID1, paragraph 5.6. Procedure OM14.ID1, paragraph 5.6, required that the managers initiate an AR for instances where overtime limits had been exceeded without approval.

The inspectors were informed that monthly overtime reports were not available for the maintenance organization and that they would have to be specially generated. The licensee provided the inspectors with a copy of each authorization signed by higher levels of management and subsequently provided a listing of all personnel who had exceeded Technical Specification 6.2.2.f limits.

The inspector selected the limit of working in excess of 24 hours in a 48 hour period and attempted to compare the 104 payroll entries with the individual approved overtime extensions. The inspectors identified that only 4 of the 104 entries had been approved. The inspectors observed that some of the entries could be payroll errors or for personnel that were not performing safety-related maintenance work but considered that the potential existed that Technical Specification 6.2.2.f was not being complied with. The inspectors asked the licensee to identify which of the 100 remaining entries were for safety-related work and then provide the approval authority.

The inspectors observed that most of the overtime extensions had been signed by the Maintenance Services Manager. The inspectors found that monthly overtime reports were not being generated for maintenance personnel and questioned the Maintenance Services Manager how maintenance managers had been complying with the requirement for a monthly review. The Maintenance Services Manager acknowledged that he had not seen any recent overtime reports.

The inspectors discussed their initial observations with licensee management. The licensee initiated a Nuclear Quality Services assessment of overtime limits. Nuclear Quality Services issued the assessment on February 16, 2000. The assessment identified 103 occurrences where timekeeping records indicated that maintenance personnel had exceeded Technical Specification 6.2.2.f limits and identified no

management approvals. Nuclear Quality Services personnel issued ARs to the associated managers to review the 103 occurrences and initiate additional individual ARs where it could not be specifically identified that the associated personnel were not performing safety-related work.

Maintenance management reviewed the 103 occurrences and determined that no Technical Specification 6.2.2.f limits had been exceeded as follows:

- Approval forms were found for 26 occurrences
- Payroll or employee data errors were found for 21 occurrences
- Employees did not include turn over time for 47 occurrences
- Workers were not performing any safety-related work for 5 occurrences
- Workers remembered having approval but records were lost for 4 occurrences

The inspectors reviewed the above results and observed that, for the 47 occurrences where the employee did not include turnover times, management personnel assigned the maximum turnover time to the records, which was 2 hours a day. The inspectors asked if the individual workers had been contacted. Maintenance management personnel stated that they had not contacted the individual workers to see what the actual turnover times were, as they did not believe the workers would remember, and it was company policy to allow up to 2 hours a day for shift turnover.

Nuclear Quality Services personnel concluded from interviews with higher level maintenance managers that these managers were not reviewing overtime records monthly. Nuclear Quality Services personnel identified the lack of procedure compliance as a programmatic quality problem, as documented in AR A0502892. Nuclear Quality Services personnel stated that they had reviewed excessive overtime requests for personnel under the Operations Service Manager and determined that NRC and licensee requirements were being met.

Nuclear Quality Services personnel performed an audit of maintenance human performance errors and overtime usage. The audit results did not indicate that overtime usage contributed to any of the maintenance errors. The inspectors reviewed a sample of the most significant errors and did not identify any that had excessive overtime as a contributing cause.

The inspectors considered that the failure of higher level management to review monthly overtime reports, as discussed above, was a violation of the Technical Specification 6.2.2.f. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action system as Quality Evaluation Q0012181. The licensee initiated nine ARs to provide corrective actions for the various types of overtime record errors observed. The licensee acknowledged that the review of records was not being performed, as required. The licensee stated that planned corrective actions would include addressing the overtime requirements of the Improved Standard Technical Specification, scheduled for implementation in May 2000 (275; 323/00005-05).

c Conclusions

A violation of Technical Specification 6.2.2.f was identified for failure of maintenance management to review monthly overtime reports. Because of the difficulties in obtaining overtime records and the number of errors observed with the records, the inspectors concluded inadequate controls existed in the maintenance organization for routine oversight of overtime usage. Several maintenance craftsmen exceeded the Technical Specifications limits for overtime usage. Further, the licensee had questionable documentation and/or justification. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action system as Quality Evaluation Q0012181.

