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May 2, 2005

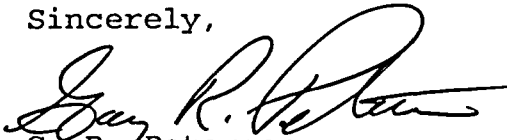
U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Unit 2
Docket No. 50-370
Licensee Event Report 370/2005-02, Revision 0
Problem Investigation Process (PIP) M-05-00882

Pursuant to 10 CFR 50.73, Sections (a)(1) and (d), attached
is Licensee Event Report (LER) 370/2005-02, Revision 0.

This report is being submitted in accordance with 10 CFR
50.73 (a)(2)(i)(B) due to the McGuire Unit 2 failed
surveillance test for Ice Condenser Lower Inlet Doors.
Probabilistic risk assessment has determined this event to
be of no significance to the health and safety of the
public. There are no regulatory commitments contained in
the LER.

Sincerely,


G. R. Peterson

Attachment

IE22

U. S. Nuclear Regulatory Commission

May 2, 2005

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cc: W. D. Travers
U. S. Nuclear Regulatory Commission
Regional Administrator, Region II
Atlanta Federal Center
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LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

| | | |
|---|-------------------------------|-------------------|
| 1. FACILITY NAME McGuire Nuclear Station, Unit 2 | 2. DOCKET NUMBER 05000 370 | 3. PAGE 1 OF 6 |
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4. TITLE

Ice Condenser Lower Inlet Door Failed Surveillance Testing

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---------------|-----|------|---------------|-------------------|--------|----------------|-----|------|------------------------------|---------------|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 3 | 3 | 2005 | 2005 | - 002 - | 00 | 05 | 2 | 2005 | FACILITY NAME | DOCKET NUMBER |

| | | | | | | | | | | |
|------------------------|---|--|--------------------|----------------------|----------------------|--|---|--|--|--|
| 9. OPERATING MODE 5 | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) | | | | | | | | | |
| 10. POWER LEVEL 000 | 20.2201(b) | | 20.2203(a)(3)(II) | | 50.73(a)(2)(I)(B) | | 50.73(a)(2)(ix)(A) | | | |
| | 20.2201(d) | | 20.2203(a)(4) | | 50.73(a)(2)(III) | | 50.73(a)(2)(x) | | | |
| | 20.2203(a)(1) | | 50.36(c)(1)(I)(A) | | 50.73(a)(2)(iv)(A) | | 73.71(a)(4) | | | |
| | 20.2203(a)(2)(I) | | 50.36(c)(1)(II)(A) | | 50.73(a)(2)(v)(A) | | 73.71(a)(5) | | | |
| | 20.2203(a)(2)(II) | | 50.36(c)(2) | | 50.73(a)(2)(v)(B) | | OTHER Specify in Abstract below or in NRC Form 366A | | | |
| | 20.2203(a)(2)(III) | | 50.46(a)(3)(II) | | 50.73(a)(2)(v)(C) | | | | | |
| | 20.2203(a)(2)(IV) | | 50.73(a)(2)(I)(A) | | 50.73(a)(2)(v)(D) | | | | | |
| | 20.2203(a)(2)(V) | | X | 50.73(a)(2)(I)(B) | 50.73(a)(2)(vii) | | | | | |
| | 20.2203(a)(2)(VI) | | | 50.73(a)(2)(I)(C) | 50.73(a)(2)(viii)(A) | | | | | |
| 20.2203(a)(3)(I) | | | 50.73(a)(2)(II)(A) | 50.73(a)(2)(viii)(B) | | | | | | |

12. LICENSEE CONTACT FOR THIS LER

| | |
|--|--|
| NAME Norman T. Simms, Regulatory Compliance | TELEPHONE NUMBER (Include Area Code) 704-875-4685 |
|--|--|

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|-------|--------|-----------|--------------|--------------------|-------|--------|-----------|--------------|--------------------|
| | | | | | | | | | |

14. SUPPLEMENTAL REPORT EXPECTED

| | | | | | | |
|--|---|----|------------------------------|-------|-----|------|
| YES (If yes, complete 15. EXPECTED SUBMISSION DATE). | X | NO | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|--|---|----|------------------------------|-------|-----|------|

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

Unit Status: At the time of the event, Unit 2 was in Mode 5 (Cold Shutdown) at 0 percent power.

