

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) DIABLO CANYON UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 3	PAGE (3) 1 OF 0 5
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TITLE (4)
MANUAL UNIT TRIP FOLLOWING CONDENSER TUBE FAILURE RESULTS IN SAFETY INJECTION
DUE TO STEAM DUMP VALVE FAILURE

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 3	3 0	8 6	8 6	0 1 1	0 0 0	4 2	5 8	6			0 5 0 0 0
											0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

OPERATING MODE (9) 1	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input checked="" type="checkbox"/> 80.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 80.38(a)(1)	<input type="checkbox"/> 80.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 80.48(a)(2)	<input type="checkbox"/> 80.73(a)(2)(vii)	<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 386A)
	<input type="checkbox"/> 20.406(a)(1)(iii)	<input type="checkbox"/> 80.73(a)(2)(ii)	<input type="checkbox"/> 80.73(a)(2)(viii)(A)	SPECIAL REPORT
	<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 80.73(a)(2)(iii)	<input type="checkbox"/> 80.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 80.73(a)(2)(iii)	<input type="checkbox"/> 80.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME RICHARD M. LUCKETT, REGULATORY COMPLIANCE ENGINEER	TELEPHONE NUMBER
	AREA CODE TELEPHONE NUMBER 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 NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
B	J	I P C V	C 6 3 5	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

AT 0300 PST, March 30, 1986, while the unit was in Mode 1 (Power Operation) at 30 percent power, a manual unit trip was initiated in accordance with plant procedures due to a condenser tube failure.

The resultant turbine trip and subsequent reactor trip lead to an automatic safety injection actuation (on high steam flow coincident with a low-low Tavg) when a condenser steam dump valve malfunctioned.

Plant operators followed appropriate emergency procedures, and the unit was stabilized in Mode 3 (Hot Standby) at 0308 PST.

The cause of the safety injection was the operation of a condenser steam dump valve, which produced a pressure transient and subsequent momentary high steam flow condition. The valve malfunctioned due to a mechanical problem that bent the positioner linkage on the valve.

The steam dump valve is being repaired and will be tested before being returned to service.

This was the fifth emergency core cooling system (ECCS) actuation cycle to date that resulted in the discharge of water into the Reactor Coolant System.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) DIABLO CANYON UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 3	LER NUMBER (6)			PAGE (3)	
		YEAR 8 6	SEQUENTIAL NUMBER - 0 1 1	REVISION NUMBER - 0 0 0	2	OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. Plant Conditions

The unit was in Mode 1 (Power Operation) at 30 percent power.

II. Description of Event

A. Event:

At 0250 PST, March 30, 1986, upon indication of a condenser (SG) tube failure, the plant initiated a rapid ramp down of turbine (TA) load to 20 percent power in accordance with plant operating procedure AP-20, "Condenser Tube Leak."

At 0300 PST, during the ramp down, conductivity levels (greater than 180 micro mho/cm) continued to rapidly increase, indicating excessive saltwater leakage into the condenser. At that time the unit was manually tripped in accordance with plant operating procedure AP-20, generating a turbine trip (TRB) and subsequent reactor trip (JC)(RCT).

At 0301 PST, a safety injection (JE) was actuated from a momentary high steam flow signal coincident with a low-low Tavg signal, and an unusual event was declared.

AT 0308 PST, March 30, 1986, the safety injection was terminated and the plant stabilized in Mode 3 (Hot Standby) using the appropriate emergency procedures. The unusual event was terminated and all systems and equipment affected by this event were returned to normal operation.

The cause of the safety injection was determined to be the malfunction of condenser steam dump valve (JI) PCV-3. After the turbine trip, PCV-3 failed open due to a mechanical failure of the valve that bent the positioner linkage on the valve. When the reactor coolant system average temperature decreased to 543 degrees fahrenheit, a protection interlock permissive signal P-12 was generated, which blocked closed all condenser steam dump valves including PCV-3. The rapid closure of PCV-3 created a momentary pressure transient in the steam lines which caused the high steam flow bistables to spuriously actuate. The momentary actuation of the high steam flow bistables coincident with the existing low-low reactor coolant system average temperature of 543 degrees fahrenheit generated the safety injection signal.

This was the fifth emergency core cooling system (ECCS)(BQ) actuation cycle to date that resulted in the discharge of water into the reactor coolant system.

08155/0043K

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) DIABLO CANYON UNIT 2	DOCKET NUMBER (2) 0 5 0 0 0 3 2 3	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 6	— 0 1 1	— 0 0	0 3	OF	0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

During the safety injection actuation, plant operators identified pressurizer steam space sample valve 9354B (IL) as indicating open when it should have closed on the phase "A" isolation signal (JM) generated from the safety injection. They immediately attempted to close the valve from the control room, with no change in the valve position indication. An auxiliary operator was dispatched to the valve to verify its position and found that it was closed. Subsequent evaluation determined that the valve position indication was not operating properly. The position indicator was adjusted and tested to be satisfactory.

