



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

Report Nos: 50-369/85-41 and 50-370/85-42

Licensee: Duke Power Company
 422 South Church Street
 Charlotte, NC 28242

Facility Name: McGuire Nuclear Station

Docket Nos: 50-369 and 50-370

License Nos: NPF-9 and NPF-17

Inspection at McGuire Nuclear Station near Huntersville, North Carolina.

Inspection on November 21 through December 20, 1985.

Inspectors: C. W. Burger, for 2/6/86
 W. Orders, Senior Resident Inspector Date Signed

C. W. Burger, for 2/6/86
 R. Pierson, Resident Inspector Date Signed

Approved by: V. Brownlee 2/7/86
 V. Brownlee, Acting Section Chief Date Signed
 Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection involved 240 hours on site in the areas of operations, surveillance testing and maintenance activities.

Results: One violation - failure to follow procedure.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *T. McConnell, Plant Manager
- B. Travis, Superintendent of Operations
- *D. Rains, Superintendent of Maintenance
- *B. Hamilton, Superintendent of Technical Services
 - L. Weaver, Superintendent of Administration
 - M. Sample, Superintendent of Integrated Scheduling
 - E. McCraw, License and Compliance Engineer
- *D. Mendezoff, License and Compliance Engineer
- *D. Marquis, Performance Engineer
 - R. White, IAE Engineer
 - R. Branch, Site QA Supervisor
- *S. Grier, IAE Engineer

Other licensee employees contacted included construction craftsmen, technicians, operators, mechanics, security force members, and office personnel.

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on December 30, 1985, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matter

(Closed) Violation 50-370/84-35-01: Violation of 10 CFR 50, Appendix B, Criterion V and XI. The licensee's response to this violation was examined. Jumpers were installed as required and the governing procedures were changed to include a step for testing a decreasing Tav_g input signal. The loop circuit operation with a decreasing Tav_g input signal was tested to verify that the Overpower Delta-T (OPΔT) setpoint responded correctly to a decreasing Tav_g input. In addition, training was implemented to be covered with all IAE technicians. Other process control system procedures were reviewed for consistency and uniformity in accordance with a methodology guideline developed for the Process 7300 system. Adequate corrective action has been completed. This item is closed.

(Closed) Violation 50-370/84-35-02: Violation of TS 3.3.1 requiring OPΔT Reactor Trip System Instrumentation operability and TS 3.0.3 which prohibits placing the unit in a Mode in which the specification does not apply when a Limiting Condition for Operation (LCO) is not met. Adequate measures have been implemented to ensure the operability of Channels I and IV of the OPΔT Reactor Trip System. This item is closed.

(Closed) Violation 50-370/84-35-03: Violation of Technical Specification 6.8.1 which requires that current written approved procedures be established, implemented and maintained. A review of some post trip reviews conducted since this occurrence has not detected any deficiencies. The licensee has provided adequate corrective action and has an effective program in place. This item is closed.

(Closed) Violation 370/85-24-02: Failure to adhere to the requirements of 10 CFR 50, Appendix B, Criteria XVI in that corrective action was not implemented in a timely manner following a QC discovered violation of the electrical separation of certain Unit 2 safety related cable. Adequate corrective actions have been taken. This item is closed.

4. Unresolved Items

No unresolved items were identified during this report period.

5. Plant Operations

The inspection staff reviewed plant operations during the report period, to verify conformance with applicable regulatory requirements. Control room logs, shift supervisors logs, shift turnover records and equipment removal and restoration records were routinely perused. Interviews were conducted with plant operations, maintenance, chemistry, health physics, and performance personnel.

Activities within the control room were monitored during shifts and at shift changes. Actions and/or activities observed were conducted as prescribed in applicable station administrative directives. The complement of licensed personnel on each shift met or exceeded the minimum required by technical specifications.

Plant tours taken during the reporting period included but were not limited to the turbine buildings, auxiliary building, units 1 and 2 electrical equipment rooms, units 1 and 2 cable spreading rooms, and the station yard zone inside the protected area.

During the plant tours, ongoing activities, housekeeping, security, equipment status and radiation control practices were observed.

