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DUKE POWER

DATE: September 18, 1995

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

**Subject: McGuire Nuclear Station Unit 1 and 2
Docket No. 50-369**

**Licensee Event Report 369/95-04, Revision 0
Problem Investigation Process No.: 1-M95-1511, 1-M95-1523**

Gentlemen:

Pursuant to 10 CFR 50.73 Sections (a) (1) and (d), attached Licensee Event Report 369/95-04 concerning failure to comply with the Technical Specification for the Reactor Coolant System Leakage Detection Systems. This report is being submitted in accordance with 10 CFR 50.73 (a) (2) (i). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

T.C. McMeekin

RJD/bcb

Attachment

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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| FACILITY NAME (1) McGuire Nuclear Station, Unit 1 | DOCKET NUMBER (2) 05000369 | PAGE (3) 1 OF 5 |
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TITLE (4) Failure To Comply With The Technical Specification Action Statement For Reactor Coolant Leakage Detection Systems Due To Programmatic Deficiencies and Equipment 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 NAME | DOCKET NUMBER(S) | | | | | | | | | |
| 08 | 21 | 95 | 95 | 04 | 0 | 09 | 20 | 95 | McGuire, Unit 2 | 05000370 | | | | | | | | | |
| OPERATING MODE (9) 1 | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (Check one or more of the following) (11) | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) 100% | | 20.402(b) | 20.405(a)(1)(i) | 20.405(a)(1)(ii) | 20.405(a)(1)(iii) | 20.405(a)(1)(iv) | 20.405(a)(1)(v) | 20.405(c) | 50.36(c)(1) | 50.36(c)(2) | 50.73(a)(2)(iv) | 50.73(a)(2)(v) | 50.73(a)(2)(vi) | 50.73(a)(2)(vii)(A) | 50.73(a)(2)(vii)(B) | 50.73(a)(2)(x) | 73.71(b) | 73.71(c) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |

LICENSEE CONTACT FOR THIS LER (12)

| | | |
|--|--|------------------------------|
| NAME R.J. Deese, Manager, Safety Review Group | TELEPHONE NUMBER AREA CODE (704) | TELEPHONE NUMBER 875-4065 |
|--|--|------------------------------|

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 |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| F | EMF | RELAY | P297 | NO | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| | | | |
|-------------------------------|-------|-----|------|
| EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|-------------------------------|-------|-----|------|

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

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

Unit Status: August 21, 1995, Units 1 and 2 - Mode 1 (Power Operations) at 100 percent power.

Event Description: On August 21, 1995, the Unit 1 Containment Atmosphere Particulate Radiation Monitor, EMF-38, was determined to have been past inoperable since approximately October 11, 1994, due to the filter paper running out. A time delay relay which activates the filter "Paper Not Moving" annunciator alarm was found to have failed. Personnel had relied on the alarm to indicate when the paper needed replacing. Also, Operations (OPS) personnel did not verify two leakage detection systems were operable prior to removing the Unit 1 and Unit 2 particulate, iodine, and gas (EMF38/39/40) radiation monitors from service.

Event Cause: The inoperability of EMF-38 is assigned a primary cause of Insufficient Monitoring of Equipment due to lack of a formal program to change filter paper. A contributing cause was Equipment Failure due to failure of a time delay relay associated with the filter "Paper Not Moving" alarm circuitry. A review of the equipment history for this circuitry revealed that this is an isolated equipment failure and is not generic to other similar equipment. The failure to have two leakage detection systems operable is assigned a cause of Deficiency in User Aids because there was nothing in place to flag OPS personnel of the need to perform OPS procedure PT/0/A/4200/40, Reactor Coolant Leakage Detection, when the Unit 1 and Unit 2 EMF38/39/40 radiation monitors were taken out of service.

Corrective Actions: The filter paper on particulate monitors will be changed periodically under a formal process. User aids will also be strengthened to ensure Control Room personnel perform the required procedure prior to removal of the Unit 1 and Unit 2 EMF-38 and EMF-39 radiation monitors from service.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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EVALUATION:

Description of Event

Units 1 and 2 were in Mode 1 (Power Operation) at 100 percent power at the time of discovery.

