



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

Report Nos.: 50-369/89-42 and 50-370/89-42

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

Facility Name: McGuire Nuclear Station Units 1 and 2

Docket Nos.: 50-369 and 50-370

License Nos.: NPF-9 and NPF-17

Inspection Conducted: December 20, 1989 - January 22, 1990

Inspectors:	<u><i>M B Shymlock for</i></u>	<u>2-7-90</u>
	P. K. Van Doorn, Senior Resident Inspector	Date Signed
	<u><i>M B Shymlock for</i></u>	<u>2-7-90</u>
	T. Cooper, Resident Inspector	Date Signed

Approved by:	<u><i>M B Shymlock</i></u>	<u>2-7-90</u>
	M. B. Shymlock, Chief Reactor Projects Section 3A Division of Reactor Projects	Date Signed

SUMMARY

Scope: This routine, resident inspection was conducted on site inspecting in the areas of plant operations safety verification, surveillance testing, maintenance activities, followup-on previous inspection findings, and followup of event reports.

Results: In the areas inspected, one additional example of a previous violation was identified involving failure to write a Problem Investigation Report concerning breakers with loose screws (paragraph 4.b.)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Addis, Superintendent of Station Services
- D. Baxter, Support Operations Manager
- J. Boyle, Superintendent of Integrated Scheduling
- D. Bumgardner, Unit 1 Operations Manager
- J. Foster, Station Health Physicist
- *D. Franks, QA Verification Manager
- G. Gilbert, Superintendent of Technical Services
- *C. Hendrix, Maintenance Engineering Services Manager
- *T. Mathews, Site Design Engineering Manager
- *T. McConnell, Plant Manager
- *D. Murdock, McGuire Design Engineering Division Manager
- R. Pierce, IAE Engineer
- W. Reeside, Operations Engineer
- R. Rider, Mechanical Maintenance Engineer
- *M. Sample, Superintendent of Maintenance
- R. Sharp, Compliance Manager
- J. Snyder, Performance Engineer
- J. Silver, Unit 2 Operations Manager
- A. Sipe, McGuire Safety Review Group Chairman
- *B. Travis, Superintendent of Operations

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

*Attended exit interview

2. Plant Operations (71707, 71710)

- a. 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.

- b. Plant tours taken during the reporting period included, but were not limited to, the turbine buildings, the auxiliary building, electrical equipment rooms, 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.

While performing Auxiliary Building inspections, the inspectors noted an improvement in the general cleanliness of the building. There were still areas, however, that had some debris and equipment that needed to be dealt with:

- Outside of the Unit 2 Turbine Driven CA Pump room, by the RN7A valve, there were various tools and cleaning equipment spread around on the floor.
- On the 767' elevations, in the room behind the YC pumps, debris, such as clothing, gloves, cleaning bottles, and metal straps, has been collecting on top of the outage furniture stored there.
- On the 767' elevation, between the Unit 1 VE fans and the wall, a large amount of debris, such as tygon tubing, bottles, and metal rods, has collected.
- On the 767' elevation, by the Unit 1 Spent Fuel Pool Ventilation fans, in an area marked, "NOTICE - This area has been designated for charcoal transfer equipment only", many pieces of equipment other than charcoal transfer equipment are being stored.

c. Unit 1 Operations

The unit began the inspection period at 100% power and operated there until January 8, 1990.

At 1015 EST, on January 8, 1990, the "A" Feedwater Pump experienced a clogged control oil filter and subsequently ran back until it was no longer supplying feedwater to the Steam Generators. While the operators were backing down load in anticipation of the transient, the "B" Feedwater Pump attempted to compensate for the decrease in feedwater flow. The Feedwater pumps both tripped on a low suction pressure signal caused by the increased demand without an increase in supply. This caused a turbine trip and a subsequent reactor trip.

Following the turbine trip, the A.C. powered Bearing Oil Pump and the D.C. powered Emergency Bearing Oil Pump indicated that they were running, but neither was developing any discharge pressure. Indications are that both the Bearing Oil Pump and the Emergency Bearing Oil Pump were air-bound. Plans had existed to provide larger vent tubing for these pumps during the next scheduled outage, due to indications that the pumps had been cavitating.

The operators secured the pumps and restarted them and finally managed to develop discharge pressure on the Emergency Bearing Oil Pump. The turbine continued to coast down until it reached approximately 170 RPM. At that point, in less than 30 seconds, the turbine came to a complete stop.

