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SUBJECT: Special Rept 88-06:on 880621,PORV opening to mitigate pressure transient.

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James D. Shiffer
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July 19, 1988

PG&E Letter No. DCL-88-185

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Re: Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Special Report on Power Operated Relief Valve Opening To Mitigate a Pressure Transient, SR 88-06

Gentlemen:

In accordance with the requirements of Diablo Canyon Technical Specifications 6.9.2 and 3.4.9.3 Action c., the enclosed Special Report is being submitted concerning a Unit 1 Power Operated Relief Valve (PORV) opening to mitigate a pressure transient.

Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it in the enclosed addressed envelope.

Sincerely,

W. B. Kaefer/for

J. D. Shiffer

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ENCLOSURE

SPECIAL REPORT 88-06

SPECIAL REPORT ON A UNIT 1 POWER OPERATED RELIEF VALVE (PORV) OPENING TO MITIGATE A PRESSURE TRANSIENT

In accordance with the requirements of Diablo Canyon Technical Specifications 6.9.2 and 3.4.9.3 Action c., this Special Report is provided concerning the operation of a power operated relief valve (PORV), on Diablo Canyon Power Plant (DCPP) Unit 1, to mitigate a pressure transient on June 21, 1988.

I. Initial Conditions

Unit 1 was in Mode 5 (Cold Shutdown) with reactor coolant system (RCS) pressure at approximately 380 psi and RCS temperature at approximately 150 degrees. The RCS was water solid with final preparations underway to establish a pressurizer steam bubble prior to RCS heatup.

II. Description of Problem

A. Event:

Preparations were underway to replenish the hydrogen blanket in the volume control tank (VCT). This operation involves initiating manual makeup to the VCT to raise water level to an open vent, then lowering tank level by diverting RCS letdown to the liquid holdup tanks (LHUT) through letdown control valve LCV-112A, and then stopping tank makeup. During letdown to the LHUTs, the letdown pressure control valve, PCV-135 failed to respond to the small pressure transient in the letdown line. As a result, there was an imbalance between charging flow and letdown flow causing RCS pressure to increase to the low temperature overpressure protection (LTOP) setpoint of 435 psig. This caused the pressurizer power operated relief valve PCV-456 to open. The valve reseated in approximately 3 seconds. The control operator verified proper closure of PCV-456 by monitoring control board valve position indication, RCS pressure and pressurizer relief tank conditions following the event.

B. Inoperable structures, components, or systems that contributed to the event:

None.

C. Dates and approximate times for major occurrences.

June 21, 1988, at 0021 PDT:	PCV-456 opened on signals from the LTOP system due to erratic control of PCV-135.
June 21, 1988, at 0021 PDT:	PCV-456 closed in approximately 3 seconds as the pressure transient was mitigated.

D. Other systems of secondary functions affected:

None.

E. Method of discovery:

The event was immediately apparent due to alarms in the control room.

F. Operator actions:

The control operator verified proper closure of PCV-456 by monitoring control board valve position indication, RCS pressure and pressurizer relief tank conditions following the event.

PCV-135 was stroke tested to verify proper operation following the event. Erratic action was noted and an action request was initiated to track the problem.

G. Safety system responses:

PCV-456 opened and closed as designed.

III. Cause of the Problem

A. Immediate Cause

RCS pressure transient occurred during letdown diversion valve operation initiating LTOP actuation.

B. Root Cause

The root cause of the LTOP actuation was erratic operation of the letdown pressure control valve PCV-135. With the RCS in a water solid condition, this valve controls the pressure of the reactor coolant system. Because of the erratic operation, the valve was unable to control RCS pressure within the limits of the LTOP setpoints. The erratic operation of PCV-135 was attributed to valve packing binding or excessive friction in the valve operator. No other mechanical or instrumentation problems were evident. Since the unit had been shutdown for refueling and maintenance for approximately 4 months, the binding or excessive friction was attributed to this long period of nonuse.

IV. Analysis of the Problem

The LTOP system is designed to mitigate RCS pressure transients during low temperature operation. The system actuated as designed to maintain the RCS pressure within the limits of the Technical Specification pressure/temperature curves. Therefore, this event did not have any effect upon the health and safety of the public.

V. Corrective Actions

Pressure control valve PCV-135 was stroked and inspected by Instrumentation and Control technicians. Erratic operation was noted upon initial stroking of the valve; however, upon exercising, the valve recovered and operated smoothly through several strokes.

To prevent recurrence, Operating Procedure A-2:I, "Filling the Reactor Coolant System," will be revised to include an instruction to stroke PCV-135 several times to ensure smooth operation prior to operating with the RCS in a water solid condition.

VI. Additional Information

A. Failed Components

Valve No.	PCV-135
Manufacturer	Copes-Vulcan (0635)
Model No.	D-100-60

B. Previous Special Reports on similar events:

None