

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket Nos.: 50-275  
50-323

License Nos.: DPR-80  
DPR-82

Report No.: 50-275/99-06  
50-323/99-06

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: April 18 through May 29, 1999

Inspectors: David L. Proulx, Senior Resident Inspector  
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James F. Melfi, Project Engineer  
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Approved By: Linda J. Smith, Chief, Project Branch E

ATTACHMENT: Supplemental Information



## EXECUTIVE SUMMARY

Diablo Canyon Nuclear Power Plant, Units 1 and 2  
NRC Inspection Report No. 50-275/99-06; 50-323/99-06

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report documents inspection performed during a 6-week period by the resident inspectors.

### Operations

- Two examples of a noncited violation of Technical Specification 6.8.1.a, in accordance with Appendix C of the NRC Enforcement Policy, were identified for failure to follow procedures. In the first example, carpenters installed a scaffold that blocked a fire suppression sprinkler in the area of a component cooling water pump, in violation of the scaffolding procedure. In the second example, operators improperly implemented Equipment Control Guideline 18.4, after declaring the fire suppression system inoperable in the area of component cooling water Pump 1-3. Operators initiated an hourly fire tour instead of a continuous firewatch as required by Equipment Control Guideline 18.4. The fire protection engineer performed a subsequent review that determined that the fire suppression system was degraded, but operable. Four other recent operator errors, with respect to implementation of the Equipment Control Guidelines, indicated that improvement was necessary in this area. These two examples of the violation were placed in the corrective action program as Action Requests A0485075 and A0484540 (Section F1.1).

### Maintenance

- Maintenance and surveillance activities observed were performed properly (Sections M1.1 and M1.2).

### Engineering

- The design change package associated with the auxiliary saltwater vault drain system was an example of sound engineering and was designed to improve the reliability of the associated check valves. The licensee installed y-strainers and low-point drains to help remove foreign material from the drain system to minimize fouling of the check valve seating surfaces (Section E1.1).
- A noncited violation, in accordance with Section VII.B.1 of the NRC Enforcement Policy, was identified for failure to implement Technical Specifications 4.0.5 and 3.7.3.1. Specifically, in July 1997, the licensee used pump curves instead of the required reference values in development of acceptance criteria for inservice testing of the component cooling water pumps. The licensee subsequently submitted a relief request to correct this violation (Section E8.2).



Plant Support

- Routine radiation protection practices were performed well in that personnel donned protective clothing and dosimetry properly and that radiological barriers were properly posted (Section R1.1).
- Routine security activities were performed well in 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 properly (Section S1.1).



## 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 April 25, 1999, operators reduced power to 50 percent to support cleaning in the circulating water tunnels. Following completion of the circulating water tunnel cleaning, operators returned Unit 2 to 100 percent power on May 1. 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 (71707)**

The inspectors visited the control room and toured the plant when on site, including periodic backshift inspections. Overall, the performance of plant operators reflected a focus on safety. Operators frequently implemented self- and peer-checking in the performance of routine duties. The use of three-way communications continued to improve, and operator responses to alarms were observed to be prompt and appropriate to the circumstances.

The inspectors noted that operators carefully conducted power maneuvers to support the Unit 2 circulating water tunnel cleaning, in accordance with procedure requirements.

### II. Maintenance

#### **M1 Conduct of Maintenance**

##### **a. Inspection Scope (62707)**

The inspectors observed portions of work activities covered by the following work orders:

<u>Work Order</u>	<u>Description</u>
C0161922	Centrifugal Charging Pump 2-1 Attempt to Correct Gear Oil HI Temperature



- R0189573            Calibration of Centrifugal Charging Pump 2-1 Gauge PI-782
- R0167678            Inspection and PM of CS-2-9001B, with Replacement of Torque Limiter Plate Per MMD M000073
- R0187659            Preventive Maintenance on Containment Spray Pump 2-2
- C0128646            Install Splice Plates for Residual Heat Removal Pump 2-1 Seismic Supports

b.    Observations and Findings

The inspectors concluded that the applicable work orders were performed properly. Operators initiated the clearances properly, and probabilistic risk assessments were satisfactorily performed prior to the work.

M1.2    Surveillance Observations

a.    Inspection Scope (61726)

The inspectors observed portions of the performance of Procedure STP M-9A, "Diesel Generator Routine Surveillance Test," Revision 53A, and Procedure STP M-89, "Emergency Core Cooling System Venting," Revision 28.

b.    Observations and Findings

The inspectors found that the licensee performed these surveillance tests properly and documented the data properly. Operators satisfactorily performed risk assessments prior to removing the applicable systems from service.