Unit 1 Operations

McGuire Unit 1 began the reporting period recovering from a loss of feed-water induced reactor trip discussed in last month's report. A reactor startup was commenced at 3:13 a.m. on November 20. The reactor was critical at 3:30 a.m. and the generator was placed on line at 4:46 a.m. The unit reached 100% power at 3:18 p.m. and remained at or about 100% power throughout the reporting period.

Unit 2 Operations

McGuire Unit 2 began the reporting period in Mode 1 operating at 100% power and remained at 100% power until December 11, 1985 when the unit was shutdown to effect repairs to the D steam generator which was leaking approximately 150 gallons per day. This leak had been detected for some time but remained less than 100 gallons per day until December 7, when a step increase in the primary to secondary leak rate was detected. The unit remained shutdown in Mode 5 throughout the duration of the reporting period. A total of 50 row 1 U-tubes in the D steam generator were plugged. As a result of leak testing and eddy current testing 8 tubes met the criteria for plugging. The remaining 42 tubes were plugged because of indications that suggested that pitting could be a problem in the failure.

6. Design Changes and Modifications

The inspectors reviewed the process established by the utility to assure that design changes and modifications (NSM's) are being developed and processed in accordance with the requirements of the TS and 10 CFR 50.59. Specific attributes reviewed were: review and approval was performed in accordance with established procedures; post-modification testing was performed where specified; associated procedure changes were made as required; as-built drawings were changed to reflect the NSM's; training on the NSM's was being provided to the operations personnel in a reasonable timeframe depending on the NSM; and, changes are planned to be on or were listed on the required 10 CFR 50.59 annual report to the NRC.

In addition, the licensee's program for temporary modifications, lifted leads and jumpers was reviewed to verify: procedures are established to require the review and approval in accordance with TS and 10 CFR 50.59; detailed procedures are used when installing these modifications; a formal record is maintained of these modifications; testing is required for the modifications where required; and periodic reviews are conducted to confirm that the temporary modification is still needed.

The specific NMS's reviewed were as follows:

MODIFICATION	DESCRIPTION
MG 01223	Replace trip overload heaters with shorting bars
MG 01534	Re-arrange NS system panel
MG 01705	Rotate or replace valves 1 CA-22, 26, 31
MG 20285	Modify the control circuit design of the main reactor trip breakers
MG 20551	Install temperature sensors upstream of CA check valves

No violations or deviations were identified.

7. NUREG 0737 Review

The following NUREG 0737 action items were reviewed to determine the status of implementation. It was determined that all the items are currently active in NRC headquarters for various reasons. Although most of the items have been physically implemented at McGuire, they will not be closed out until headquarters review is complete. The items were reviewed for both units and are as detailed below:

Item

I.C.1.1.	Small Break LOCA Procedures Review
I.C.2.B.	Inadequate Core Cooling Procedures Review
I.C.3.B.	Transients and Accidents Procedures Review
I.D.2.3	S.P.D.S.
II.F.2.4.	Inadequate Core Cooling Instrumentation
II.K.3.1.B	PORV Isolation
II.K.3.5.B	Auto Trip of Reactor Coolant Pump
II.K.3.10	Anticipatory Reactor Trip

8. Solenoid Valve Sealing

On September 19, 1985, station personnel determined that an environmentally sealed solenoid valve located inside the containment building had failed due to moisture entering the electrical cover. The moisture had entered the enclosure by seeping between the electrical conductors and through the potting seal. The potting compound had not sealed around each of the ten individual conductors because of the arrangement of the wire bundle. The failed solenoid valve is required to be operable after a Loss of Coolant Accident (LOCA) to obtain containment gas samples. In accordance with TS 3.6.4.1 the failed solenoid valve was declared inoperable.

The four solenoid valves affected were originally installed by the Construction Department. The installation was to be in accordance with McGuire Installation Specification MCS-1390.01-00-0068 (Cable Termination Sealing Inside Containment and Doghouses). The valves are shipped by the manufacturer with test leads provided for bench testing only. These leads are not intended for final installation. To utilize all of the valve limit switches and functions, ten wires would have to be connected to the valve.