- On March 8, 1994, Instrument and Electrical (IAE) personnel completed the 18 month channel calibration of the Unit 1 particulate, iodine, and gas (EMF38/39/40) radiation monitors [EIS:EMF].
- Proper operation of alarms, including the filter "Paper Not Moving" alarm [EIS:ALM] on the Unit 1 Containment Atmosphere Particulate Monitor, EMF-38, were verified during this calibration. The "Paper Not Moving" alarm is received when the filter paper supply spool stops turning, indicating a filter paper jam/lack of filter paper/etc. The "Paper Not Moving" alarm (indicating lack of filter paper) is initiated when the filter paper nears the end of the roll (approximately 6 hours prior to being inoperable).
- On August 12, 1994, Radiation Protection (RP) personnel replaced filter paper in EMF-38 (paper typically lasts 60 days).
- An informal process was used to check filter paper status.
- On August 15, 1995, at 0828, the Unit 1 EMF38/39/40 radiation monitors were taken out of service for the 18 month channel calibration.
- On August 16, 1995, IAE personnel discovered the filter paper in particulate monitor EMF-38 had run out and the time delay relay [EIS:RLY] which activates the filter "Paper Not Moving" alarm had failed. The filter paper is required for the particulate monitor to be operable.
- On August 17, Operations (OPS) personnel discovered OPS procedure PT/0/A/4200/40, Reactor Coolant Leakage Detection, had not been performed when the EMF38/39/40 radiation monitors were taken out of service on August 15, 1995. Procedure PT/0/A/4200/40 is required for OPS to manually log Containment Ventilation Condensate Drain Tank (CVUCDT) level to meet the sensitivity requirements of Regulatory Guide (Reg Guide) 1.45, Reactor Coolant Pressure Boundary Leakage Detection Systems.
- On August 18, 1995, at 2318, the Unit 1 EMF38/39/40 radiation monitors were returned to service.
- On August 21, 1995, EMF-38 was judged to have been past inoperable since approximately October 11, 1994 (60 days after the last time the filter paper was replaced). It was also determined that procedure PT/0/A/4200/40 was not performed on other occasions when Unit 1 and Unit 2 EMF38/39/40 radiation monitors were taken out of service.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Conclusion

There were no personnel injuries, radiation overexposures, or uncontrolled releases of radioactive material resulting from this event. This event is not Nuclear Reliability Data System (NPRDS) reportable.

- The primary cause of EMF-38 being past inoperable was Insufficient Monitoring of Component due to the lack of a formal program to change filter paper on particulate monitors on a predetermined frequency.
- Personnel were aware that the filter paper lasts approximately 60 days but relied on the "Paper Not Moving" alarm to indicate when the replacement of filter paper was required. An informal process was used to check filter paper status.
- The readout module for EMF-38 in the Control Room [EISS:NA] exhibited normal indication and therefore did not provide an opportunity for problem detection earlier.
- There were no indications on the Unit 1 Containment Atmosphere Gas Radiation Monitor, EMF-39, or the Unit 1 Containment Atmosphere Iodine Radiation Monitor, EMF-40, that would indicate that there was a problem with EMF-38.
- The filter paper can not be checked during system walkdowns due to having to stop flow through the EMF38/39/40 radiation monitors to open the cover of the particulate monitor. This would make EMF-38 and EMF-39 inoperable on each walkdown.
- A contributing cause was Equipment Failure. Subsequent testing proved that the "Paper Not Moving" alarm circuitry did not function correctly due to failure of a time delay relay.
- A review of the equipment history for this circuitry revealed that this is an isolated equipment failure and is not generic to other similar equipment.
- The filter paper was estimated to have run out on October 11, 1994. Therefore, the requirement to restore the Leakage Detection system to operable within 30 days was violated due to the undetected inoperability of EMF-38.
- A search of the Problem Identification Process (PIP) and (Operating Experience Program) OEP databases for the past 24 months revealed one other reportable event due to Insufficient Monitoring of Component. This event is documented in Licensee Event Report (LER) 370/95-01. This event did not involve the same equipment, the same administrative controls, the same personnel actions, or the same work groups. One other reportable incident due to failure of a time delay relay was identified. This incident is documented in Voluntary LER 369/94-09. A contributing cause of this incident was failure of the Boric Acid Flow deviation instrumentation circuitry. This event did not involve the same equipment, systems, or vendors.
- The failure to have two Leakage Detection systems operable, when the Unit 1 EMF38/39/40 radiation monitors were taken out of service, was due to a Deficiency in User Aids because there was nothing in place to flag OPS to perform procedure PT/0/A/4200/40 when using the CVUCDT as a Reactor Coolant (NC) [EISS:AB] system Leakage Detection system.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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- A reference to procedure PT/0/A/4200/40 was put in the Unit 1 and Unit 2 Loss of Operator Aid Computer (OAC) procedures and the EMF38/39/40 Loss of Containment Flow Sample annunciator [EIIIS:ANN] response procedures. However, the need to flag OPS to perform procedure PT/0/A/4200/40 when the EMF38/39/40 radiation monitors are taken out of service for routine maintenance and troubleshooting was not recognized when Engineering and OPS personnel developed the necessary actions to make the CVUCDT capable of meeting the requirements of an NC system Leakage Detection system.
- The Senior Reactor Operators (SROs) depend upon the status of equipment, as recorded in the Technical Specifications Action Items (TSAIL), to determine operability. Since references to procedure PT/0/A/4200/40 associated with the CVUCDT were not adequate, the Control Room SRO and Work Control SRO made the Unit 1 EMF/38/39/40 process monitors inoperable without initiating the required procedure.
- A search of the PIP and OEP databases for the past 24 months revealed no other reportable events due to a Deficiency in User Aids. Therefore, this event is considered not recurring.

