

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) DIABLO CANYON, UNIT 1										DOCKET NUMBER (2) 0 5 0 0 0 2 7 5					PAGE (3) 1 OF 0 3	
TITLE (4) REACTOR TRIP AND SAFETY INJECTION																
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)						
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES				DOCKET NUMBER(S)			
0 5	1 8	8 5	8 5	0 1 4	0 1	0 7	0 9	8 5					0 5 0 0 0			
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)													
POWER LEVEL (10) 1 0 1 0			20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)	
			20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)	
			20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				X OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
			20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)				Special Report	
			20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)					
			20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)					
LICENSEE CONTACT FOR THIS LER (12)																
NAME DAVID P. SISK, REGULATORY COMPLIANCE ENGINEER										TELEPHONE NUMBER AREA CODE 8 0 5 5 9 5 - 7 3 5 1						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC						
X	E E I	N V T	S 2 4 5	Y												
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)												X NO				

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

At approximately 0714 PDT, May 18, 1985, while in Mode 1 (Power Operation), Unit 1 had a reactor trip followed by a safety injection. All automatic equipment, including the turbine-driven auxiliary feedwater pump (TDAFWP), responded as designed except for diesel generator 1-3, which failed to maintain speed (see Special Report SR 85-04 dated June 17, 1985). The plant was stabilized in Mode 3 (Hot Standby) in accordance with procedures. All systems and equipment affected by this event were returned to normal operation.

This event was caused by the failure of the slave 2.5 KVA regulating transformer for instrument inverter IY-1-3. The failed transformer was replaced with a spare and the inverter was returned to service.

This was the sixth Emergency Core Cooling System (ECCS) actuation cycle to date that resulted in the discharge of water into the reactor coolant system.

On June 6, 1985, a snubber on the steam line to the TDAFWP was found to be inoperable. The turbine-driven auxiliary feedwater pump was declared inoperable in accordance with the Technical Specifications. Five additional snubbers were found to be damaged. All six damaged snubbers were replaced. The snubber damage was attributed to a water hammer during the transient of May 18, 1985. Condensate had collected as the result of two steam traps being left closed after a test on May 11, 1985.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

TEXT (If more space is required, use additional NRC Form 365A's) (17)

At approximately 0714 PDT, May 18, 1985, while in Mode 1 (Power Operation), Unit 1 had a reactor trip followed by a safety injection. All automatic equipment, including the turbine-driven auxiliary feedwater pump (TDAFWP), responded as designed except for diesel generator 1-3 (EK)(DG), which failed to maintain speed (see Special Report SR 85-04). The plant was stabilized in Mode 3 (Hot Standby) in accordance with procedures. All systems and equipment affected by this event were returned to normal operation.

This event was caused by the failure of the slave 2.5 KVA regulating transformer (EE)(XPT) for instrument inverter IY-1-3 (EE)(INVT). This caused a loss of power to the reactor coolant pump (RCP) breaker position indicator (JC)(ZI), which produced a RCP breaker (AB)(BKR) open signal. Since Unit 1 was above P-8 (Loss of Flow Permissive), only one RCP breaker open signal was required to produce the reactor trip signal. The safety injection signal occurred when two low steam pressure bistables were initiated as a result of a loss of an instrument bus (following the loss of the inverter) coincident with four high steam flow signals. These four signals were produced because the high steam flow setpoint was automatically reset to 40 percent upon a reactor trip.

The failed transformer was replaced with a spare. The replacement transformer was tested satisfactorily and the inverter was returned to service.

As a long-term measure to improve reliability, the entire inverter will be replaced with a new improved design that features a single output regulator transformer, thereby eliminating the slave transformer. This inverter will be replaced during the first available long-term outage, but no later than the end of the first refueling outage.

This was the sixth Emergency Core Cooling System (BQ) actuation cycle to date that discharged water into the reactor coolant system (AB).