M8    Miscellaneous Maintenance Issues (92700, 92902)

M8.1    (Closed) Licensee Event Report (LER) 50-323/97-005-00: Reactor trip and safety injection caused by inadvertent main steam isolation valve closure because of personnel error.

This issue was discussed in detail and dispositioned in NRC Inspection Report 50-275; 323/97-19. No new issues were revealed upon review of this LER.



### III. Engineering

#### E1 Conduct of Engineering

##### E1.1 Design Change Package Review

###### a. Inspection Scope (37551)

The inspectors reviewed Design Change DCP P-49392 to determine if the proper design controls were implemented.

###### b. Observations and Findings

The licensee implemented Design Change DCP P-49392 during Refueling Outage 1R9. The purpose of this design change was to install newly designed check valves, y-strainers, and low-point drains on the Unit 1 auxiliary saltwater pump vault drains to improve the reliability of the associated check valves. NRC Inspection Report 50-275; 323/97-14 identified several issues associated with the auxiliary saltwater pump vault drain check valves. These valves were noted to be unreliable, since these check valves were found to be stuck in the open position during periodic surveillances because of foreign material on the seats. This rendered the check valves unable to perform their intended safety function of preventing back flow into the auxiliary saltwater pump vault during postulated intake structure flooding. Design Change DCP P-49392, which installed y-strainers and low-point drains upstream of the check valves, was developed to help minimize the deposition of foreign material on the check valve seating surfaces.

The inspectors also reviewed the as-built drawings and applicable preventive maintenance instructions and noted that these items were satisfactorily revised to reflect Design Change DCP P-49392. From these reviews, the inspectors determined that Design Change DCP P-49392 was an example of sound engineering.

###### c. Conclusions

The design change package, associated with the auxiliary saltwater vault drain system, was an example of sound engineering and appeared to improve the reliability of the associated check valves.

#### E8 Miscellaneous Engineering Issues (92700)

##### E8.1 (Closed) Inspection Followup Item (IFI) 50-275; 323/97003-01: periodic testing required for main feedwater pump turbine stop valves.

This followup item was opened after a loss of main feedwater Pump 2-1 and a reactor trip on March 29, 1997, when the licensee discovered that the main feedwater pump turbine stop valves had a design basis specification to close within 5 seconds, but were not tested to verify this criterion. This followup item involved reviewing the licensee's resolution for testing of the stop valves.



### Background

After a reactor trip, the licensee identified an equipment problem with the main feedwater Pump 2-1 governor valve, in which it did not shut promptly because of particulates in the main feedwater Pump 2-1 control oil system. The licensee resolved this problem, but also questioned other aspects of the main feedwater pump control system, including whether this failure could affect the main feedwater turbine stop valves. A quality assurance audit determined that certain design basis accident sequences relied upon these turbine stop valves to close to limit the amount of feedwater entering containment by stopping the main feedwater pumps. Further review identified that the main feedwater pump stop valves were not tested to verify that they would satisfy the design basis requirements. The inspectors opened the followup item to assess the licensee's resolution of not testing these stop valves.

### Assessment

At the time of the reactor trip, the licensee performed a prompt operability assessment that concluded that the valves were operable based upon startup tests performed on the main feedwater pumps. The inspectors found that the licensee implemented surveillance procedures to test these valves and issued License Amendment Request 98-05 on August 10, 1998, to include a trip response time for the main feedwater pumps. The licensee tested these valves using Procedure STP V-3P7, "Timing Test - Main Feedwater Pump Stop Valves." The inspectors considered the licensee's actions appropriate.

The licensee had Technical Specifications (TSs) that did not assure that the design basis was maintained for the plant. Title 10 CFR 50.36(c)(2)(ii)(C) states that a TS limiting condition for operation must be established for each item that is a structure, system or component that functions to mitigate a design basis accident or transient that presents a challenge to the integrity of a fission product barrier. Limiting how much feedwater enters containment was considered important for a postulated feedwater line or steam line break in containment to limit the height of water in containment or the extent of a cooldown of the reactor coolant system. However, 10 CFR 50.36(c)(2)(iii) states that licensees are not required to revise TSs issued prior to April 1995 to meet the requirement concerning the proper content of limiting conditions for operation. Because the TSs were initially issued without including the surveillance of the main feed pump turbine stop valves, no violation of NRC requirements occurred and this followup item is closed.

E8.2 (Closed) LER 50-275/97-012-00: TSs 3.7.3.1 and 4.0.5 not met because of personnel error.

