

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 2 | | | | | | | | | | | |
| TITLE (4) FAILURE OF GENERAL ELECTRIC MAGNE-BLAST CIRCUIT BREAKERS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 NAME | | | | DOCKET NUMBER(S) | | | | | | | | | | | | | |
| 0 | 2 | 1 | 7 | 8 | 4 | 8 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 3 | 1 | 9 | 8 | 4 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | |
| OPERATING MODE (9) 5 | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11) | | | | | | | | | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) 0 0 0 | | 20.402(b) | | | | 20.406(c) | | | | 50.73(a)(2)(iv) | | | | 73.71(b) | | | | | | | | | | | | |
| | | 20.406(a)(1)(i) | | | | 50.30(e)(1) | | | | 50.73(a)(2)(v) | | | | 73.71(c) | | | | | | | | | | | | |
| | | 20.406(a)(1)(ii) | | | | 50.30(e)(2) | | | | 50.73(a)(2)(vii) | | | | OTHER (Specify in Abstract below and in Text, 10 CFR Form 365A) | | | | | | | | | | | | |
| | | 20.406(a)(1)(iii) | | | | 50.73(a)(2)(i) | | | | 50.73(a)(2)(viii)(A) | | | | | | | | | | | | | | | | |
| | | 20.406(a)(1)(iv) | | | | 50.73(a)(2)(ii) | | | | 50.73(a)(2)(viii)(B) | | | | | | | | | | | | | | | | |
| | | 20.406(a)(1)(v) | | | | 50.73(a)(2)(iii) | | | | 50.73(a)(2)(x) | | | | | | | | | | | | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAME W. W. KESSINGER, REGULATORY COMPLIANCE ENGINEER | | | | | | | | | | TELEPHONE NUMBER 8 0 5 5 4 1 - 7 5 8 6 | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | |
| B | E | A | B | K | R | G | O | 8 | 0 | N | | B | E | A | B | K | R | G | O | 8 | 0 | N | | | | |
| B | E | A | B | K | R | G | O | 8 | 0 | N | | B | E | A | B | K | R | G | O | 8 | 0 | N | | | | |
| 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)

On February 17, 1984, Pacific Gas and Electric determined that test failures of four 4.16KV circuit breakers, used for Engineered Safety Feature equipment, represented a potential for safety systems to fail to perform their intended function. The test failures occurred in the mechanical actuator of General Electric Magne-Blast circuit breakers, and was characterized by failure of the circuit breakers to remain closed. The cause of these failures was determined to be excessive wear in the Teflon coated fiberglass sleeve bearings used in the mechanical actuator.

Investigation determined that the failures occurred in breakers with approximately 400 cycles of operation, much earlier than the predicted replacement value of 10,000 cycles. Corrective actions included: functional testing to confirm operability of all 4.16KV breakers serving vital loads; development of supplemental maintenance procedures for 4.16KV breakers inspection and overhaul; repair of failed breakers using aluminum bronze sleeve bearings; and acceleration of breaker overhaul using aluminum bronze bearings in all 4 16KV breakers serving vital loads, prior to initial criticality.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) | | |
|-----------------------|-------------------|----------------|-------------------|-----------------|----------|----|----|
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| DIABLO CANYON, UNIT 1 | 05000275 | 84 | 006 | 00 | 02 | OF | 02 |

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

On February 17, 1984, Pacific Gas and Electric determined that test failure of four vital 4.16KV General Electric Magne-Blast circuit breakers represented a potential for safety systems to fail to perform their intended function.

The first breaker failure occurred in September 1983, when breaker 52-HH-7 (Vital Bus H feeder from Diesel Generator No. 1-1) (BKR) failed to remain closed. The cause of this failure was determined to be excessive wear of the Teflon-coated fiberglass (Tuf-Loc) sleeve bearings used in the circuit breaker mechanical actuator (ML-13 Stored Energy Device). Investigation indicated that General Electric was recommending replacement of the Tuf-Loc sleeve bearings in the ML-13 Stored Energy Device with aluminum bronze sleeve bearings. Breaker 52-HH-7 was repaired with the replacement bearings. A repair program for all breakers using the ML-13 device was initiated. The required replacement parts, including the aluminum bronze bearings, were ordered from General Electric. Supplemental maintenance procedures to specifically address this problem and to perform the overhaul were written and approval was pending.

While awaiting replacement parts, on January 15, 1984, circuit breaker 52-HG-11 (Vital Bus G to Reciprocating Charging Pump No. 1-3) (BKR) failed to remain closed during testing. Subsequent to this failure, functional testing of 4.16KV vital load circuit breakers was accomplished. During this testing, on February 4, 1984, circuit breaker 52-HG-12 (Vital Bus G to Component Cooling Water Pump No. 1-2) (BKR) failed to remain closed. On February 6, 1984, during additional testing, circuit breaker 52-HH-11 (Vital Bus H to Residual Heat Removal Pump No. 1-2) (BKR) failed in the same manner. All other tested circuit breakers remained functional. Investigation of these failures indicated the cause as excessive wear of the Tuf-Loc sleeve bearings used in the ML-13 Stored Energy Device.

These additional failures have prompted this report since there is evidence of accelerated bushing wear and the potential for safety systems to fail to perform their intended function. Physical inspection of the Tuf-Loc sleeve bearings confirmed that the breaker malfunction was caused by excessive wear. The repair program was accelerated to assure correction of the problem prior to initial criticality.

While there would be no safety consequences for Mode 5 (pre-initial criticality) operation, if the circuit breakers serving vital 4.16KV loads had remained in their degraded condition in other operational modes, coupled with a loss of offsite power, it is possible that one or more vital 4.16KV circuit breakers could have failed to remain closed once the emergency power source had energized the vital busses. Therefore, it is possible that a situation could have existed where one or more safety systems could have failed to perform their intended function; however, the results of a test program specifically developed to determine breaker operability did not indicate this to be a reasonable assumption.

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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JAMES D. SHIFFER
MANAGER

DEPARTMENT OF NUCLEAR PLANT OPERATIONS
NUCLEAR POWER GENERATION

March 19, 1984

PGandE Letter No.: DCL-84-105

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

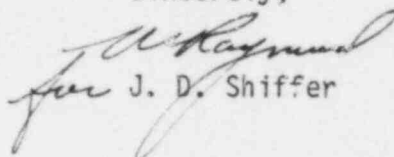
Re: Docket No. 50-275, OL-DPR-76
Diablo Canyon Unit 1
Licensee Event Report 84-006-00
Failure of G. E. Magne-Blast Circuit Breakers

Gentlemen:

Pursuant to 10 CFR 50.73 (a)(20)(v), the enclosed Licensee Event Report is submitted. This LER concerns the failure of General Electric Magne-Blast circuit breakers which are used in 4.16KV vital switchgear.

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

Sincerely,


for J. D. Shiffer

Enclosure

cc: J. B. Martin
Service List

IE22
1/1