CORRECTIVE ACTION:

Immediate:

1. OPS personnel initiated procedure PT/0/A/4200/40.

Subsequent:

1. Personnel repaired the "Paper Not Moving" alarm and replaced filter paper in Unit 1 EMF-38.
2. RP personnel verified that filter paper had recently been changed on other particulate monitors including Unit 2 EMF-38.
3. OPS personnel were instructed to perform procedure PT/0/A/4200/40 if EMF-38 becomes inoperable for any reason.

Planned:

1. RP personnel will change filter paper on particulate monitors on a predetermined frequency under a formal program.
2. Engineering and OPS personnel will evaluate a means to better explain the requirements to manually log CVUCDT level to meet sensitivity requirements of Reg Guide 1.45 as outlined in procedure PT//0/A/4200/40.
3. Information Technology (IT) personnel, in conjunction with OPS personnel, will evaluate the addition of a prompt in the electronic TSAIL to perform procedure PT/0/A/4200/40 when the EMF38/39/40 process monitors are taken out of service.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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SAFETY ANALYSIS:

The health and safety of the public and plant personnel were not affected as a result of this event. This equipment has no effect on Individual Plant Examination (IPE) Core Melt Frequency. Therefore, this event is not considered significant.

The inoperability of these parts of the NC system Leakage Detection system is based upon their ability to provide an alarm and indication in the Control Room. The alarm and indication, for each portion of the leakage detection systems, should be set such that an increase in leakage from the NC system of ≥ 1 GPM alarms within 1 hour.

The Control Room personnel have available to them a highly accurate program on the OAC to calculate the leak rate from the NC system. This program which is required every 72 hours, is performed every 24 hours or whenever a change in leakage is suspected. Based on the results of these calculations at not time was there an increase in the unidentified leakage rate ≥ 1 GPM during the time period associated with this event.

Operations personnel continuously monitor the NC system and other systems which are connected to the NC system. This monitoring provides a leakage detection capability of equivalent sensitivity to that which is required by TS 3.4.6.1 and without the use of the components specified by this TS.

Although EMF-38 is inoperable without filter paper, the downstream monitors would be more likely to alarm in the event of a NC system leak. The particulate activity would pass through this monitor and would then be captured on the carbon filter of EMF-40 and would cause this monitor to respond conservatively toward alarm. Alarm (Trip 2) of this monitor would alert operators of a problem.

Should the particulates pass through the EMF-40 carbon filter, the particulate activity would be added to the noble gas activity monitored by EMF-39 and would increase the probability of this monitor alarming and again lead to investigation for a leak. Investigation of these alarms would likely result in discovery of a system leak or discovery of the failed particulate monitor.

Radiation monitors EMF-39, EMF-40, and the Containment Floor and Equipment (CF&E) sump level instrumentation continued to be operable and capable of NC system leakage detection during the time period (except during short periods for maintenance on this equipment) associated with this incident.