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

None

C. Dates and approximate times for major occurrences.

1. March 30, 1986, 0250 PST: Condenser Tube Failure
2. March 30, 1986, 0300 PST: Event Date, Reactor Trip
3. March 30, 1986, 0301 PST: Safety Injection Actuation
4. March 30, 1986, 0308 PST: Stable conditions achieved

D. Other system or secondary functions affected:

None

E. Method of discovery:

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

F. Operator actions:

The operators followed the appropriate procedures and placed the unit in a stable condition.

G. Safety system responses:

1. The turbine tripped.
2. The reactor trip breakers opened.
3. The control rod drive mechanism allowed the control rods to drop into the reactor.

08155/0043K

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 6	- 0 1 1	- 0 0	0 4	OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

4. The Emergency Core Cooling System (ECCS) equipment started in response to a safety injection signal.
5. A phase "A" containment isolation occurred.
6. Emergency diesel generators 2-1, 2-2, and 1-3 started but did not load.

III. Cause of Event

A. Immediate cause:

Manual unit trip following a failure of condenser tube.
Condenser steam dump valve malfunction causing a safety injection.

B. Root cause:

The root cause of the mechanical problem with the condenser steam dump valve is under investigation, and is awaiting valve disassembly by maintenance.

The root cause of the safety injection was the sensitivity of the steam flow measuring devices to momentary, minor fluctuations in steamline pressure. These fluctuations caused the high steam flow bistables to momentarily actuate, and coincidence with a low-low Tav_g signal resulted in a safety injection signal being generated.

IV. Analysis of Event

The failure of a condenser tube, which resulted in a plant shutdown, has no adverse safety consequences.

The failure of a single condenser steam dump valve affects less than 4 percent of the total steam flow. As such, this event is not specifically addressed in the FSAR. Normally there would be no adverse effects from this transient, and the P-12 permissive would block closed the steam dump valves, limiting any continued cooldown.

For this event the overconservative sensitivity of the steam flow instrumentation resulted in an unnecessary safety injection.

0815S/0043K

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		8 6	- 0 1 1	- 0 0	0 5	OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Since the reactor protection system and the engineered safety features performed as designed, no adverse consequences or implications resulted from this event.

V. Corrective Actions

1. The failed condenser tube was identified and plugged.
2. The failed condenser steam dump valve PCV-3 will be repaired and tested. All other condenser steam dump valves were inspected and tested for correct operation.
3. The position indicator on pressurizer steam space sample valve 9354B was repaired and tested to be satisfactory.
4. The plant is evaluating the number of unnecessary high steam flow safety injections that have occurred to date and has initiated discussions with the vendor to provide the necessary analysis and hardware modifications to correct this problem.

VI. Additional Information

A. Failed components:

Condenser steam dump valve PCV-3 (Copes-Vulcan 8-inch air-operated modulating valve)

B. Previous LERs on similar events:

The corrective actions to prevent recurrence of the events described in the following LERs are not applicable for the safety injection event in this LER.

1. LER 2-85-007, "Reactor Trip Safety Injection"
2. LER 2-85-016, "Reactor Trip and Reactor Trip with Safety Injection During Startup Testing Associated with Control Systems Adjustments"
3. LER 2-85-018, "Manual Reactor Trip Prompted by Failure of Digital Rod Position Indication System Followed by Spurious Safety Injection"

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PACIFIC GAS AND ELECTRIC COMPANY

PG&E



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JAMES D. SHIFFER
VICE PRESIDENT
NUCLEAR POWER GENERATION

April 25, 1986

PGandE Letter No.: DCL-86-114

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

Re: Docket No. 50-323, OL-DPR-82
Diablo Canyon Unit 2
Licensee Event Report/Special Report 2-86-011-00
Manual Unit Trip Following Condenser Tube Failure Results
in Safety Injection Due to Steam Dump Valve Failure

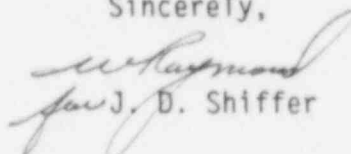
Gentlemen:

Pursuant to 10 CFR 50.73(a)(2)(iv), and as required by Technical Specification 6.9.2 and Action Statement b. of Technical Specification 3.5.2, PGandE is submitting the enclosed Licensee Event Report/Special Report concerning a manual actuation of the unit trip following a condenser tube failure. This situation resulted in a safety injection when a steam dump valve failed during the unit trip.

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: L. J. Chandler
R. T. Dodds
J. B. Martin
B. Norton
H. E. Schierling
CPUC
Diablo Distribution
INPO

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