Pacific Gas and Electric Company

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March 17, 2000

PG&E Letter DCL-00-042

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

Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 1-2000-001-00
Technical Specification 3.3.1 Not Met Due to Inadequate Post Maintenance Tests

Dear Commissioners and Staff:

Pursuant to 10 CFR 50.73(a)(2)(i)(B), PG&E is submitting the enclosed Licensee Event Report regarding the surveillance for the over temperature delta temperature channels not being met due to inadequate post maintenance testing. Response time testing was not performed after maintenance to satisfy Technical Specification 4.3.1.2.

This event 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

LMP1/2246/Q0012158

IE22

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Diablo Canyon Unit 1	0 5 0 0 0 2 7 5	1 OF 7

TITLE (4)
Technical Specification 3.3.1 Not Met Due to Inadequate Post Maintenance Tests

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
05	27	1994	2000	- 0 0 1 -	0 0	03	17	2000		

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)	
1	X	10 CFR 50.73(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 L. 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
X	J D	E B	H 3 2 1	N					

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

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

On May 27, 1994, with Unit 1 in Mode 1 (Power Operation) at 90 percent power, Technical Specification (TS) 4.3.1.2 "Reactor Trip System Response Time," surveillance for over temperature delta temperature, was not performed after the isolator associated with nuclear instrumentation (NI) power range channel N41 was replaced, which resulted in not meeting TS 3.3.1. Similarly, on December 3, 1995, with Unit 1 in Mode 1, at 100 percent power, the response time surveillance test was not performed after the isolator associated with NI channel N44 was replaced, which resulted in not meeting TS 3.3.1.

On October 25, 1999, engineering concluded the post maintenance test (PMT) performed on Unit 1 channels N41 and N44 was inadequate. On October 27, 1999, the response time surveillance test was satisfactorily performed on N41 and verified current on N44.

On February 17, 2000, after the NRC resident inspector questioned the event, PG&E determined the condition was reportable per 10 CFR 50.73(a)(2)(i)(B).

The cause of the TS violation was inadequate PMT due to personnel error. Maintenance personnel determined the PMT requirements without obtaining engineering input. The cause of the late LER was due to personnel error. Regulatory Services personnel failed to recognize the isolator replacement invalidated the response time surveillance. Corrective actions include revising the PMT procedure to incorporate engineering's guidance for required response time testing following maintenance of engineered safety feature and reactor trip system components.

TEXT

I. Plant Conditions

Unit 1 was in Mode 1 at 90 percent power during the initial event and has since been in various modes and power levels prior to resolving the condition.

II. Description of Problem

A. Summary

On May 27, 1994, with Unit 1 (Power Operation) in Mode 1 at 90 percent power, TS 4.3.1.2, "Reactor Trip System [JC] Response Time," surveillance for over temperature delta temperature (OTΔT) [JD], was not performed after the isolator associated with nuclear instrumentation (NI) [IG] power range channel N41 was replaced, which resulted in not meeting TS 3.3.1. Similarly, on December 3, 1995, with Unit 1 in Mode 1, at 100 percent power, the response time surveillance test was not performed after the isolator associated with NI channel N44 was replaced, which resulted in not meeting TS 3.3.1.

B. Background

The NI Power Range Instruments consist of four channels, N41 through N44. The NI power range channels input to Eagle-21 [JC], and the solid state protection system (SSPS) [JG]. Inputs include the Δ I signal to the reactor trip system OTΔT reactor trip function.

TS 4.3.1.2, "Reactor Trip System Response Time," surveillance requires a surveillance test of one channel of OTΔT each refueling outage such that each channel is tested at least once every eight years. The required response time is $\leq$ 7 seconds. Neutron detectors are exempt from response time testing. Response time of the neutron flux signal portion of the channel shall be measured from the detector output or input to the first electronic component in channel.

TS 3.3.1, "Reactor Trip System Instrumentation Limiting Condition for Operation," requires OTΔT channels to be operable with response times. The Action Statement requires an inoperable channel to be placed in the tripped condition within 6 hours.

TEXT

Surveillance Test Procedure (STP) I-33, "Reactor Trip and ESF Response Time Test Program," implements the TS response time surveillance requirements.

STP I-33BRX, "SSPS Response Time Testing for (Refueling X) Surveillance/PMT Requirements," is revised specifically for each refueling to test specific equipment to meet surveillance interval requirements, or PMT.

STP I-33PR, "NIS Power Range Isolation Response Time Testing," was created to specifically perform the response time test after replacing a power range isolator.

STP I-2C2, "Calibration Procedure for Power Range Channel," partially satisfies the surveillance requirements for the channel calibration specified in TS 4.3.1.1.

STP I-2D, "Nuclear Power Range Incore/Excore Calibration," partially satisfies the surveillance requirements for the Δ I penalty input to the OTΔT reactor trip setpoint specified in TS 4.3.1.1.

Interdepartmental Administrative Procedure AD13.ID4, "Post Maintenance Test Procedure," requires the PMTs to demonstrate operability.

C. Event Description

On May 25, 1994, while holding at 90 percent power following the sixth refueling outage, maintenance personnel tested the NI power range channels. NI channel N41 isolator was found outside of its desired tolerance. Maintenance personnel replaced the isolator and calibrated the channel using STP I-2C2 and I-2D for PMT, satisfying TS 4.3.1.1 surveillance requirements, but not satisfying the response time surveillance requirement of TS 4.3.1.2. On May 27, 1994, Operations returned the channel to service.

