UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos.: 50-369/84-23 and 50-370/84-20

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

Docket Nos.: 50-369 and 50-370 License Nos.: NPF-9 and NPF-17

Facility Name: McGuire Nuclear Station Units 1 and 2

Inspection Conducted: July 20 - August 20, 1984

Inspectors: A. J. Ignatonis for W. T. Orders 9/26/84 Date Signed

A. J. Ignatonis for R. Pierson 9/26/84 Date Signed

Approved by: Virgil L. Brownlee 9/26/84 Date Signed
V. L. Brownlee, Section Chief
Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection involved 168 inspector-hours on site in the areas of operations safety verification, surveillance testing and maintenance activities.

Results: One violation was identified - failure to file a report on loose parts monitor (50-369/84-23-01).

REPORT DETAILS

1. Licensee Employees Contacted

   *G. Vaughn, Manager Nuclear Stations
   *M. McIntosh, Station Manager
   *G. Cage, Superintendent of Operations
   *T. McConnell, Superintendent Technical Services
   *R. White, IAE Engineer
   *D. Mendezoff, Licensing Engineer

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

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on August 17, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged cognizance of and concern over the areas of concern as detailed herein. One violation was identified involving the licensee's failure to file a report on an inoperable channel of the loose parts monitoring system. The details are described in paragraph 7.

3. Licensee Action on Previous Enforcement Matters

   Not inspected.

4. Unresolved Items*

   Unresolved items were not identified during this inspection.

5. Plant Operations

   The inspector reviewed plant operations throughout the report period, July 20 - August 20, 1984, to verify conformance with regulatory requirements, Technical Specifications and administrative controls. Control room logs, shift supervisor 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 on day and night shifts.

   Activities within the control rooms were monitored during shifts and at shift changes. Actions and/or activities observed were conducted as prescribed in Section 3.1 of the Station Directives. The complement of

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*An Unresolved Item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

licensee personnel on each shift met or exceeded the minimum required by Technical Specifications. Operators were responsive to plant annunciator alarms and appeared to be cognizant of plant conditions.

Plant tours were taken throughout the reporting period on a systematic basis. The areas toured include but were not limited to the following:

Turbine Buildings

Auxiliary Buildings

Unit 1 and 2, Electrical Equipment Rooms

Units 1 and 2, Cable Spreading Rooms

Station Yard Zone within the protected area

Unit 2 Reactor Building

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

McGuire Unit 1 began the reporting period operating at 100% power. The unit was maintained at or about 100% until 6:02 a.m. on Monday, July 23, 1984, when a reactor trip occurred due to "C" steam generator low-low level. The reactor trip was initiated when 1CF-28, steam generator 1C Feedwater Control Isolation Valve, drifted closed. All systems responded normally.

The unit was subsequently restarted when required maintenance was completed and reached criticality on Wednesday, July 25, 1984 at 3:40 a.m. Power escalation continued with the unit entering Mode 1 at 5:00 a.m. Power was subsequently increased to 100% and maintained at or about 100% throughout the reporting period.

McGuire Unit 2 began the reporting period in Mode 3 at 2235 psig and 557°F. A unit start-up was underway - the result of a reactor trip which occurred the previous day (July 19).

The unit reached criticality at 2:56 p.m., entered Mode 1 at 3:24 p.m. and was placed on line at 4:21 p.m. that afternoon. Power was subsequently increased to 100% and was maintained at or about 100% until Friday, July 27, 1984, when a shutdown was initiated to repair 2BB-141, the "B" steam generator blowdown containment isolation valve, which could not be opened. The unit was maintained in Mode 2 to facilitate repair of 2BB-141. On Sunday, July 29, 1984, abnormal leakage was detected on the "A" main coolant pump #1 seal. The decision was made to replace the seal, thus the unit was cooled down and depressurized, entering Mode 5 at 10:00 p.m. that evening. The unit was maintained in Mode 5 through August 4, 1984.

