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)

Entry into Technical Specification 3.0.3 Due to Digital Rod Position Indication Failure

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
06	21	1998	1998	- 0 0 6 -	0 0	07	21	1998		

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	
Vickie A. Backman - Senior Regulatory Services Engineer	805	545-4289

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	A A	R J X	W 1 2 0	No					

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 June 21, 1998, at 1729 PDT, with Unit 1 in Mode 1 (Power Operation) at 100 percent power, PG&E entered Technical Specification (TS) 3.0.3 due to a failure of the digital rod position indication (DRPI) system group A power supply. The actions taken after the power supply failure caused a loss of DRPI indication when the control selector switch was repositioned during immediate troubleshooting actions provided by plant procedures. This brief loss of position indication of the reactor control rods occurred because DRPI group B indication was disabled during the switch transfer.

Plant operators selected group B DRPI indication, restoring indication on all but two rods, and exited TS 3.0.3. Due to two previous independent DRPI data group B rod position failures, plant operators entered TS 3.1.3.2, "Position Indication Systems, Operating," action requirements and initiated compensatory control rod position surveillance requirements.

On June 22, 1998, at 1713 PDT, DRPI group A was returned to service following replacement of the group A logic power supply. The DRPI failure was caused by a power supply voltage regulating control circuit failure.

PG&E has reviewed DRPI system maintenance history and industry events and determined that the failure was random and not indicative of a repetitive problem. Therefore, PG&E determined that no additional corrective actions are necessary.

TEXT

I. Plant Conditions

Unit 1 was in Mode 1 (Power Operation) at 100 percent power.

II. Description of Problem

A. Summary

On June 21, 1998, at 1729 PDT, with Unit 1 in Mode 1 at 100 percent power, PG&E entered Technical Specification (TS) 3.0.3 due to a failure of the digital rod position indication (DRPI)(AA) system group A power supply (RJX). The actions taken after the power supply failure caused a loss of DRPI indication when the control selector switch was repositioned during immediate troubleshooting actions provided by plant procedures. This brief loss of position indication of the reactor control rods occurred because DRPI group B indication was disabled during the switch transfer.

Plant operators selected group B DRPI indication, restoring indication on all but two rods, and exited TS 3.0.3. Due to two previous independent DRPI data group B rod position failures, plant operators entered TS 3.1.3.2, "Position Indication Systems, Operating," action requirements and initiated compensatory control rod position surveillance requirements.

On June 22, 1998, at 1713 PDT, DRPI group A was returned to service following replacement of the group A logic power supply. The DRPI failure was caused by a power supply voltage regulating control circuit failure.

B. Background

The DRPI system measures the position of the control rod drive mechanism shafts within the control rod drive housings so the positions of the control rods within the core are verified. The DRPI system consists of dual sets of rod position detectors (groups A and B) for each rod drive housing: two data cabinets, and a main control board display unit. Each group's data cabinet is provided power from an independent 110 VAC to 15 VDC power supply.

TEXT

A three position "break before make" selector switch located on the main control board allows the plant operators to select:

1. The A+B position that utilizes both group A and group B detectors to determine rod position to within the full accuracy indication.

2. The A-only position that utilizes only group A detectors to determine rod position within half accuracy indication.

3. The B-only position that utilizes only group B detectors to determine rod position within half accuracy indication.

During movement of this control room selector switch between positions, rod position indication momentarily provides the A+B position indication due to the "break before make" type switch. Routine selector switch movement is not considered a TS 3.0.3 entry because the system is operable and indication is not lost. However, if the A-only or B-only position is selected during a loss of the logic power supply to that group, all control board rod position indication is lost. Plant annunciator response procedures require a TS 3.0.3 entry for this condition.

TS 3.1.3.2 requires DRPI and the demand position indication system be operable to determine the position of each rod within ±12 steps in Modes 1 and 2 (Startup). With a maximum of one DRPI indication inoperable per bank, the position of the nonindicating rod(s) must be determined by moveable incore detector testing each 8 hours. Having more than one rod position indication per bank inoperable constitutes a failure to comply with the limiting condition for operation (LCO), Action a.1.

TS 3.0.3 requires initiating action within 1 hour to place the unit in a mode in which the specification does not apply by shutting down the unit.

