



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

Report Nos.: 50-369/87-02 and 50-370/87-02

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

Facility Name: McGuire Nuclear Station 1 and 2

Docket Nos.: 50-369 and 50-370

License Nos.: NPF-9 and NPF-17

Inspection Conducted: December 21, 1986 - January 20, 1987

Inspector: T. A. Peebles, Jr. 2-5-87
W. Orders, Senior Resident Inspector Date Signed

Accompanying Personnel: S. Guenther

Approved by: T. A. Peebles 2-5-87
T. A. Peebles, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine unannounced inspection involved the areas of operations safety verification, surveillance testing, maintenance activities, in-office review of written reports, and cold weather preparations.

Results: Of the areas inspected, no violations were identified.

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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
- *N. McCraw, Compliance Engineer
- *M. Sample, Superintendent of Integrated Scheduling
- *N. Atherton, Compliance
- *P. Nardoci, General Office Licensing

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 January 28, 1987 with those persons indicated in paragraph 1 above. One Inspector Followup Item, concerning the dual-train control room ventilation/chill water system failures (paragraph 3), and one Licensee Identified Violation, concerning the failure to verify proper control rod positions as required by the Technical Specifications (paragraph 4), were discussed. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

3. 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

Unit 1 was on line for the entire reporting period. One brief load reduction occurred on December 25, 1986, to accommodate system generation demands. On January 7, 1987, the unit entered Technical Specification (TS) 3.0.3, when both trains of control room ventilation/chilled water (VC/YC) became inoperable. The "A" train of VC/YC failed to start at 2:00 a.m., while attempting to swap operating trains for routine equipment rotation. This placed both units in TS 3.7.6, which required the inoperable train to be restored within seven days. The "B" train of VC/YC subsequently tripped on low refrigerant temperature at 3:28 a.m., and a dual-unit shutdown was commenced at 4:28 a.m., in compliance with TS 3.0.3. The load decrease was suspended at about 85 percent power at 6:40 a.m., when the "B" train of VC/YC has restored to an operable status. The requirements of TS 3.0.3 were no longer applicable and the units were returned to full power. Unit 1 remained at full power for the remainder of the reporting period.

The licensee is investigating the VC/YC system failures under Problem Investigation Report (PIR) Serial No. O-M87-0006. The inspectors will review the PIR upon completion and track the incident as an Inspector Followup Item (IFI 50-369,370/87-02-01).

Unit 2 Operations

Unit 2 was on line from the beginning of the reporting period until January 20, 1987. A brief load reduction occurred when a unit shutdown was initiated on January 7, in compliance with TS 3.0.3 as discussed under Unit 1 Operations above.

The unit was at 100 percent power at 9:53 a.m., on January 20 when all three hotwell pumps (HWPs) tripped in response to an erroneous emergency low hotwell level signal. One of three hotwell level instruments had failed and a second experienced a brief downward spike, thereby satisfying the 2/3 logic required to trip the HWPs. The resultant loss of condensate flow caused all three condensate booster pumps and both main feedwater (CF) pumps to trip on low suction pressure. The total loss of CF resulted in a main turbine trip which, in turn, caused the reactor to trip since power was above the turbine trip permissive setpoint.

Safety system response during the transient was essentially normal, however, the secondary system transient response was more severe. The sudden loss of condensate and feedwater flow caused water hammer transients in portions of the feed and condensate systems. The licensee thoroughly inspected the affected piping and components and found some damaged hangers which were repaired or replaced. An alignment check of the "B" CF pump/turbine

revealed that the transient had misaligned the components, thereby precluding a prompt unit restart. The "A" CF pump oversped to greater than or equal to 7,000 rpm during the transient and the pump's seals failed, allowing water to enter the lubricating oil system.

At the close of the inspection period, the licensee was investigating the cause of the overspeed condition, the reason for the overspeed trip failure, and the extent of damage to the CF pump.

4. Surveillance Testing

Selected surveillance tests were analyzed and/or witnessed by the inspector to ascertain procedural and performance adequacy and conformance with applicable Technical Specifications.

Selected tests were witnessed to ascertain that current written approved procedures were available and in use, that test equipment in use was calibrated, that test prerequisites were met, that system restoration was completed and test results were adequate.