Similarly, on December 3, 1995, with the unit at 100 percent power, after completing the seventh refueling outage, maintenance personnel tested NI channel 44 and found it failed low and not adjustable. Maintenance personnel replaced the isolator, calibrated the channel using STP I-2D for PMT, and Operations returned it to service.

TEXT

On March 3, 1999, the routinely scheduled response time surveillance, STP I-33BR9, was completed on channel N44, restoring the surveillance.

On October 25, 1999, during the ninth Unit 2 refueling outage, an NI power range isolator was replaced, and maintenance conferred with engineering to determine the appropriate PMT. Engineering concluded a response time test was required to restore the surveillance. A review of the maintenance history revealed that the isolators had been replaced in the past without performing a response time surveillance. Engineering created STP I-33PR and on October 27, 1999, tested channel N41, thus restoring the surveillance.

On November 5, 1999, after conferring with Engineering, Regulatory Services concluded the replacement of isolators did not invalidate the response time surveillance of channels N41 and N44 due to a failure modes and effects analysis and the insignificant contribution to the overall channel response time.

On February 17, 2000, after receiving comments from the NRC Resident Inspector, Regulatory Services concluded the replaced isolator invalidated the previous surveillance, and the inadequate PMT did not satisfy the response time surveillance requirement. Therefore, the condition is reportable. During the period of time between replacing the isolators until the response time surveillance was successfully completed, TS 3.3.1 was not being met, and therefore the condition is reportable per 10 CFR 50.73(a)(2)(i)(B).

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

None.

E. Dates and Approximate Times for Major Occurrences

1. May 27, 1994, at 1847 PDT: Event Date: After replacing the isolator, NI Channel N41 was returned to service without a valid response time surveillance.

TEXT

2. December 3, 1995, at 1647 PST: Event Date: After replacing the isolator, NI Channel N44 was returned to service without a valid response time surveillance.

3. On March 3, 1999, at 1700 PST: STP I-33BR9 was completed on channel N44, demonstrating an acceptable response time.

4. October 25, 1999, at 2319 PST: Discovery Date: Engineering discovered power range NI isolators were replaced without a response time surveillance PMT.

5. October 27, 1999, at 1430 PST: STP I-33PR was completed on channel N41, demonstrating an acceptable response time.

6. February 17, 2000 at 1400 PST: Regulatory Services reversed its previous decision and concluded the performed PMT did not satisfy the response time surveillance requirement.

F. Other Systems or Secondary Functions Affected

None.

G. Method of Discovery

On October 25, 1999, the SSPS engineer identified the lack of response time testing while determining the appropriate PMT for a NI power range isolator replacement during the ninth refueling of Unit 2.

H. Operator Actions

None.

I. Safety System Responses

None.

TEXT

III. Cause of the Problem

A. Immediate Cause

The immediate cause of the TS violation was the inadequate PMT specified after replacing the isolators. The replacement of the isolator had the potential to affect the response time of the NI channels, and therefore invalidated the previous surveillance. Since the invalidated surveillance was not recognized at the time, the associated TS was not met.

B. Root Cause

The root cause of the inadequate PMT was personnel error. The work planner specified the PMT based on prior experience. At the time, Eagle-21 was relatively new, the procedural guidance was weak, and the planner did not seek input from engineering.

The cause of the late LER was also personnel error. Based on the failure modes and effects analysis and the fact that the isolator has a very minor contribution to the overall response time of the channel, Regulatory Services incorrectly concluded the condition was not reportable.

IV. Analysis of the Event

Despite the inadequate PMT, when the response time surveillance test results were performed, they demonstrated the NI channel response times were always acceptable. Therefore, this event had no actual safety significance.

Westinghouse WCAP 14036 "Elimination of Periodic Protection Channel Response Time Tests" contains a failure modes and effects analysis (FMEA) which demonstrates that the NI channel response time is not significantly impacted by the degradation of these power range isolators. The response time contribution of the isolator is not significant (<10mS) in relation to the 7 second overall response time requirement of the channel. Therefore, this event had no potential safety significance.

The condition was evaluated using the NRC's Significance Determination Process in accordance with NRC's Inspection Manual Chapter 06XX, Draft Revision 1 (8/10/99) and was screened out as green. In addition, this condition is not considered a Safety System Functional Failure in accordance with the draft guidance provided in NEI 99-02, dated February 29, 2000.

TEXT

V. Corrective Actions

A. Immediate Corrective Actions

Upon discovery, the response time surveillance for channel N44 was verified current. A new surveillance procedure, STP I-33PR, was written to test NI power range isolation amplifier response times. Channel N41 was tested using STP I-33PR, and the response time test results were satisfactory.

B. Corrective Actions to Prevent Recurrence

1. The PMT procedure, AD13.ID4, will be revised to provide additional response time testing guidance following engineered safety feature and reactor trip system maintenance.

2. Planners in the Control Room Electrical Asset Team will receive training for replacing parts covered under STP I-33.

VI. Additional Information

A. Failed Components

The Power Range Isolation Amplifier is manufactured by Hybrid Systems Corporation. The model number is N200-3.

B. Previous Similar Events

None.