M6.2 Failure to Complete Commercial Grade Dedication Requirements During Installation

a. Inspection Scope (62707)

Quality assurance personnel identified work orders that did not contain the required records for commercial grade dedication inspections. The inspectors observed the investigation of the scope of this problem and resultant corrective actions.

b. Observations and Findings

General Requirements and Background

Commercial grade parts are those parts that are procured for safety-related applications from commercial sources that are not qualified suppliers, as defined in 10 CFR Part 50, Appendix B. Dedication of these commercial grade parts is defined in 10 CFR Part 21, which requires that these parts be dedicated in accordance with the applicable provisions of 10 CFR Part 50, Appendix B. Procedure AD9.ID4, “Establishing Procurement Technical and Quality Requirements,” Revision 4, provided instructions for material procurement, including commercial purchase of safety-related material. Procedure CF3.ID13, “Replacement of New Part Evaluation,” Revision 7, contained the instructions for Diablo Canyon personnel to specify what dedication inspections were required for safety-related parts procured as commercial grade. As part of the dedication instructions contained in Procedure CF3.ID13, engineering personnel sometimes included installation inspections and tests.

Procedure AD9.ID7, “Receipt Inspection and Acceptance Testing,” Revision 3, step 5.5, specified that the installation inspections and tests shall be incorporated into the associated work order.

The plant information management system included automated steps to assist planners in work order preparation using a computer terminal. In brief, during work preparation, the planner designated which replacement material was required. The preparation screen included a field to designate if the material was safety-related. This was done by use of the letter “Q.” The planner designated the material as “Q"; the plant information management system automatically checked to see if the material was commercial grade and if any installation inspections or tests were specified on the associated replacement

parts evaluation. If there were installation activities specified, the plant information management system automatically printed those requirements and added these requirements to the work order.

Performance

During a quality assurance audit of the procurement process, the auditors found work orders that installed safety-related material but had not included the required commercial grade dedication installation inspections and tests. The work orders failed to specify that the material was safety-related ("Q" in the material classification field) or added safety-related parts to the work order without revising the work order. In both situations, the plant information management system was bypassed and planners added the installation dedication actions manually. The quality assurance audit noted numerous work orders in which the planner had failed to include the required inspections and tests.

The licensee issued Nonconformance Report N0002109. The licensee reviewed all the work orders for the last 10 years, which had a blank in the material type field or had material added after the work order was issued. The licensee identified approximately 20 work orders where required commercial grade installation dedication activities had been missed. The licensee initiated ARs for engineering personnel to evaluate the missed activities. Licensee personnel determined that no material was required to be replaced, because of the missed inspections and tests.

Evaluation

The inspectors reviewed the results of the quality assurance audit of the 20 individual ARs evaluated by engineering personnel. In general, the installation inspections required that the technician verify that the new part was the same as the removed part or was the correct form and fit. The licensee stated that it was reasonable to assume that the technicians performed these inspections, even though they were not documented. For those work orders that should have included installation tests, the licensee established that postmaintenance testing was adequate to meet the requirements of the required dedication testing.

The inspectors also reviewed a sample of work orders that had a blank in the material type field for which the licensee had not issued ARs. The licensee had not issued ARs since the material was not safety-related, not used, or the planner had manually entered the dedication requirements into the work order. The inspectors did not identify any new material that was not properly dedicated. The inspectors observed that, following engineering review, the licensee did not identify any risk significant errors. However, for corrective action, the licensee stated that the plant information management system database entry program for work control would be changed to prevent the material type field from being left blank.

Technical Specification 6.8.1.a requires that written procedures shall be implemented in accordance with Appendix A of Regulatory Guide 1.33, "Quality Assurance Program Requirements." Regulatory Guide 1.33 includes procedures for control of maintenance,

and Procedure AD9.ID7 partially implemented this requirement. Therefore, the inspectors concluded that the failure of the licensee to include commercial grade dedication activities required by Procedure AD9.ID7, step 5.5, into approximately 20 work orders was a violation of Technical Specification 6.8.1.a. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Nonconformance Report N0002109 (275; 323/00005-06).

c. Conclusions

A violation of Technical Specification 6.8.1.a was identified for failure to include commercial grade dedication activities required by plant procedures into approximately 20 work orders. The licensee determined that, although the commercial grade dedication activities were not performed, these errors were not risk or safety significant after performing evaluations that demonstrated the acceptability of the items. This Severity Level IV violation is being treated as a noncited violation in accordance with Section VII.B.1.a of the NRC Enforcement Policy. This item was placed in the corrective action program as Nononformance Report N0002109.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Inspection Followup Item 275/97202-04: ASME Section XI testing of auxiliary saltwater pumps

The inspectors reviewed this inspection followup item and determined that no further action is required. This item is closed.

