

LICENSEE EVENT REPORT (LER)

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|--|--|--------|-----|-----------|--|---|--|--------------------|-------|--------------------------------------|--|-------------------|--|--|-----------------|--------------|--|-------------------------------|--|--------------------|-----|-----|--|--|--|------|----------------|--|--|--|--|--|------------------|--|--|--|--|--|
| FACILITY NAME (1) McGuire Nuclear Station - Unit 2 | | | | | | | | | | DOCKET NUMBER (2) 0 5 0 0 0 3 7 0 | | | | | | | | | | PAGE (3) 1 OF 3 | | | | | | | | | | | | | | | | | | |
| TITLE (4) Spurious Overcurrent Relay Actuation Causes Switchgear Blackout | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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) | | | | | |
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| OPERATING MODE (9) 6 | | | | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) | | | | | | 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)(vi) | | | | | | 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) | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 20.405(a)(1)(iv) | | | | | | 50.73(a)(2)(ii) | | | | | | 50.73(a)(2)(viii)(B) | | | | | | | | | | | | | | | | | | | | |
| 20.405(a)(1)(v) | | | | | | 50.73(a)(2)(iii) | | | | | | 50.73(a)(2)(ix) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LICENSEE CONTACT FOR THIS LER (12) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NAME Scott Gewehr - Licensing | | | | | | | | | | | | | | TELEPHONE NUMBER AREA CODE 7 0 4 3 7 3 - 7 5 8 1 | | | | | | | | | | | | | | | | | | | | | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CAUSE | | SYSTEM | | COMPONENT | | MANUFACTURER | | REPORTABLE TO NPDs | | CAUSE | | SYSTEM | | COMPONENT | | MANUFACTURER | | REPORTABLE TO NPDs | | | | | | | | | | | | | | | | | | | | |
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| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | | | | | | | | EXPECTED SUBMISSION DATE (15) | | | | MONTH | | | | DAY | | | | YEAR | | | | | | | | | | | | |
| <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) | | | | | | | | | | | | | | <input checked="" type="checkbox"/> NO | | | | | | | | | | | | | | | | | | | | | | | | |

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

On March 27, 1985, an overcurrent relay at McGuire Unit 2 actuated on a spurious (non-existent) condition, causing a breaker to open and a resultant interruption of power to an essential switchgear. Unit 2 was in Mode 6 at the time. The cause of the event is a component malfunction, because the overcurrent relay caused the breaker to open without an actual overcurrent condition.

Corrective actions consisted of replacement of the relay, and its return to the manufacturer for inspection.

The health and safety of the public were not affected.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

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|---|--|----------------|----------------------|--------------------|----------|----|---|
| FACILITY NAME (1) McGuire Nuclear Station - Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 3 7 0 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | 8 5 | — 0 0 7 | — 0 0 | 0 2 | OF | 3 |

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

INTRODUCTION: On March 27, 1985, power was lost to essential switchgear 2ETA. Breaker 2TA4 (feeding this bus) tripped open when an associated overcurrent (51) relay actuated. An actual overcurrent condition did not exist.

Unit 2 was in Mode 6 and in the process of latching control rods at the time of the event.

This incident is classified as a Code 7.0, Component Failure/Malfunction, because an overcurrent relay caused breaker 2TA4 to trip without an overcurrent condition occurring. The relay is an ITE model 51Y overcurrent relay.

EVALUATION: On March 27, 1985, a loss of power occurred on essential switchgear 2ETA because an overcurrent relay (51) tripped open feeder breaker 2TA4. Breaker 2TA4 feeds transformer 2ATC, which powers essential switchgear 2ETA.

The loss of power caused an automatic actuation of the 2ETA sequencer. Because Unit 2 was in Mode 6, KF pump 2A was the only 4160V pump powered by 2ETA. Diesel Generator (D/G) 2A did not automatically start because its control power was removed to facilitate maintenance activities. The 2ETA blackout caused residual heat removal (ND) pump 2A to become inoperable (ND pump 2B was operating but ND pump 2A was also required operable by Technical Specification (T.S.) 3.9.8.2). Core alterations were secured as required by the action statement of T. S. 3.9.8.2. VP fans 2A and 2B were secured as required by action statement 38 of T.S. 3.3.3.9 when power was lost to EMF's 38, 29, and 40.

The reason for the overcurrent relay malfunction could not be determined. No pumps or other loads powered by 2ETA started, and no overcurrent condition occurred. With Unit 2 in Mode 6, the current was actually less than normal. Transmission personnel removed the relay and tested it for a range of overcurrent conditions. Relay pickup and timing tests were performed, and the silicon control rectifier (SCR) devices were tested. The relay was energized for over eight hours with excess current, and the relay operated correctly. The only discrepancy found was that the relay tripped in 1.67 seconds on a 300% overcurrent signal. It is designed to trip in 2.0 seconds. Transmission personnel state that the discrepancy would not have caused this inadvertent relay actuation.

Transmission personnel state that the inadvertent actuation of this type relay is not a generic problem. Several inadvertent overcurrent relay actuations occurred prior to 1982 due to problems with the relays' SCRs. It was determined that a defective batch of SCRs were installed in these relays. These SCRs were replaced in the relays at McGuire by 1982 and no other failures of this type have occurred until this event.

One other event at McGuire was caused by an inadvertent 6900V protective relay malfunction. On June 6, 1984, the Unit 1 reactor tripped when a spurious undervoltage (27) relay actuation deenergized one of the reactor coolant pumps (LER 369/84-20). The 27 relay is of a different design and its failure is not related to the failure of the overcurrent (51) relay in this event.

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

CORRECTIVE ACTION:

The overcurrent relay was replaced, and the relay will be sent to the manufacturer, Brown Boveri, for further troubleshooting.

SAFETY ANALYSIS: If operators had been unable to reclose 2TA4, 2ETA could have been energized through transformer SATA. Had this failure occurred during normal operations, D/G 2A would have started and reenergized 2ETA. If electrical alignments were normal prior to such an event, the unit might survive without tripping.

B train ND was operable and running throughout the event. The health and the safety of the public were not affected.

DUKE POWER COMPANY

P.O. BOX 33189
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HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

April 29, 1985

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

Subject: McGuire Nuclear Station, Unit 2
Docket No. 50-370
LER 370/85-07

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a)(1) and (d), attached is Licensee Event Report 370/85-07 concerning a Switchgear Blackout which is submitted in accordance with §50.73 (a)(2)(iv). This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

H. B. Tucker / HBT

Hal B. Tucker

SAG/mjf

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
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McGuire Nuclear Station

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