In the first case of the solenoid valve 1MISV68EJ failure, the vendor supplied wiring had been removed and replaced with approved control cable wiring connected to all ten terminals. The ten wires passed out through a 3/4 inch conduit fitting where the Scotchcast 9 epoxy resin had been filled in around the conductors. The wires had formed a bundle in the center of the potting material and did not allow the resin to seal around each conductor in the center of the bundle. The installation specification states "Ensure that the Scotchcast 9 completely seals around each individual conductor in the cable". This deficient seal was not detected by either the installers or the Quality Control (QC) inspectors. The ten wires ran to a pull box where only two coil wires were actually connected.

Valve 1MISV6870 was connected the same as 1MISV6880 with ten wires going to a pull box and only two wires being used. There was no moisture located near this valve and the only repair action taken was to replace the seal and wiring and install only two wires into the solenoid housing.

The Train B solenoid valves 1MISV6910 and 1MISV6920 were apparently connected to the vendor supplied leadwires. These leadwires were not intended for final installation according to the vendor's manual but the Duke drawings used by the installers did not indicate that these wires were not suitable for use. The seals around these solenoid valves were rewired and resealed with only two wires entering the enclosure. There were no signs of moisture in or around these two valves.

The Unit 2 solenoids used in this application were visually inspected to determine if they were correctly sealed. These four solenoid valves did not have pull boxes installed. The three conductor field cables connected to the valves were routed directly into the top of the solenoids which means that only three wires entered the electrical enclosure. With this method of cable termination, Station and Design Engineering personnel believe that an adequate seal was made around the three wires.

This installation and inspection problem is apparently limited to Valcor Model 526 Solenoid Valves used in only five applications inside the Unit 1 Containment Building. The technique of installation used by a particular crew or foreman may have contributed to the lack of an adequate seal around the electrical conductors.

This item will be maintained as an Inspector Followup Item (369/85-41-01) pending a determination of the extent of the installation problem.

9. Surveillance Testing

The surveillance tests below were analyzed and/or witnessed by the inspector to ascertain procedural and performance adequacy and conformance with applicable TS. The selected tests witnessed were examined to ascertain that current written approved procedures were available and in use, that test equipment in use was calibrated, that test prerequisites were met, system restoration completed and test results were adequate.

PT/0/A/4208/01	NS Heat Exchanger Perf Test
PT/1/A/4252/01B	MD CA Pump 1B Perf Test
PT/1/A/4403/01B	RN Pump Performance Test
PT/2/A/4208/01A	NS Pump 2A Perf Test
PT/2/A/4208/01B	NS Pump 2A Perf Test

10. ESS Actuation

On December 12, 1985, Unit 1 was operating at 100% power when performance technicians who were performing slave relay testing on "B" train SSPS inadvertently actuated on "A" train relay, which energized train "A" LOCA loads. All "A" train LOCA loads started except the "A" diesel generator and the "A" RN pump which were out of service at the time.

The technicians were performing section 12.51 of procedure PT-1-A-4200-28, Slave Relay Test. Step 12.54 energizes relay K608 which starts DG 1B. No train "B" loads are energized due to the sequencer having been placed in "Test" in step 51.2. In this particular instance, steps 51.1-3 had been performed as required, however the technicians then proceeded to cabinet STC-A instead of STC-B, energized relay K608 for train "A" which energized the train "A" sequencer, and the train "A" LOCA loads. Although the loads energized, there was no actual injection because there was no LOCA signal present. The loads were de-energized and placed back in standby with no deleterious effects.

This incident was reported to the NRC at 12:24 p.m. that same afternoon. For more information pertaining to this event, refer to McGuire Unit 1 Non-Routine Event Report 85-58. The associated LER has yet to be written. Inasmuch as the procedure clearly specified the cabinet and switch number, and since the cabinet is clearly identified, the above incident is an example of failure to follow procedure, and is a Violation of TS 6.8.1.a. (369/85-41-02).

11. Open Items Review

The following items were reviewed in order to determine the adequacy of corrective actions, the implications as they pertain to safety of operations, the applicable reporting requirements, and licensee review of the event. Based upon the results of this review, the items are herewith closed.

50-369

LER 84-01
LER 84-23
LER 85-06
LER 85-07
LER 85-19
LER 85-24
LER 85-26
LER 85-32

50-370

LER 85-47
LER 85-03
LER 85-04
LER 85-06
LER 85-08
LER 85-13
LER 85-17
LER 85-19
LER 85-21
LER 85-22
LER 85-23
LER 85-26
LER 85-29