Subsequent investigation revealed damage to most of the bearings and some damage to the High Pressure turbine. The utility entered the refueling outage, that had previously been scheduled for March 28, 1990. On line date is scheduled to be April 28, 1990.

d. Unit 2 Operations

The unit started the inspection at full power except for a brief period of time when the unit commenced load reduction to 86 percent power on January 21, 1990 for load following, the unit reached full power on January 22, 1990.

No violations or deviations were identified.

3. Surveillance Testing (61726)

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 acceptance criteria were met.

Detailed below are selected tests which were either reviewed or witnessed:

<u>Procedure</u>	<u>Equipment/Test</u>
PT/2/A/4252/01	Auxiliary Feedwater Pump #2 Performance Test
PT/0/A/4600/02A	Incore and Nuclear Instrumentation Systems Correlation Check
PT/2/A/4200/25	IWP Pump Testing - Monthly
PT/1/A/4209/01A	Centrifugal Charging Pump 1A Performance Test
PT/1/A/4600/03C	Weekly Surveillance Items
PT/2/A/4200/06B	Boron Injection Valve Lineup Verification
PT/2/A/4200/28B	B Train Slave Relay Test

Procedure
(Continued)

Equipment/Test

PT/1/A/4450/03C

Annulus Ventilation System Performance
Test

4. Maintenance Observations (62703)

- a. 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.

Activity

Work Request/Procedure

Observe Acoustic Monitoring
of Main Feedwater Check Valves
1 & 2CF-25,26,27 and 28

N/A

Inspect Spare Breaker #5A
on Motor Control Center 1EMXH

69765 / IP/O/A/3850/09

Preventive Maintenance
on Containment Spray Pump 2B

01964B / MP/O/A/7300/01

Preventive Maintenance
on 1B ND Motor

07722A / MP/O/A/730/01

No violations or deviations were identified.

- b. On January 17, 1990, Catawba Nuclear Station notified the plant that they had identified a generic concern with the screws used to hold the moveable contactors in place in 600 V safety-related breakers. These contactors were manufactured by GTE Sylvania and had been in use in the plant since construction. The contactors in question were Sylvania model TM, sizes 00, 0, 1, and 2. The screws used to hold the contactors in place had a tendency to loosen over a period of time, due mainly to vibration.

GTE Sylvania supplied correspondence to the licensee that demonstrated that they had identified this problem in 1980. In 1982, General Motors was notified of the problem and the needed solution was described in the letter to them. These breakers are a commonly used item in several industries, including the nuclear industry. GTE Sylvania has not previously notified the nuclear industry of the potential problem with the screws.

The licensee initiated an inspection of the 34 safety-related MCCs which utilize this type of breaker. Thirteen breakers with loose screws were identified. These screws were removed and the contacts were inspected. The screws were replaced and torqued to twenty inch-pounds, as recommended by the manufacturer. The licensee performed an operability evaluation on all of the breakers with loose screws and determined that they had remained operable at all times. The licensee plans to replace all of the screws in the safety-related breakers with nylon coated screws, which were designed to prevent loosening due to vibration.

The licensee indicated that they were aware of a tendency for these screws to vibrate loose, even though they had not been informed of such by the manufacturer. During the routine preventative maintenance, the technicians would tighten those screws found loose, as directed by the PM procedure. Even though the technicians were aware of the potentially loose screws, no Problem Investigation Report was issued, which would have identified and evaluated the problem at an earlier stage. The lack of documentation of the identified problem with a PIR is considered another example of violation 369, 370/89-01-07, Failure to Follow Procedures with Respect to Problem Investigation Reports, which is presently an open issue. The licensee indicated that they would review the previously intended corrective action in light of the new example and respond to the violation if additional corrective actions are deemed necessary.

5. Licensee Event Report (LER) and Part 21 Followup (90712,92700)

(Closed) Part 21 369/87-01: Inadequate High Temperature Resistance of Rockbestus Coaxial Cable Insulation Located on Sorrento High Range Rad Monitors. The inspector verified that the licensee had received the report and had initiated appropriate corrective action. Licensee evaluation documented in Problem Investigation Report (PIR) M87-0042 showed their cable to be acceptable.

(Closed) Part 21 369,370/89-12: Limitorque Corporation SMB-000 and SMB-00 Cam Type Torque Switches Can fail as a Result of Stationary Contact Screws Loosening. The inspector verified that the licensee had received the report and had initiated corrective action. Corrective action has been initiated to replace the affected switches and is documented in PIR M89-0293.

