Pacific Gas and Electric Company

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PG&E Letter DCL-00-009

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report 2-1999-004-00
Technical Specification 3.4.2.2 Not Met Due to Pressurizer Pressure Safety Valves As Found Pressure Setting Low

Dear Commissioners and Staff:

PG&E is submitting the enclosed licensee event report regarding Technical Specification 3.4.2.2, "Safety Valves," not met due to pressurizer safety valves as-found pressure setting low.

This event was not considered risk significant and did not adversely affect the health and safety of the public.

Sincerely,

David H. Oatley

cc: Steven D. Bloom
Ellis W. Merschoff
David L. Proulx
Diablo Distribution
INPO

Enclosure

DDM/2246/A0496245

IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Diablo Canyon Unit 2	0 5 0 0 0 3 2 3	1 OF 8

TITLE (4)

Technical Specification 3.4.2.2 Not Met Due to Pressurizer Pressure Safety Valves As Found Pressure Setting Low

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	23	1999	1999	- 0 0 4 -	0 0	01	24	2000		

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)		
1	X	10 CFR	10CFR50.73(a)(2)(i)(B)
POWER LEVEL (10)		OTHER	
1 0 0	(SPECIFY IN ABSTRACT BELOW AND IN TEXT, NRC FORM 366A)		

LICENSEE CONTACT FOR THIS LER (12)

	TELEPHONE NUMBER	
	AREA CODE	
Roger Russell - Senior Regulatory Services Engineer	805	545-4327

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MON	DAY	YR
[ ] YES (If yes, complete EXPECTED SUBMISSION DATE)	[X] NO				

ABSTRACT (Limit to 1400 spaces. i.e., approximately 15 single-spaced typewritten lines.) (16)

On December 23, 1999, with Unit 2 in Mode 1 (Power Operation) at 100 percent power, PG&E determined that a violation of Technical Specification (TS) 3.4.2.2, "Safety Valves," occurred for the pressurizer safety valves (PSVs) removed for offsite testing during the Unit 2 ninth refueling outage (2R9). The three PSVs were replaced with pretested spares during 2R9 and sent offsite for lift setting verification in accordance with plant procedures. The three PSVs were identified with as-found lift settings lower than that specified in the TS but enveloped by the Final Safety Analysis Report Update analyzed conditions.

PG&E believes the cause of the PSV as-found lift settings being outside the TS tolerance is random setpoint spread, an inherent characteristic of this type of valve.

The PSVs were reset to the required tolerance using Surveillance Test Procedure M-77, "Safety and Relief Valve Testing."

PG&E has previously enhanced the PSV maintenance activities and offsite testing procedures resulting in improved performance of the PSVs. PG&E believes that the PSVs continue to perform within their design and analysis requirements for Diablo Canyon Power Plant and no additional corrective actions are required.

TEXT

I. Plant Conditions

Unit 2 was in Mode 1 (Power Operation) and had operated in various modes with the identified condition.

II. Description of Problem

A. Summary

On December 23, 1999, with Unit 2 in Mode 1 at 100 percent power, PG&E determined that a violation of Technical Specification (TS) 3.4.2.2, "Safety Valves," occurred for the pressurizer safety valves (PSVs)(AB)(RV) removed for offsite testing during the Unit 2 ninth refueling outage (2R9). The three PSVs were replaced with pretested spares during 2R9 and sent offsite for lift setting verification in accordance with plant procedures. The three PSVs were identified with as-found lift settings lower than that specified in the TS but enveloped by the Final Safety Analysis Report (FSAR) Update analyzed conditions.

B. Background

TS 3.4.2.2 requires that all PSVs be operable with a lift setting of 2485 psig, plus or minus 1 percent with the lift setting pressure corresponding to ambient conditions of the valve at nominal operating temperature and pressure in Modes 1, 2 (Startup), and 3 (Hot Standby).

Surveillance Test Procedure (STP) M-77, "Safety and Relief Valve Testing," requires that the PSVs lift point setting be verified by testing a predetermined group in order to meet the requirements of TS 4.0.5 and ASME Boiler and Pressure Vessel Code, Section XI.

STP M-77 requires safety valves lift twice consecutively between 2461 and 2509 psig without adjustment in order to declare them operable.

The test methodology for obtaining the as-found lift settings consists of placing the PSV in an environmentally controlled area and controlling the ambient air temperature conditions typical at Diablo Canyon Power Plant (DCPP). The PSV loop seal is established and temperature monitored to simulate the piping temperature conditions at DCPP. Testing is accomplished by the addition of steam pressure applied to the loop seal piping at a defined ramp rate. Steam is added until physical evidence of

stem movement is visible on the remote data acquisition display screen. The data is reviewed to ascertain "first discernible stem movement" and determine the pressure at which it took place.

C. Event Description

On October 27, 1999, PSV 8810B was documented as having a low as-found lift setting during performance of STP M-77.

On December 8, 1999, PSV 8810A was documented as having a low as-found lift settings during performance of STP M-77.

On December 9, 1999, PSV 8810C was documented as having a low as-found lift settings during performance of STP M-77.

On December 21, 1999, PSV testing data was documented by the test engineer upon return to the plant site from the offsite testing facility.

On December 23, 1999, a review of the overall PSV testing results determined that a violation of TS 3.4.2.2 occurred in that the as-found lift settings were outside the TS requirements during the Unit 2 cycle 9, and therefore technically inoperable for a period of time longer than allowed.