Event Description: On 3/3/05, as-found torque testing of the forty-eight Ice Condenser Lower Inlet Doors (LIDs) was performed in accordance with Technical Specification (TS) Surveillance Requirement (SR) 3.6.13.6. Seven of the forty-eight LIDs failed to meet their test acceptance criteria. These seven LIDs were retested on 3/25/05 (in the as-found condition) and five of the seven LIDs failed to meet their test acceptance criteria. Subsequently, McGuire determined that one or more of these five LIDs could have been previously inoperable in Modes 1-4 for a period longer than allowed by TS.

Event Cause: The five doors failing the verification tests on 3/3/05 and 3/25/05 were due to LID spring tension being out of adjustment.

Corrective Action: The five LIDs were repaired. All forty-eight LIDs were satisfactorily retested on 3/30/05 (in the as-left condition). LID corrective and preventative maintenance practices will be reviewed for possible enhancements. TSSR 3.6.13.6 and associated Bases will be reviewed for possible enhancements.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

BACKGROUND

The Ice Condenser [COND] is an Engineered Safety Feature System containing borated ice that acts to absorb energy in the event of a Loss Of Coolant Accident (LOCA) or a Main Steam Line Break. Steam is condensed and post accident pressure is reduced to ensure containment integrity.

The Ice Condenser is divided into 24 bays. Each bay has a pair of inlet doors [DR]. The doors are in the lower compartment and are designed to quickly open due to differential pressure during a large break LOCA or during a high energy line break such that energy is evenly absorbed by the Ice Bed. For the small break LOCA scenario, the doors are also designed to open uniformly to prevent an uneven distribution of steam into the Ice Bed. All 48 Lower Inlet Doors (LIDs) are required to be operable while the Unit is in Modes 1-4.

During a small break LOCA event, the doors will begin to open with a 1 pound per square foot (PSF) differential pressure between lower containment and the ice bed. Sustained lower containment pressure at this magnitude (or higher) will move the doors to their full open position (i.e., 40 degrees from closed) against the shock absorbers.

Technical Specification (TS) Surveillance Requirement (SR) 3.6.13.6 assesses the LIDs' ability to modulate after opening in the event of a small break LOCA event, by quantifying resistance in the door hinges and springs through a series of opening/closing force tests. Associated test acceptance criteria (TAC) include:

1. Verify that the torque, T (Open), required to cause opening motion at the 40 degree open position is ≤ 195 in-lb (approx. 7-1/8 lb at door test position).
2. Verify that the torque, T (Close), required to hold the door stationary at the 40 degree open position is ≥ 78 in-lb (approx. 3 lb at door test position).
3. Calculate the frictional torque of each door using the results obtained from the above steps, and verify that the calculated frictional torque, T (Friction) is ≤ 40 in-lb.

These torque values are tested every 18 months per procedure PT/0/A/4200/32, "Periodic Inspection of Ice Condenser Lower Inlet Doors." Historically, these surveillance tests were performed in the as-left (i.e., just prior to Unit start-up) condition. However, the procedure was recently revised to require performance in both the as-found (i.e., prior to maintenance of the LID hinges or springs) and as-left conditions.

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If any LID cannot satisfy TSSR 3.6.13.6 during Modes 1-4, then the LID shall be declared inoperable and Required Actions B.1 (verify maximum ice bed temperature is less than or equal to 27 degrees Fahrenheit once per 4 hours) and B.2 (restore ice condenser door to operable status and closed positions within 14 days) shall be met.

EVENT DESCRIPTION

At the time of the event, Unit 2 was in Mode 5 at 0 percent power. No additional structures, systems, or components were out of service at the time of the event which contributed to either the event's occurrence or its significance.

McGuire completed the As-Found surveillance tests on the LIDs on 3/3/05 per procedure PT/0/A/4200/032. Out of a total of forty-eight LIDs, seven LIDs exceeded one of the SR 3.6.13.6 TAC. Six doors failed to meet TAC No. 1, and the remaining door failed to meet TAC No. 2 as explained on page No. 2.

Subsequently, an evaluation was initiated to determine why the seven LIDs failed their test acceptance criteria. Also, PT/0/A/4200/032 was revised to incorporate industry operating experience and to improve repeatability of the LID test results.

On 3/25/05, while Unit 2 was in Mode 6, the seven LIDs were retested (in the as-found condition) using the revised surveillance procedure. Of the seven LIDs re-tested, five LIDs (i.e., 2L, 2R, 3R, 14R, 23R) still failed to meet their test acceptance criteria. The remaining two doors (22R, 23L) did meet their acceptance criteria.

Spring adjustments were made on all five doors that failed the 3/25/05 LID Torque Tests. Post-maintenance re-tests on all 48 LIDs (all required surveillances) were performed in Mode 6 on 3/30/05 with all 48 doors successfully meeting their test acceptance criteria.