III. Engineering

E8 Miscellaneous Engineering Issues (92700)

E8.1 (Closed) Licensee Event Report (LER) 275;323/1997-006-02: nuclear fuel system outside design basis because of fuel pellet-to-clad gap reopening.

Revision 2 was issued on February 1, 2000, and provided a new event description but did not change the analysis of the event or the safety assessment provided in Revision 1. Revision 1 was reviewed and closed in NRC Inspection Report 50-275; 323/99-12.

E8.2 (Closed) Inspection Followup Item 275:323/98005-01: auxiliary saltwater system suction vulnerability to single failure.

Both trains of the auxiliary saltwater system took suction from a common intake bay with a single traveling screen. This item was opened for further NRC staff review of the acceptability of this design. The staff reviewed the risks associated with the design and the criteria for requiring modification of a previously accepted design (backfit) and concluded that the risks associated with the existing design were low. Therefore, the staff concluded that the existing system design was acceptable without modification.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments (71750)

The inspectors evaluated radiation protection practices during plant tours and work observation. The inspectors determined that personnel donned protective clothing and dosimetry properly and that radiological barriers were properly posted.

R8 Miscellaneous Radiological Protection and Chemistry Control Issues (92700)

R8.1 (Closed) LER 323/2000-001-00: Technical Specification 4.4.8 not met because of personnel error.

This LER documented that chemistry personnel did not complete an analysis of a reactor coolant sample within the required 2 hours. The sample was completed 32 minutes late. The licensee determined that the sample was still acceptable. This event constitutes a violation of minor significance which is not subject to formal enforcement action. The inspectors considered the licensee corrective actions adequate.

S1 Conduct of Security and Safeguards Activities

S1.1 General Comments (71750)

During routine tours, the inspectors noted that the security officers were alert at their posts, security boundaries were being maintained properly, and screening processes at the Primary Access Point were performed well. During backshift inspections, the inspectors noted that the protected area was properly illuminated, especially in areas where temporary equipment was brought in.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on March 31, 2000. The licensee acknowledged the findings presented. The licensee disagreed with the violation that concerned failure to restrain equipment to prevent seismic interactions. The licensee believed that the scenario necessary for damage of the associated component cooling water was unlikely. This issue is unresolved pending further licensee evaluation.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. R. Becker, Manager, Operations Services
W. G. Crockett, Manager, Nuclear Quality Services
T. L. Grebel, Director, Regulatory Services
D. B. Miklush, Manager, Engineering Services
D. H. Oatley, Vice President and Plant Manager
R. A. Waltos, Manager, Maintenance Services
L. F. Womack, Vice President, Nuclear Technical Services

INSPECTION PROCEDURES (IP) USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902	Followup - Maintenance
IP 92903	Followup - Engineering

ITEMS OPENED AND CLOSED

Opened

323/00005-04	URI	Materials not seismically restrained (Section M2.1)

Closed

275/97202-04	IFI	ASME Section XI testing of auxiliary saltwater pumps (Section M8.1)
275;323/ 1997-006-02	LER	Nuclear fuel system outside design basis (Section E8.1)
275; 323/98005-01	IFI	Auxiliary saltwater system vulnerability to single failure (Section E8.2)
323/2000-001-00	LER	Technical Specification 4.4.8 not met (Section R8.1)

Opened and Closed

323/00005-01	NCV	Technical Specification 3.6.3 violation for opening inboard containment isolation valve while outboard valve was inoperable (Section O1.3)
323/00005-02	NCV	Technical Specification 3.4.4 violation for opening block valve while PORV was inoperable (Section O1.4)
323/00005-03	NCV	Licensed power level exceeded (Section M1.3)
275; 323/00005-05	NCV	Violation of overtime restrictions (Section M6.1)
275; 323/00005-06	NCV	Failure to properly dedicate commercial grade components (Section M6.2)

LIST OF ACRONYMS USED

AR	action request
DEG	diesel engine generator
IFI	inspection followup item
IP	inspection procedure
LER	licensee event report
MP	maintenance procedure
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
PORV	power-operated relief valve
STP	surveillance test procedure
TP	temporary procedure
URI	unresolved item
Work order	work order