Valve Number	Lift Number	Lift Setting
8810 B	FIRST LIFT:	2427 PSIG (2.3% LOW)
	SECOND LIFT:	2446 PSIG (1.56% LOW)
	THIRD LIFT:	2494 PSIG (within tolerance)
8810A	FIRST LIFT:	2453 PSIG (1.3% LOW)
	SECOND LIFT:	2442 PSIG (1.7% LOW)
	THIRD LIFT:	2428 PSIG (2.3% LOW)
8810C	FIRST LIFT:	2451 PSIG (1.4% LOW)
	SECOND LIFT:	2438 PSIG (1.9% LOW)
	THIRD LIFT:	2477 PSIG (within tolerance)

D. Inoperable Structures, Components, or Systems that Contributed to the Event

None.

E. Dates and Approximate Times for Major Occurrences

1. During October 1999: Three Unit 2 PSVs were removed from service for offsite testing.

2. On October 27, 1999: PSV 8810B was identified with a low initial lift setting.

3. On December 8, 1999: PSV 8810A was identified with a low initial lift setting.

4. On December 9, 1999: PSV 8810C was identified with a low initial lift setting.

5. On December 23, 1999: PG&E determined that a violation of TS 3.4.2.2 occurred for Unit 2 cycle 9.

F. Other Systems or Secondary Functions Affected

None.

G. Method of Discovery

This event was identified during the Unit 2 PSVs test data review following routine scheduled offsite testing of valves removed during 2R9.

H. Operator Actions

None.

I. Safety System Responses

None.

III. Cause of the Problem

A. Immediate Cause

The as-found setpoint of the PSVs was not within the TS 3.4.2.2 lift setting of 2485 psig plus or minus 1 percent.

B. Root Cause

The cause of the condition was determined to be the random setpoint spread.

IV. Analysis of the Event

The most limiting transient that results in the actuation of the PSVs is a Condition II transient. The FSAR Update Chapter 15 acceptance limit for Condition II transients is 110 percent of design pressure (2750 psia).

PG&E reviewed the FSAR Update analysis of the loss of load/turbine trip transient without reactor coolant system (RCS)(AB) pressure control at beginning of life for the as-found Unit 2 PSV setpoints found during 2R9. This transient is the limiting FSAR Update Condition II transient for RCS overpressure protection. All three PSV lift settings were below the setpoint assumed in the FSAR Update analysis. Operation with this condition does not affect the results of this analysis and the current results remain valid.

PG&E additionally reviewed the effect of the lowered setpoints on the probability of inadvertent opening and determined that due to adequate margin between the power operated relief valve's setpoint and the as-found PSV settings that no additional challenges to the PSV opening were created.

The condition was evaluated using the NRC's Significance Determination Process. In accordance with NRC Inspection Manual Chapter 06XX, Draft Revision 1, dated August 10, 1999, the event was screened out as "green," because the PSVs were available to perform their required safety function and if called upon in the unlikely event of an accident or transient condition the PSVs would have performed within FSAR Update analyzed conditions.

Therefore, this event did not adversely affect the public health and safety.

TEXT

V. Corrective Actions

A. Immediate Corrective Actions

Unit 2 PSVs were reset to the required tolerance using STP M-77.

B. Corrective Actions to Prevent Recurrence

This condition has been recognized as an industry-wide problem. PG&E has participated in extensive investigative test programs, both jointly with the Westinghouse Owners Group, and independently. The results of these investigations confirm the adequacy of present test methods and that adequate margin exists to accommodate the identified random setpoint characteristics of the valves.

PG&E has sufficient spare PSVs such that the valves to be tested may be replaced with pretested valves during each refueling outage. These valves have been dimensionally verified to be within manufacturer's tolerances and additionally machined to match critical dimensional tolerances as close as practical. PG&E believes that the PSVs continue to perform their primary safety function of overpressure protection without additional corrective actions.

VI. Additional Information

A. Failed Components

None.

B. Previous Similar Events

No similar events were identified in the past three years.

Voluntary LER 1-88-018 was submitted regarding PSVs found outside TS limits during refueling outages. No root cause or corrective actions could be established for the generic industry problem of setpoint drift of the PSVs. Therefore, the corrective actions taken for LER 1-88-018 could not prevent this event.

TEXT

LER 1-94-009 was submitted regarding PSVs found outside TS limits during the Unit 1 sixth refueling outage. The root cause of this event was determined to be random setpoint spread. No corrective action to prevent recurrence was required because this inherent characteristic of the valve was within the analysis basis of DCPP. However, a prudent action to replace the PSV upper spring washer was recommended. The implementation of this prudent action is deferred until NRC concerns regarding valve performance characteristics can be acceptably resolved. Therefore, the corrective actions taken for LER 1-94-009 could not prevent this event.

LER 1-95-016 was submitted regarding PSVs found outside TS limits following the Unit 1 seventh refueling outage. The root cause of this event was determined to be random setpoint spread. PG&E enhanced the PSV maintenance activities and offsite testing procedures resulting in improved performance of the PSVs. No corrective action to prevent recurrence was required because setpoint spread is an inherent characteristic of the valve and the valves performance was within the analysis basis of DCPP. However, a prudent action to replace the PSV upper spring washer was recommended. The implementation of this prudent action is deferred until NRC concerns regarding valve performance characteristics can be acceptably resolved. Therefore, the corrective actions taken for LER 1-95-016 could not have prevented this event.

General Cutaway View of Diablo Canyon Power Plant PSV