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

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
NRC Inspection Report No. 50-369, 370/94-12
Violation 50-369, 370/94-12-01 and 50-370/94-12-02
Reply to a Notice of Violation

Gentlemen:

Enclosed is a response to the Notice of Violation issued July 8, 1994 concerning failure to follow work process control procedures and failure to promptly implement corrective measures for identified deficiencies in the NI system. In addition, supplemental information on efforts to identify and resolve Cold Leg Accumulator leakage is attached. Should there be any questions concerning this response, contact Randy Cross at (704) 875-4179.

Very Truly Yours,

For 
T. C. McMeekin

Attachment

xc: (w/attachment)

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McGuire Nuclear Station
Reply to a Notice of Violation

Violation 50-369, 370/94-12-01

- B. Technical Specification 6.8.1 states that written procedures shall be established, implemented and maintained in accordance with Regulatory Guide 1.33, Revision 2, February 1978, Appendix A, which refers to general procedures for the control of maintenance, repair, replacements and modification work.

Work Process Manual, Section 500.5.6.4, requires that during the execution of a work order task, if a problem is discovered that changes or increases the original work scope, then the work should be replanned or a new task should be created.

Contrary to the above, on April 7, 1994, the licensee failed to properly replan or create a separate task for the removal of glue from the control room ventilation system chiller heat exchanger during corrective maintenance. Vapors from the solvent used entered the control room complicating normal control room operations.

This is a Severity Level IV violation (Supplement I).

Reply to Violation 50-369, 370/94-12-01

1. Reason for the Violation

The reason for the violation is Inappropriate Action. Maintenance personnel involved in the insulation removal process failed to recognize that the use of a solvent to facilitate glue removal was a change in the original work scope requiring the work to be replanned or a new task created.

2. Corrective steps that have been taken and the results achieved:

Control Room personnel access doors were immediately opened and fans were placed to ventilate the vapors. Security personnel were posted at the open doors. Following ventilation of the Control Room, the fans were removed and personnel access doors were secured.

3. Corrective steps that will be taken to avoid further violations:

- a. All Maintenance personnel will be reminded of their responsibility to adhere to the current Work Process Manual, section 500.5.6.4 requirement to replan the work or create a new task if the original work scope changes or increases. This corrective action will be completed by October 1, 1994.
- b. The Work Process Manual, section 500.5.6.4, will be evaluated to determine if the section should be clarified to state that only significant changes or increases in the original work scope would require the work to be replanned or a new task created. This corrective action will be completed by February 1, 1995.

4. Date when full compliance will be achieved:

McGuire Nuclear Station is now in full compliance.

McGuire Nuclear Station
Reply to a Notice of Violation

Violation 50-370/94-12-02

- A. 10 CFR 50 Appendix B states that measures shall be established to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Contrary to the above, on May 18, 1994, the licensee discovered significant gas accumulation in the Unit 2 NI system discharge lines due to long-standing degraded valve conditions of the NI system that had resulted in cold leg accumulator outleakage. The licensee was aware of the degraded condition and failed to take the necessary corrective actions to resolve the issue in a timely manner.

This is a Severity Level IV violation (Supplement I).

Reply to Violation 50-370/94-12-02

1. Reason for the Violation

There are several reasons for the violation. Leakage from the Cold Leg Accumulators (CLAs), causing the need for frequent and repetitive makeups, had been historically treated more as an operational inconvenience rather than a degraded system condition. Various high levels of CLA leakage had become commonplace such that clear identification and direct assignment of this problem did not take place. As a result, acknowledgement and aggressive understanding of this issue by System Engineering was not achieved prior to the EOC8 outages when the system would have been more available for inspection and repair activities. This lack of acknowledgement was influenced by the fact that implementation of a new System Engineering organization had begun only one year prior to the EOC8 outages with many new System Engineers and management team. Improved problem identification and turnover processes were being developed but were not fully in place during this period.

2. Corrective steps that have been taken and the results achieved:

- a. Processes for clear identification and assignment of plant problems have been enhanced or developed and are functioning effectively. These primarily include, but are not limited to, the Problem Investigation Process (PIP), the 7:00 AM Plant Status Meeting, and the Top 10 Reliability/Top 20 Work Around program for identifying and tracking major plant issues. Timely completion of important plant concerns is being emphasized through management expectations and status monitoring.
- b. Management of CLA leakage, NI system pressurization, and related check valve/isolation valve health is clearly acknowledged as the responsibility of the NI System Engineer.

These system parameters are being monitored and evaluated to direct future required action, in a timely fashion. In addition, acceptance criteria has been incorporated into the 30 day ECCS venting procedure PT/1,2/A/4200/019 to ensure feedback to System Engineering when adverse conditions are found. Procedure PT/1,2/A/4200/019 was revised on August 5, 1994.