Technical Specification 4.1.3.1.1 requires that the position of each full-length rod be determined to be within the group demand limit by verifying the individual rod positions at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

Technical Specification 4.1.3.6 requires that the position of each control bank be determined to be within the insertion limits at least once per 12 hours except during time intervals when the Rod Insertion Limit Monitor is inoperable, then verify the individual rod positions at least once per 4 hours.

Technical Specification 4.1.3.2 requires that each rod position indicator be determined to be OPERABLE by verifying that the Demand Position Indication System and the Rod Position Indication System agree within 12 steps at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the Demand Position Indication System and the Rod Position Indication System at least once per 4 hours.

At 8:20 a.m., on January 14, the licensee discovered that the Rod Position Deviation Monitor and the Rod Insertion Limit Monitor of the Operator Aid Computer became inoperable at 5:00 p.m., on the previous day, but the applicable TS surveillances were not performed on 4-hour intervals as required. The licensee has initiated a Problem Investigation (Report Serial No. 2-M87-0012) to determine the cause for the missed surveillances and the appropriate corrective action. As allowed by 10 CFR Part 2, Appendix C, no Notice of Violation will be issued for this violation of the Technical Specifications; it will, however, be tracked as a Licensee Identified Violation (LIV 50-370/87-02-02).

5. Maintenance Observations

Routine maintenance activities were reviewed and/or witnessed by the resident inspection staff to ascertain procedural and performance adequacy and conformance with applicable Technical Specifications.

The selected activities witnessed were examined to ascertain that, where applicable, current written approved procedures were available and in use, that prerequisites were met, that equipment restoration was completed and maintenance results were adequate.

6. In-Office Review of Written Reports (90712)

A systematic review was performed on the items detailed below to determine the following:

- if additional inspection was warranted;
- if corrective action discussed in the report appeared appropriate;
- if the information reported satisfied reporting requirements; and
- if there appeared to be any generic issues.

The review indicated that the reports were adequate; the items are herewith closed.

UNIT 1

<u>Item Number</u>	<u>Subject</u>
78-PC-08	Spare Containment Penetrations
78-PC-09	Stem Mounted Limit Switches
79-05-01	Pipe Support Inspection
79-17-03	Barton Model 763
80-CI-16	Rosemount Trip Unit Deficiencies
82-03-03	Prevent Instrument Lines Freezing
82-36-02	Inspector Follow Up Item
83-15-01	Cross-Disciplinary Review
83-15-02	Turbine Trip Test
83-16-02	Quality Control Activities
83-16-03	Main Control Board Deficiencies
83-39-01	Noncompliance Containment Spray
LER83-16	Loose Hanger
LER83-18	ND System Water Hammers
LER83-23	ND System Operability
LER83-29	Boron Concentration Below 1900 ppm
LER83-34	CLA Inoperable
LER83-46	Ventilation System Inoperable
LER83-48	VC Low Refrigerant Temp

LER83-50	VC Cutout Switch Failure
LER83-51	Filter Package Fans Overload
LER83-56	VC/YC Chiller B Trouble
LER83-57	Overtemperature Delta T Inoperable
LER83-65	Pressurizer Heater Grp Inoperable
LER83-103	Overtemperature Delta T Inoperable
LER83-104	Overtemperature Delta T Inoperable

UNIT 2

<u>Item Number</u>	<u>Subject</u>
LER83-03	Reactor Trip Breaker
LER83-59	Inoperable NI Valve
LER83-64	Defective SAI Relays
83-19-04	Ventilation System Components
83-19-05	Review Control Board Labeling
83-40-01	Control Rod Withdrawal Limits
83-43-01	Exceeded LCO Not Reported

7. Cold Weather Preparations (71714)

The licensee has inspected systems susceptible to freezing under PT/O/B/4700/038, "Verification of Freeze Protection Equipment and Systems", to ensure the proper functioning of heat tracing and/or space heaters. A number of systems/components which have had a history of freezing during severe weather have been, or are in the process of being, modified to prevent freezing in the future. Freeze protection features have been incorporated into susceptible components in the fire protection system, the condenser circulating water system, the feedwater and condensate systems, and the conventional waste water system, among others.