On August 5, 1984, during the filling process following completion of the repairs to the "A" main coolant pump #1 seal, a leak occurred in the 2-inch residual heat removal line (ND) which connects the ND system to the chemical and volume control system (NV). The leak began when an apparent water hammer caused the packing to blow out on valve 2NV 121. Subsequently it was discovered that a weld had also failed at a socket weld next to valve 2ND17. This is a process weld which was subsequently determined to have had 90% failure due to fatigue prior to failing - the apparent result of the aforementioned water hammer. Twelve hangars and two snubbers were damaged or torn from their mounting from the resultant pipe whip. The leak was isolated after 4000 gallons of contaminated primary reactor coolant had spilled in the auxiliary building. Radiation levels were 500 mR in the general area, with local areas as high as 2.7 Rem. Following this event the unit was maintained in a shutdown condition, in mode 5 while repairs were performed on the ND system.

There will be more details concerning the water hammer event in subsequent reports.

On August 20, at 7:30 a.m., the unit was preparing to startup, when with the unit at 1800 PSIG and 520°F, a sight glass ruptured on a UHI line creating a leak of approximately 20 gpm. An unusual event was declared at 7:35 a.m. which was terminated at 11:08 a.m. after the leak was secured by isolating the 3/4 inch valves leading to the sight glass. The unit ended the report period in Mode 3, preparing to restart.

More details concerning the above described leak will be entailed in the August 20 - September 20, 1984 report.

6. Reactor Trip - Inadequate Procedure

Event: At 6:40 p.m. on July 19, 1984, a Unit 2 reactor trip occurred during the performance of PT/0/A/4601/07, Response Time Testing of Reactor Trip Breakers. The test was to reverify the opening time of the reactor trip bypass breakers which had recently undergone semi-annual preventive maintenance. Two Instrument and Electrical (IAE) technicians performing the test, contacted the control operator in the Control Room and requested that he open the Unit 2 Train A reactor trip breaker (RTA) so RTA could be removed from its compartment. The control operator opened the RTA using the control board switch which tripped the reactor. At the time of the trip, the unit was decreasing load at 4 MWe/minute preparing for a unit shutdown to repair 2BB-140A, Steam Generator 2A Blowdown Containment Isolation Valve. The trip occurred with the unit at 73% power.

Analysis: On July 16, 1984, Westinghouse DS-416 Air Circuit Breaker Inspection Procedure (MP/C/A/2001/06) was performed on the Unit 2 Train A reactor trip bypass breaker (BYA) and Train B reactor trip bypass breaker (BYB). Procedure PT/0/A/4601/07, Response Time Testing of Reactor Trip Breakers, was to be performed on BYA and BYB following preventive maintenance. The I&A technicians were only required to test the response time of the reactor trip bypass breakers. The IAE technicians performed Steps 12.1

through 12.10 of the procedure and then skipped to Step 12.25 (as instructed by Step 12.10) since they only had to test the bypass breakers (BYB first, then BYA). RTA and RTB were verified to be closed per Step 12.4 and BYA was racked into the "CONNECT" position and closed per Step 12.5 of the procedure. Step 12.25 required that the reactor trip breaker be removed from the breaker compartment; however, RTA was still closed and would remain closed unless Steps 12.11 through Step 12.24 were completed. The procedure did not provide guidance at this point on how the breaker should be opened. The IAE technician contacted the control operator via telephone and requested that the Train A reactor trip breaker be opened. The control operator verified that BYA was closed and proceeded to open the RTA using the control board switch. This resulted in a reactor trip from 73% power.

Opening either manual reactor trip switch on the control board will open the bypass breakers for both trains and open the respective trains main trip breakers, resulting in a reactor trip. The correct method of opening RTA would have been to open the breaker locally at the breaker compartment.

Procedure PT/0/A/4601/07 had been used to test RTA and RTB on July 13, 1984. However, on that date, the procedure was run step-by-step bypassing Steps 12.25 thru 12.41, which tested the bypass breakers. During Step 12.22, the RTA is tripped open by using the shunt trip "ST TEST" pushbutton in the breaker compartment. Without having to perform Steps 12.11 through 12.24 of the procedure, guidance on how to open the reactor trip breaker was missing.