Since the tests on 3/3/05 and 3/25/05 were conducted as-found and five doors required repair before they could satisfy TS SR 3.6.13.6, it is reasonable to conclude that one or more the five LIDs that failed their test acceptance criteria on 3/3/05 and 3/25/05 could have been previously inoperable in Modes 1-4 and that Required Actions B.1 and B.2 would not have been satisfied within the completion times specified by TS. Therefore, this event is considered reportable pursuant to 10CFR50.73 as a condition prohibited by TS.

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CAUSAL FACTORS

A review of the Unit 1 and Unit 2 LID torque test results from the previous four refueling outages, including a review of industry operating experience shows that no anomalous condition would have been expected in the EOC16 refueling outage, as no problems requiring corrective maintenance had been reported previously. No problems were noted in the performance of any of the other LID surveillances.

Therefore, the Apparent Cause of the five doors that failed the verification tests on 3/3/05 and 3/25/05 is LID spring tension being out of adjustment. The springs on all five LIDs required adjustment before they could satisfy TSSR 3.6.16.3 acceptance criteria.

CORRECTIVE ACTIONS**Immediate Corrective Actions:**

1. Adjusted springs on five of the failed LIDs.
2. Revised Procedure PT/0/A/4200/0032, Rev.11 so that the 40 degree test results are an average from three tests to ensure that the test methodology has a higher degree of repeatability and consistency.

Planned Corrective Actions:

1. Enhance the LID Inspection and Corrective Maintenance procedure (MP/0/A/7150/141) to include inspection and preventive maintenance of the LID spring clevis brackets/rod ends, and inspection and cleaning of the hinge bearing housings including swing arms. Also, the procedure will be revised to ensure a more comprehensive inspection to the LID's cover skins, frame shims and hinge boot covers to help in identifying potential problems.
2. Evaluate and revise as appropriate TSSR 3.6.13.6 and associated Bases to revise the LID Torque Test series requirement, and provide greater assurance that LID quality and operability are satisfactorily maintained.
3. Further evaluation will be performed on the LIDs to identify whether an anomalous degradation mechanism exists. If further evaluation determines new significant information with regard to a potential degradation mechanism of the springs, then this LER will be supplemented with the new information.

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SAFETY ANALYSIS

Based on the following, this event is not considered to be significant. At no time was the safety or health of the public or plant personnel affected as a result of the event.

The Ice Condenser design basis requires it to function properly to maintain peak containment pressure below the containment design pressure. To ensure the ice bed is available to absorb energy from a Main Steam Line Break or LOCA, the Ice Condenser Lower Inlet Doors must be capable of opening at a relatively low pressure to prevent steam from bypassing the Ice Condenser to upper Containment during a small break LOCA.

Large Break LOCA and Main Steam Line Break are the design basis limiting transients for the Ice Condenser. The blow-down load from a large break LOCA bounds small break LOCAs as well as steam line and feedwater line breaks. The pressure differential across the LIDs following a large break LOCA will be substantially greater than that applied to the doors in the TSSR 3.6.13.6 torque test procedure. The doors which failed the TSSR 3.6.13.6 torque test procedure requirements would have opened as designed following the potential bounding LOCA.

Analyses have been performed using the GOTHIC computer code to determine what fraction, if any, of the LIDs can be completely blocked closed with containment pressure remaining below the calculated peak containment internal pressure (Pa=14.8 psig) during the blow-down period of the limiting size Large Break LOCA. These analyses demonstrated approximately 1/3 of the doors can be completely blocked shut (i.e., will not open at all) during the design basis events and containment pressure will remain below 14.8 psig.

The LIDs at McGuire were not blocked shut. The doors would have opened as designed during a limiting Large Break LOCA. For the small break LOCA event, the doors also would have opened as designed, but some of the doors might not have exhibited the expected flow proportioning capabilities as described in UFSAR 6.2.2.8.1.

In conclusion, the GOTHIC results demonstrate that for a large break LOCA, all of the Ice Condenser Lower Inlet Doors would have performed their design basis function. Adequate operating doors would mitigate the small break LOCA. The slight increase in the required opening/closing torque would not be expected to have a measured effect on the containment response following any design basis accident.

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ADDITIONAL INFORMATION

A review of the McGuire corrective action database identified one previous reportable occurrence of LIDs failing to meet the Torque Test. This was reported in LER 369/99-01.

Applicable Energy Industry Identification (EIIS) system and component codes are enclosed within brackets. McGuire unique system and component identifiers are contained within parentheses.