

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 FM Bulletin 7505, Catalog 5U12-11 with a 120V AC coil.

LICENSEE EVENT REPORT

CONTROL BLOCK: 1 (PLEASE PRINT OR TYPE ALL REQUIRED INFORMATION)

01 PATMI 1200-000000-000 3411111 4 5
7 8 9 LICENSEE CODE 14 15 LICENSE NUMBER 25 26 LICENSE TYPE 30 57 CAT 58

CON'T
01 L 605000289 7061879 8070679 9
7 8 9 REPORT SOURCE 50 51 DOCKET NUMBER 58 59 EVENT DATE 74 75 REPORT DATE 80

EVENT DESCRIPTION AND PROBABLE CONSEQUENCES 10

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

09 S H 11 B 12 B 13 R E L A Y X 14 A 15 Z 16
7 8 9 SYSTEM CODE 9 10 CAUSE CODE 11 12 CAUSE SUBCODE 13 14 COMPONENT CODE 15 16 COMP. SUBCODE 17 18 VALVE SUBCODE 19 20

17 7 9 0 1 2 0 1 T 0
7 8 9 LER/RO REPORT NUMBER 21 22 EVENT YEAR 23 24 SEQUENTIAL REPORT NO. 25 26 OCCURRENCE CODE 27 28 REPORT TYPE 29 30 REVISION NO. 31 32

B 18 B 19 Z 20 2 21 0 0 0 0 Y 23 N 24 A 25 G 2 7 2 26
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

CAUSE DESCRIPTION AND CORRECTIVE ACTIONS 27

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

15 G 28 0 0 0 29 NA C 31 inspection due to previous failure
7 8 9 FACILITY STATUS 10 11 N POWER 12 13 OTHER STATUS 14 15 METHOD OF DISCOVERY 16 17 DISCOVERY DESCRIPTION 18 19

16 2 33 2 34 NA NA 36
7 8 9 ACTIVITY CONTINUED 10 11 RELEASED OF RELEASE 12 13 AMOUNT OF ACTIVITY 14 15 LOCATION OF RELEASE 16 17

17 0 0 37 Z 38 NA 39
7 8 9 PERSONNEL EXPOSURES 10 11 TYPE 12 13 DESCRIPTION 14 15

18 0 0 40 NA 41
7 8 9 PERSONNEL INJURIES 10 11 NUMBER 12 13 DESCRIPTION 14 15

19 2 42 NA 43
7 8 9 LOSS OF OR DAMAGE TO FACILITY 10 11 TYPE 12 13 DESCRIPTION 14 15

20 N 44 When weekly news release resumes
7 8 9 PUBLICITY 10 11 ISSUED DESCRIPTION 12 13

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58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100