In July 1997, the licensee identified that the inservice testing requirements were not met for component cooling water (CCW) Pump 1-3, because of an inadequate test procedure. This error occurred, in part, because of changes in code requirements for the second 10-year inservice testing interval and a failure to implement required procedure changes before the next required inservice test. The CCW pump test



procedure did not comply with TS 4.0.5 and ASME Operations and Maintenance Part 6 requirements as clarified by NUREG-1482. The licensee used pump curves instead of reference values in determining the acceptance criterion.

The licensee revised the surveillance test procedures for the CCW pumps to comply with ASME Operations and Maintenance Part 6, prior to subsequent surveillance tests. Analysis of the test results did not show any actual degradation of CCW Pump 1-3.

As corrective actions for this LER, the licensee submitted a relief request to allow using pump reference curves for the CCW pump testing and performed an independent assessment of the inservice testing program to ensure that all required relief requests have been submitted. The licensee received approval for the relief request for the CCW pumps on February 25, 1998. The licensee has also submitted a relief request for the auxiliary saltwater pumps.

The inspectors determined that the failure to test CCW Pump 1-3 in accordance with the ASME code was a violation of TSs 4.0.5 and 3.7.3.1. This nonwillful, licensee-identified and corrected violation is being treated as a noncited violation consistent with Section VII.B1 of the NRC Enforcement Policy (50-275/99006-01).

- E8.3 (Closed) LER 275: 323/97-003-00: Reactor vessel level indication system outside design basis due to personnel error and inadequate vendor communication.

This LER identified an error with their calibration of their reactor vessel level indication system during an evaluation for the transition to a 24-month fuel cycle. This situation was discussed in NRC Inspection Report 50-275;323/97-02. The inspectors reviewed this LER and did not identify any new issues, and concluded that the licensees' corrective actions were adequate. This LER is closed.

#### 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 routine radiation protection practices were performed well in that personnel donned protective clothing and dosimetry properly and that radiological barriers were properly posted.

##### **S1 Conduct of Security and Safeguards Activities**

###### **S1.1 General Comments (71750)**

During routine tours, the inspectors assessed the conduct of security and safeguards activities. The inspectors concluded that routine security activities were performed well



in 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 properly. During backshift inspections, the inspectors noted that the protected area was properly illuminated.

**F1 Control of Fire Protection Activities**

**F1.1 Scaffolding Controls**

**a. Inspection Scope (71707)**

The inspectors evaluated the effect of installed scaffolding on safety-related structures, systems, and components.

**b. Observations and Findings**

**b.1 Scaffolding Installation**

During tours of the facility, the inspectors evaluated the effect of installed scaffolding on safety-related systems with respect to fire protection. On May 19, 1999, the inspectors noted that carpenters erected a scaffold above CCW Pump 1-3. The licensee used this scaffold for work on penetration seals. The inspectors noted that the scaffold had the appropriate seismic qualification and did not interfere with CCW system operation.

However, the inspectors noted that the carpenters installed the scaffold platform such that the platform blocked the fire suppression sprinkler nozzle above CCW Pump 1-3. The inspectors were concerned that the fire suppression capabilities were impaired without compensatory measures and notified the shift supervisor of this deficiency.

The shift supervisor inspected the scaffold and agreed that the scaffold impaired the functionality of the fire suppression system. The shift supervisor initiated Action Request (AR) A0485075 to enter this item into the corrective action system. In addition, the shift supervisor added the impaired sprinkler to the hourly firewatch tour.

The inspectors noted that Procedure AD7.ID5, "Scaffold Material Structures," Revision 4A, Section 6.3.7.g, stated that scaffold structures shall not block passageways, walkways, fire suppression equipment, emergency lighting, or personnel exits. Because carpenters erected a scaffold that obstructed a sprinkler near CCW Pump 1-3, the licensee did not comply with this procedure. TS 6.8.1.a requires the licensee to implement procedures as recommended in Regulatory Guide 1.33, Appendix A, Revision 2. Regulatory Guide 1.33, Appendix A, recommends administrative procedures, and Procedure AD7.ID5 partially implemented this requirement. Therefore, failure to implement Procedure AD7.ID5 is the first example of a violation of TS 6.8.1.a. However, this Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the Enforcement Policy. This violation example is in the corrective action program as AR A0485075 (50-275/99006-02, Example 1).