Surveillance Test Procedure (STP) R-9, "Determination of Rod Position Using the Movable Incore Detector System (MIDS)," verifies control rod position as required by TS 3.1.3.2a.1.

C. Event Description

Group B DRPI indication of Unit 1 control rods F8 and B10 had previously failed. Group A DRPI indication for all rods, including F8 and B10, was available.

TEXT

On June 21, 1998, at 1729 PDT, Unit 1 lost DRPI group A indication in the control room as indicated by plant annunciator alarm. DRPI continued to indicate positions from group B, except for rods F8 and B10, which lost indication.

During immediate troubleshooting activities provided by the annunciator response procedure, the DRPI selector switch was moved from the A+B position to the A-only position for approximately 2 minutes, resulting in a loss of all DRPI indication. This condition resulted in a failure to satisfy the LCO and an entry into TS 3.0.3. Plant operators returned the selector switch to the A+B position, restoring control room indication for all but rods F8 and B10.

Plant operators entered TS 3.1.3.2, LCO, Action a.1., placed the rod control switch in manual mode, and initiated actions to perform movable incore detector verification each 8 hours.

On June 21, 1998, at 2020 PDT, the first incore monitoring verification of rod positions F8 and B10 was satisfactorily completed. Subsequent verifications were completed at required intervals.

On June 21, 1998, at 2115 PDT, PSRC concurrence of a corrective action plan was received via telephone conference call. Administrative restrictions were established to limit the time the DRPI selector switch could be placed in the A-only position to less than 30 seconds and minimize the switch transfers to perform maintenance and testing. However, no further troubleshooting in the A-only position was required..

On June 22, 1998, at 1713 PDT, Unit 1 DRPI was returned to operable status following replacement of the data A logic power supply, and the TS actions were exited.

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

1. DRPI system group A logic power supply failed, resulting in a DRPI group A data failure.

2. DRPI indication of group B rods F8 and B10 had failed previously.

TEXT

E. Dates and Approximate Times for Major Occurrences

1. June 21, 1998, at 1729 PDT: Event/Discovery date: Unit 1 entered TS 3.0.3 briefly when the DRPI selector switch was placed in the group A only position.

2. June 22, 1998, at 1713 PDT: DRPI group A logic power supply was replaced and DRPI was returned to service.

F. Other Systems or Secondary Functions Affected

None.

G. Method of Discovery

The condition was immediately apparent to licensed plant operators due to alarms and indications in the control room.

H. Operator Actions

Licensed plant operators responded to alarms and indications in the control room and placed rod control in manual. Plant operators performed troubleshooting actions that determined the DRPI group A had failed.

I. Safety System Responses

None.

III. Cause of the Problem

A. Immediate Cause

Failure of the DRPI group A 15 volt logic power supply.

B. Root Cause

The cause of the loss of DRPI group A was a logic power supply voltage regulating control circuit failure. The failed part was original plant equipment, and is judged to be an end of life failure.

IV. Analysis of the Event

During this event, licensed plant operators in the control room maintained the rod control system in manual mode, confirmed there was no rod motion or demand for rod motion, and verified rods were in the correct position in accordance with STP R-9.

The brief loss of DRPI indication did not cause an accident or prevent mitigation of an accident evaluated in the Final Safety Analysis Report Update.

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

V. Corrective Actions

A. Immediate Corrective Actions

1. Plant operators placed the rod control system in manual mode.

2. Troubleshooting was performed that determined a logic power supply had failed.

3. The logic power supply was replaced.

B. Corrective Actions to Prevent Recurrence

PG&E has reviewed DRPI system maintenance history and industry events and determined that the failure was random and not indicative of a repetitive problem.

Therefore, PG&E determined that no additional corrective actions to prevent failure of DRPI power supplies are necessary.

VI. Additional Information

A. Failed Components

Data cabinet power supply; Westinghouse Part # 2376A52G01

TEXT

B. Previous LERs on Similar Problems

LER 2-96-005-00, reported an event where a manual reactor trip was initiated upon discovery that the DRPI system was inoperable in Mode 3 (Hot Standby) during startup. This event was caused by personnel error, cognitive, in that the test switch was left in the test position after maintenance. Corrective actions included a maintenance procedure revision to incorporate lessons learned. The corrective action would not have prevented this event as personnel error was involved rather than equipment failure.