No similar events have occurred since implementation of these corrective actions.

3. Corrective steps that will be taken to avoid further violations:

To resolve remaining questions about potential pump degradation, the 1A NI pump will be disassembled and inspected during the upcoming 1EOC9 refueling outage. The 1A NI pump has experienced the greatest number of starts of any NI pump from filling Cold Leg Accumulators and surveillance testing. The results of this inspection will assist in evaluating the condition of all NI pump/motors. This corrective action will be completed by November 5, 1994.

4. Date when full compliance will be achieved:

McGuire Nuclear Station is now in full compliance.

McGuire Nuclear Station
Violation 50-370/94-12-02
Supplemental Information

This supplemental information provides a chronological sequence of efforts to identify and resolve Cold Leg Accumulator leakage.

Discovery of nitrogen gas accumulation in the Unit 2 NI system led to a number of aggressive actions to 1) quantify the amount of gas and generation rate, 2) type of gas (later concluded to be nitrogen but initially treated as if hydrogen), and appropriate methods for removal. A Conditional Operability review was completed which directed increased venting on the system to preclude unacceptable amounts of gas accumulation. Plans were put in place and then executed to repair valve 2NI-148 (2B NI Pump discharge check) which stopped the leak migration and ended the nitrogen accumulation in the NI system.

Details of this summary are provided as follows:

On May 9, 1994, suction pressure anomalies were noted by an Operations NLO and the NI System Engineer after the 2B NI Pump was secured following a routine CLA fill evolution. Suction pressure increased after the pump was stopped and then slowly decayed.

The NI System Engineer and an Operations Staff Engineer immediately began evaluating this observation combined with prior observations of warm discharge piping on the U2 NI system and faint backleakage noise inside the 2B NI Pump discharge check valve. This same day, the 1B NI Pump was operated for quarterly IWP testing and the test was observed to see if similar conditions were present. No anomalies were observed during this pump run.

Over the course of the next several days, additional observations were made during routine CLA fill evolutions while a temporary test procedure was being developed to install additional pressure instrumentation on the pump discharge header of the U2 NI system. The procedure (TT/2/A/9100/442) was executed on May 16, 1994 and again on May 17, 1994 utilizing both the 2A and 2B NI Pumps. Additional data gathered from these tests and previous observations suggested the presence of a gas bubble in the discharge portion of the system.

On May 18, 1994, PT/2/A/4200/019 (30 day ECCS venting surveillance) was utilized to direct a venting evolution at a specific high point vent on the U2 NI system. The vent was left opened for 83 seconds to vent accumulated gases; however, quantification of actual gas volume vented was indeterminate because the variable of percent valve opening during the venting could not be precisely determined.

On May 19, 1994, additional venting was begun to determine the rate of gas accumulation in the system and to reduce accumulation. Also, a gas sample was taken for analysis by the Chemistry Section to determine the type of gas. There was a concern that the gas could be hydrogen from Reactor Coolant system leakage. The analysis showed the sample to be air; however, there was significant uncertainty regarding obtaining the sample such that results were judged inconclusive.

On May 23, 1994, an additional gas sample was obtained and the analysis confirmed 98% nitrogen. This clearly pinpointed the gas generation/accumulation to be the result of CLA leakage into the NI system.

On May 25, 1994, a Conditional Operability evaluation was completed which directed specific venting requirements to maintain the U2 NI system operable by ensuring gas accumulation did not migrate past the containment penetration on the common injection header. The Conditional Operability evaluation thoroughly addressed all effects of nitrogen present in the system with respect to 1) water hammer

potential, 2) ECCS injection delays, 3) Reactor Coolant system natural circulation capability following gas injection, and 4) other less significant issues. Subsequent work on a Past Operability evaluation showed the U2 NI system to be past operable even with additional gas accumulation.

On June 3, 1994, check valve 2NI-148 (2B NI Pump discharge check) was repaired. A small depression was found on the valve seat which allowed back leakage. After the repair was completed and system restored, venting was continued to ensure the problem had been corrected.

On June 7, 1994, the Conditional Operability was deleted and the U2 NI system restored to full operable status. Subsequent monitoring has shown U2 CLA filling dropped from a frequency of 3 times per day (before repair) to once per 2 weeks (after repair).

Concurrent with actual check valve repair, Engineering conducted evaluations of the NI pumps, motors, and motor breakers to determine to what extent, if any, frequent starting could have created degradation of these components. The 2B NI Pump motor breaker was inspected during the check valve repair window and no problems were found. Further evaluation of motor design showed no concerns relative to heavy starting duty. To resolve remaining questions about potential pump degradation, the 1A NI Pump will be disassembled and inspected at the upcoming 1EOC9 refueling outage. (The 1A NI Pump has experienced the greatest number of starts of any NI pump.)