GQL 0875
July 6, 1979

Three Mile Island Nuclear Station, Unit 1
Docket No. 50-289
Attachment to LER 79-12/01T-0

During inspection of the phosphor bronze operating rods on relays in the Engineered Safeguards Actuation System, relay 62x2B/RC1A failed in the energized position. The relay did not "drop out" when the coil was de-energized. The inspection was being conducted to check for notches in operating rods that could possibly result in failure. The failed relay had a notch approximately 0.002 inches deep. The failed relay is part of the 2-of-3 coincidence logic for Actuation A, Block 3. The components affected would be Decay Heat Closed Cooling Pump A and Nuclear Services Closed Cooling Pump A (or B). The relay failure would not prevent component starting but would result in a 2-of-2 logic. Although the individual relay failure is not reportable by TMI-1 Technical Specifications, the event is being reported in accordance with Technical Specification 2.9.2.A(9) as a potentially generic problem.

Similar relays failed and were reported in LER 76-5 and 76-16. Two (2) relay failures occurred in 1977 that were not reportable. One relay failed in January 1979. The failure in January 1979 was attributed to the notch in the operating rod. The other four (4) failures were attributed to other causes.

The cause for the failure is believed to be the notch on the operating rod; however, the failure mode has not been positively identified. The notch in the operating rod occurs where the rod vibrates against the magnet assembly due to coil hum. An inspection of 48 relays was conducted. Twenty-five (25) of the relays had detectable notches ranging from 0.001 to 0.003 inches deep. The notches were smoothed out using crocus cloth. The remaining relays will be inspected; notches will be removed or the operating rod and magnet assembly will be replaced prior to startup. A chamfered magnet assembly is being investigated that would prevent the operating rod from hanging up on the magnet assembly.

The failed relay is a GTE Sylvania, Type PM Bulletin 7305, Catalog 5U12-11 with a 120V AC coil.

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NRC FORM 366
(7-77)

U. S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT

CONTROL BLOCK: [- | | | | | |] (1) (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

[0 1] [P A T M I 1] (2) [0 0 - 0 0 0 0 0 - 0 0] (3) [4 1 1 1 1] (4) [ ] (5)
7 8 9 LICENSEE CODE 14 15 LICENSE NUMBER 25 26 LICENSE TYPE 30 57 CAT 58

CON'T
[0 1] REPORT SOURCE [L] (6) [0 5 0 0 0 2 8 9] (7) [0 6 1 8 7 9] (8) [0 7 0 6 7 9] (9)
7 8 60 61 DOCKET NUMBER 68 69 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES (10)

[0 2] During inspection of relays in the Engineered Safeguards Actuation System,
[0 3] relay 62x2B/RC1A failed to drop out when the coil was deenergized. Individual
[0 4] failure not reportable, but is being reported per TS 6.9.2.A(9) as a
[0 5] potentially generic problem. Failed relay would have reduced 2-of-3 coincidence
[0 6] logic to 2-of-2, affecting Decay Heat Closed Cooling Pump A & Nuc Services
[0 7] CC Pump A or B. This event had no effect on the public health or safety.
[0 8] Similar events: 76-5 and 76-16.
7 8 9 80

[0 9] SYSTEM CODE [S H] (11) CAUSE CODE [B] (12) CAUSE SUBCODE [B] (13) COMPONENT CODE [R E L A Y X] (14) COMP. SUBCODE [A] (15) VALVE SUBCODE [Z] (16)
7 8 9 10 11 12 13 18 19 20

(17) LER/RO REPORT NUMBER: EVENT YEAR [7 9] 21 22 | 23 SEQUENTIAL REPORT NO. [0 1 2] 24 26 / 27 OCCURRENCE CODE [0 1] 28 29 REPORT TYPE [T] 30 — 31 REVISION NO. [0] 32

ACTION TAKEN [B] (18) FUTURE ACTION [B] (19) EFFECT ON PLANT [Z] (20) SHUTDOWN METHOD [Z] (21) HOURS (22) [0 0 0 0] 33 34 35 36 37 40 ATTACHMENT SUBMITTED [Y] (23) NPRD-4 FORM SUB. [N] (24) PRIME COMP. SUPPLIER [A] (25) COMPONENT MANUFACTURER [G 2 7 2] (26) 41 42 43 44 47

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS (27)

[1 0] Failure cause believed to be notch in operating rod. Notch occurs where rod
[1 1] vibrates against magnet assy due to coil hum. GTE Sylvania Relay, Type PM,
[1 2] Bulletin 7305, Catalog 5U12-11 w/120 V.AC Coil. Of 48 relays subsequently
[1 3] inspected, 25 notches, 0.001 to 0.003 inches deep, were found & removed.
[1 4] Chamfered magnet assy being investigated for replacement.
7 8 9 80

[1 5] FACILITY STATUS [G] (28) % POWER [0 0 0] (29) OTHER STATUS (30) [NA] 10 12 13 44 METHOD OF DISCOVERY [C] (31) 45 46 DISCOVERY DESCRIPTION (32) [inspection due to previous failure] 80

[1 6] ACTIVITY RELEASED [Z] (33) OF RELEASE [Z] (34) CONTENT [NA] AMOUNT OF ACTIVITY (35) 9 10 11 44 [NA] LOCATION OF RELEASE (36) 45 80

PERSONNEL EXPOSURES
[1 7] NUMBER [0 0 0] (37) TYPE [Z] (38) DESCRIPTION (39) [NA] 11 12 13 80

PERSONNEL INJURIES
[1 8] NUMBER [0 0 0] (40) DESCRIPTION (41) [NA] 11 12 80

LOSS OF OR DAMAGE TO FACILITY (43)
[1 9] TYPE [Z] (42) DESCRIPTION [NA] 10 80

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PUBLICITY
[2 0] ISSUED [N] (44) DESCRIPTION (45) [When weekly news release resumes] 10 68 69 80

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