No violations or deviations were identified.

6. Followup on Previous Inspection Findings (92701, 92702)

The following previously identified items were reviewed to ascertain that the licensee's responses, where applicable, and licensee actions were in compliance with regulatory requirements and corrective actions have been completed. Selective verification included record review, observations, and discussions with licensee personnel.

- a. (Closed) Unresolved Item 370/87-14-02: Diesel Operability in Manual Mode. This item questioned whether logging the Diesel Generator (DG) inoperable when an out of service pressure switch caused the manual start feature to be inoperable was appropriate. Also in question was the actual operability of the DG in this condition. The licensee reviewed this event and determined that the DG would have functioned per the accident basis. However, the licensee indicated that it would have been appropriate to log the DG inoperable and feels that this would be typically done in the current time frame. A violation was issued in the time frame of the event for failure to log inoperable items. The inspector discussed the licensee's evaluation and reviewed Operations Management Procedure 2-5: Technical Specifications Action Item Logbook.
- b. (Closed) Inspector Followup Item 370/87-21-01: Review PIR M87-151 Re Inadvertent SI While Realignment from NC Check Valve Test. Appropriate corrective actions have been completed and are documented in PIR M87-151. These include counseling of the operator involved and review of procedures for changes which resulted in changes to test procedures. Licensee actions appear to be appropriate.
- c. (Closed) Inspector Followup Item 369,370/87-41-01: Non-Existent Program for Control of Auxiliary Building Pressure Boundary Doors. The licensee does have a program which includes signs on the doors, periodic maintenance and periodic testing. However, doors have occasionally been found open recently. The licensee evaluated this problem and determined that retraining would be accomplished in the short term. Hardware fixes such as stronger closures are difficult since the direction of pressure differential varies and also a ventilation system modification is in progress. The licensee indicated that hardware modifications would continue to be pursued as a possible long term fix. Licensee actions appear appropriate.
- d. (Closed) Inspector Followup Item 369,370/88-31-25: Verify Design Engineering Procedure Improvements for 10 CFR 50.59 Evaluations. The inspector reviewed the Design Engineering procedure and verified that revisions have been incorporated to ensure that any changes to the original modification scope will require performance of a new 10 CFR 50.59 evaluation.
- e. (Closed) Non-Cited Violation 369,370/89-01-05: Followup on Improvements in Control Room Drawing Control. The licensee has implemented corrective actions which included implementation of an improved distribution system, personnel training, deletion of some unneeded drawings, correcting the deficient drawings, implementing a QA audit, revising the drawing control procedure (OMPI-11: Operations Modification Implementation Process), benchmarking current status of limited edition prints and development of a temporary modification logbook. The inspector verified these corrective actions and re-audited a sample of 18 Control Room and Technical Support Center drawings. No additional problems were identified.

- f. (Closed) Inspector Followup Item 369,370/89-18-02: Review of Licensee Evaluation of Control Room Door Problems. The licensee evaluated the effect of a control room (CR) door seal degradation on CR ventilation operability and documented this review on PIR M89-156. The event was determined to not be reportable. The licensee also issued a Technical Specification interpretation to provide guidance for actions to take when doors are found degraded. The inspector reviewed the PIR and interpretation.

No violations or deviations were identified.

7. Management Meetings (94702, 30702)

The inspector participated in two management meetings held during the inspection period. The first was held on January 9, 1990 to discuss Intersystem LOCA precursor and related events and the licensee's corrective actions planned or taken. Events discussed included overpressurization of Chemical and Volume Control System piping, air binding of a Residual Heat Removal pump, Safety Injection check valve failures and overpressurization of Containment Spray System. The licensee also discussed the potential impact of NRC Generic Letter 89-10: Safety-Related Motor Operated Valve Testing and Surveillance on these types of events and the Probabilistic Risk Assessment aspects of Inter system LOCA events.

The second meeting was held on January 16-17, 1990 to discuss the licensee's fitness for duty program, handling of discrepancies as they affect operability and/or licensing basis, and status of various licensing issues. Minutes of both meetings will be issued by NRC/NRR.

8. Exit Interview (30703)

The inspection scope and findings identified below were summarized on January 22, 1989, with those persons indicated in paragraph 1 above. The following item as discussed in detail:

The additional example of a previous violation involving failure to document loose screws in breakers.

The licensee representatives present offered no dissenting comments, nor did they identify as proprietary any of the information reviewed by the inspectors during the course of their inspection.