Licensee investigation of this issue revealed that Procedure AD7.ID5 provided thorough instructions for the carpenters to follow to ensure that safety-related systems were not impaired during scaffold installation. However, Procedure AD7.ID5 contained only vague direction with respect to operator and engineering walkdowns of scaffolds. The licensee was evaluating enhancements to Procedure AD7.ID5 at the end of the inspection period.

b.2 Operator Response to Scaffold Problem

The inspectors subsequently reviewed the operator response to the deficient scaffold. The inspectors noted that operators considered the fire suppression system for the vicinity of CCW Pump 1-3 inoperable and implemented Equipment Control Guideline 18.4, "Sprinkler/Spray Systems." Equipment Control Guideline 18.4 required that, if a fire suppression sprinkler system was inoperable in an area containing fire protection safe shutdown equipment, a continuous firewatch was required. If a fire suppression sprinkler or spray system was inoperable in an area without safe shutdown equipment, an hourly firewatch tour of the area was required. The licensee's safe shutdown analysis credited the CCW pumps; therefore, upon discovery that the fire suppression sprinkler was inoperable, a continuous firewatch was required.

However, operators mistakenly directed that the area of CCW Pump 1-3 be added to the hourly firewatch tour because of insufficient knowledge of Equipment Control Guideline 18.4. AR A0484540 and Quality Evaluation Q0012134 were updated to include this operator error. Quality Evaluation Q0012134 contained four additional examples of operators failing to properly implement Equipment Control Guidelines. The licensee addressed these errors on a generic basis. The inspectors considered the licensee response to operator performance issues appropriate.

Procedure OP1.DC16, "Control of Plant Equipment not Required by the Technical Specifications," Revision 2A, Section 5.4.4, stated that the required actions of the Equipment Control Guidelines shall be implemented. Because the operators failed to properly implement Equipment Control Guideline 18.4 when the fire suppression system was inoperable, this procedure requirement was not met.

TS 6.8.1.a requires the licensee to implement procedures as recommended in Regulatory Guide 1.33, Appendix A, Revision 2. Regulatory Guide 1.33, Appendix A, recommends administrative procedures, and Procedure OP1.DC16 partially implemented this requirement. Therefore, failure to implement Procedure OP1.DC16 is the second example of a violation of TS 6.8.1.a. However, this Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the Enforcement Policy. This violation example is in the corrective action program as AR A0484540 (50-275/99006-02, Example 2).

The licensee's fire protection engineer evaluated the as-found condition of the scaffold. The fire protection engineer noted that, although the sprinkler above the scaffold platform could not perform its function, another sprinkler head existed in the area of the pump. Therefore, the fire protection engineer determined that the fire suppression



system in the area was degraded but operable. The fire protection engineer directed that, as a prudent compensatory measure, an hourly firewatch tour be in place and no combustible materials be allowed in the vicinity of CCW Pump 1-3. The inspector determined that these measures were appropriate.

c. Conclusions

Two examples of a noncited violation of TS 6.8.1.a, in accordance with Appendix C of the enforcement policy, were identified for failure to follow procedures. In the first example, carpenters installed a scaffold that blocked a fire suppression sprinkler in the area of a CCW pump, in violation of the scaffolding procedure. In the second example, operators improperly implemented Equipment Control Guideline 18.4, after declaring the fire suppression system inoperable in the area of CCW Pump 1-3. Operators initiated an hourly firewatch tour instead of a continuous firewatch as required by Equipment Control Guideline 18.4. The fire protection engineer performed a subsequent review that determined that the fire suppression system was degraded but operable. Four other recent operator errors, with respect to implementation of the Equipment Control Guidelines, indicated that improvement was necessary in this area. These two examples of the violation were placed in the corrective action program as ARs A0485075 and A0484540.

**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 June 9, 1999. The licensee acknowledged the findings presented.

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  
R. D. Gray, Director, Radiation Protection  
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 Follow up of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 92902	Follow up - Maintenance
IP 92903	Follow up - Engineering



## ITEMS OPENED AND CLOSED

### Opened

None.

### Closed

50-323/97-005-00	LER	Reactor trip and safety injection caused by inadvertent main steam isolation valve closure because of personnel error (Section M8.1)
50-275; 323/ 97-003-01	IFI	Periodic testing requirements for main feedwater pump turbine stop valves (Section E8.1)
50-275/97-012-00	LER	TSs 3.7.3.1 and 4.0.5 not met because of personnel error (Section E8.2)
50-275; 323/ 97-003-00	LER	Reactor vessel level indication system outside design basis (Section E8.3)

### Opened and Closed

50-275/99006-01	NCV	Failure to properly implement the inservice testing program for a component cooling water pump (Section E8.2)
50-275/99006-02	NCV	Two examples of failure to follow administrative procedures (Section F1.1)



## LIST OF ACRONYMS USED

ASME	American Society of Mechanical Engineers
AR	action request
CCW	component cooling water
IFI	inspection followup item
IP	inspection procedure
LER	licensee event report
NCV	noncited violation
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
TS	Technical Specification