On the morning of June 6, 1985, plant personnel reported hydraulic fluid leaking from a snubber on the steam supply line to the TDAFWP. Upon further inspection, it was determined that the snubber shaft had failed. In accordance with the Action Statement to Technical Specification 3.7.7.1, the TDAFWP was declared inoperable. Coincidentally, an inspection of another snubber on one of the TDAFWP steam supply lines indicated that it was binding. There was no observed damage to the piping systems.

During the period of June 7-9, all of the mechanical snubbers on the steam supply lines to the TDAFWP were manually stroked to verify operability. As a result, four additional snubbers were replaced to restore the TDAFWP to its original status. The steam supply lines were isolated on June 7 after identifying the faulty snubbers.

Investigation into the snubber damage found that two steam traps on the auxiliary feedwater pump steam supply line had been inadvertently left isolated after the completion of the one-time, vendor, turbine generator warranty test and the plant

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performance benchmark test. Test valve check lists indicated that the steam traps had been unisolated twice, but apparently were left isolated due to multiple operations during the repeated testing. The isolated traps caused condensation to collect. It is believed that the initial pressure increase caused by the main steam isolation valve closure on May 18, 1985 displaced the condensate from its resting position. When the flow control valve opened a few seconds later, condensate began flashing as the dropping pressure created a water hammer environment in the steam line. Slugs of water and steam caused thermal-hydraulic loads in excess of the design basis loads to be applied to the piping and supports.

A preliminary assessment of operability was conducted after the snubbers were replaced. The associated steam lines were declared operable and a performance test on the TDAFWP was undertaken on June 8, 1985 with the results showing no adverse effects. The TDAFWP was declared operable on June 8, 1985. No damage was expected, since the turbine is similar to a Pelton wheel and is resistant to damage from entrained water.

To provide additional conservatism in the system, one of the snubbers was replaced with a larger capacity snubber. In addition, another snubber will be modified to reduce its stanchion length.

An evaluation of representative anchor bolts on all applicable anchors and snubber supports and on 25% of the applicable rigid supports was performed. The results indicated that all concrete expansion anchors tested remain functional.

A program is being initiated to walk down and verify on a weekly basis that all steam traps are correctly valved to assure that the steam lines are properly drained.

A piping analysis has been performed to assess the effect of the inoperable snubbers on the qualification of the affected steam supply line. The results show that the piping system would remain functional for both seismic and thermal loadings.

Based on PGandE's detailed review of the system operation, analyses, and inspections, it is concluded that the integrity of the piping system was not compromised and that no permanent damage occurred, other than the damage to the snubbers which were replaced. In addition, modifications to two of the snubbers will further enhance the capability of this system to accommodate unusual events. The weekly program of walking down steam traps should prevent recurrence of this transient. PGandE's analyses indicate that the plant's ability to achieve and maintain Hot Shutdown was not compromised during this event.

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

July 9, 1985

PGandE Letter No.: DCL-85-235

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

Re: Docket No. 50-275, OL-DPR-80
Diablo Canyon Unit 1
Licensee Event Report 85-014-01
Reactor Trip and Safety Injection

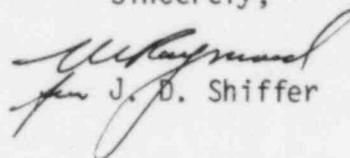
Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(i) and (iv) and as required by Diablo Canyon Unit 1 Technical Specification 6.9.2 and Technical Specification 3.7.1.2, PGandE is submitting the enclosed revision to a Licensee Event Report/Special Report concerning the inadvertent actuations of Engineered Safety Features (ESF), a reactor trip followed by a safety injection, and snubber damage caused by a water hammer in the steam supply line to the turbine-driven auxiliary feedwater pump.

This event has in no way affected the public's health and safety.

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

Sincerely,


for J. D. Shiffer

Enclosure

cc: J. B. Martin
Service List

IE 22
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