Corrective Action: In discussions with the licensee, it was learned that PT/0/A/4601/07 will be changed to separate Train A and Train B procedures and will include specific instructions to open the reactor trip breakers from the breaker compartment and not to use the control board switch.

The root cause of the event appears to be the inadequacy of procedure PT-0-A-4601-07, <u>Response Time Testing of Reactor Trip Breakers</u> in that the procedure contains no instruction whatsoever in terms of tripping the main breaker to facilitate it's removal from the cubicle, a function which is performed in step 12.25.

The above is a violation of Technical Specification 6.8.1 which requires current, written, approved procedures be established implemented and maintained pertaining to safety related maintenance and surveillance testing. Implicit in those requisites is the requirement that the procedures be technically and administratively sufficient in detail.

The above described event appears to be in violation of those requirements and is another example of an inadequate procedure which is similar to the violations identified in Inspection Report Nos. 50-369/84-21 and 50-370/84-18 will not be cited in this report.

7. Failure to File Required Report

On Friday, July 27 at 8:36 a.m., the inspector while on routine control room tour noticed that four channels of Unit 1 loose parts monitor system were in alarm. The inspector noticed that a work request identification sticker had been placed beside one of the four channels. The other three channels had spuriously alarmed and were subsequently cleared when brought to operations attention. A review of the Technical Specification logbook revealed that the remaining channel had been logged as inoperable on June 12, 1984.

Technical Specification 3.3.3.10 requires that the loose parts detection system be operable in Modes 1 and 2. The specification also requires that with one or more channels inoperable for more than 30 days, that a report outlining the cause of the malfunction and plans for restoring the channels, to operable status be prepared and submitted within the next ten days. The thirty day inoperable period ended July 12, 1984. The ten day report submittal period expired July 22, 1984.

The inspector brought the matter to the attention of the licensee's licensing staff who subsequently prepared and filed the necessary report.

The above described event is a violation of Technical Specification 3.3.3.10. (50-369/84-23-01).

8. Surveillance Testing

The surveillance tests categorized below were analyzed and/or witnessed by the inspector to ascertain procedural and performance adequacy.

The completed test procedures examined were analyzed for embodiment of the necessary test prerequisites, preparations, instructions, acceptance criteria and sufficiency of technical content.

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.

The selected procedures perused attested conformance with applicable Technical Specifications and procedural requirements, they appeared to have received the required administrative review and they apparently were performed within the surveillance frequency specified.

Procedure	Title
PT-2-A-4252-01A	Motor Driven Auxiliary Feedwater Pump Performance Test
PT-0-A-4600-14A	NIS Power Range Functional Test
PT-2-A-4601-04	Protection System Channel 1V Functional Test
PT-2-A-4403-01A	Nuclear Service Water 2A Performance Test
PT-2-A-4209-09	Standby Makeup Pump Check Valve Test

PT-2-A-4403-01B	Nuclear Service Water 2B Performance Test
PT-0-A-4601-09A	SSPS Train A
PT-2-A-4208 01A	Containment Spray Pump 2A Performance Test
PT-2-A-4252 01A	Motor Driven Auxililiary Feedwater Pump 2A Performance Test
PT-2-A-4252 01B	Motor Driven Auxiliary Feedwater Pump 2B Performance Test
PT-1-A-4601 02	Protective System Channel 2 Functional Test
PT-1-A-4209 01C	Standby Makeup Pump Flow Test
PT-1-A-4401 01A	Component Cooling Train 1A Performance Test
PT-1-A-4252 01A	Motor Driven Auxiliary Feedwater Pump 1A Performance Test
PT-1-A-4252-01B	Motor Driven Auxiliary Feedwater Pump 1B Performance Test
PT-1-A-4209-01B	Centrifugal Charging Pump 1B Performance Test

9. Maintenance Observations

The unit two reactor coolant pump seal replacement, the ND/NV line replacement and the ND/NV snubber and or restraint repairs were analyzed and/or witnessed by resident inspection staff which was augmented by Region staff personnel.

The completed procedures examined were analyzed for embodiment of the necessary prerequisites, preparation, instruction, acceptance criteria and sufficiency of technical detail.

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