



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

Report Nos.: 50-369/89-16, 50-370/89-16

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

Facility Name: McGuire Nuclear Station 1 and 2

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Inspection Conducted: June 2, 1969 - June 28, 1989

Inspectors: *K. Vandoorn*
K. Vandoorn, Senior Resident Inspector

8/4/89
Date Signed

Accompanying Inspector: Mark Lesser, Resident Inspector

Approved by: *M. B. Shymlock*
M. B. Shymlock, Section Chief
Division of Reactor Projects

8-8-89
Date Signed

SUMMARY

Scope:

This routine unannounced inspection involved the areas of operations safety verification, surveillance testing, maintenance activities, and follow-up on licensee event reports and previous inspection findings.

Results:

In the areas inspected, one deviation and one violation were identified as follows:

Deviation 369,370/89-16-01: Failure to Meet Commitment to Provide Bypass Indication for Control Room Ventilation System (Paragraph 3.d.).

Violation 369,370/89-16-02: Failure to Implement Adequate Design Control Measures for Air Operated Valve Components (Paragraph 6.b). An example was cited whereby non-safety-related equipment was installed between a safety-related solenoid and safety related valve actuator. Although this issue was licensee identified all criteria for a non-cited violation were not met.

During this inspection the licensee discussed a number of initiatives in an NRC Licensee interface meeting. These are discussed in paragraph 3.e.

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
M. Funderburke, Station Chemist
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
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
R. White, IAE Engineer

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

*Attended exit interview

2. Unresolved Items

An unresolved item (UNR) is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation. There were no unresolved items identified in this report.

3. Plant Operations (71707, 71710)

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, the 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. The inspector also conducted a walkdown of the Units 1 and 2 Safety Injection Systems (SI). Minor discrepancies involving labeling of valves SI-115, SI-113 and SI-142 and missing handwheels on valves SI-104 and SI-531 were noted and the licensee was informed.

a. Unit 1 Operations

Unit 1 remained on-line during the period generally at 100% power with one small power reduction at the request of the dispatcher. No significant events occurred.

b. Unit 2 Operations

Unit 2 remained on-line the entire period. Power was reduced to 90% for about one week for core conservation. A refueling outage is scheduled to begin July 5, 1989. No significant events occurred.

c. The licensee had previously questioned operability of Borg-Warner flexible wedge gate valves in the Main Feedwater (CF) System (see NRC Report 369,370/89-14). During this inspection period the licensee implemented a torque switch bypass modification on all the affected CF valves (1 and 2 CF-126B, 127B, 128B and 129B). This modification bypasses the torque switch until the wedge is driven past the seat opening but not into the seat (approximately 95% closed) allowing greater thrust to be available to the 95% closed position. At this point less torque is required and the torque switch is available to protect the motor from stall torque conditions. The licensee stated that worst case degraded voltage conditions would result in 16,800 pounds thrust for the modified valves with a required value of 15,900 pounds. The licensee declared the valves operable after the modification was completed. Further NRC followup will be conducted during review of Licensee Event Report 369/89-10.

d. On June 6, 1989 the inspector observed that Train A of Control Room Area Ventilation (VC/YC) appeared to be bypassed as indicated on the control room "Bypass Indication System." This system indicates the status of safety systems by illuminating panel indicator lights when a system is bypassed or inoperable. The licensee committed to implement this system as documented in the McGuire FSAR by complying with the intent of the requirements stated in paragraph 4.13 of IEEE 279-1971 and the position explained in NRC Regulatory Guide 1.47, Bypassed and Inoperable Status Indication for Nuclear Power Plant

Safety Systems. The control room operator stated that the train was operable but the Bypass Indication System logic is such that the non running train of VC/YC is always lighted. This raised a concern that the logic does not meet the intent of RG 1.47. Since the non-running VC/YC train is normally lighted, an inoperability or bypassing of the non-running train would not be indicated to the operator. This could increase the probability of an unrecognized inoperable train.

The inspector verified the logic scheme with the system engineer and explained the concerns. The engineer subsequently verified operability of the train by verifying all inputs to the panel.

Section 7.8.2 of the McGuire FSAR states:

"System level bypass indication is automatically provided to the operator by a display panel located in the control room. Each bypass or deliberately induced inoperability which

- (1) affects an automatic function important to public safety; and,
- (2) can be reasonably expected to occur more frequently than once per year (during times when the affected system is required to be operable), shall be automatically indicated in the control room.

It is our intention to fully comply with the intent of the requirements stated in Paragraph 4.13 of IEEE 279-1971 and the position explained in NRC Regulatory Guide 1.47."

Paragraph 4.13 of IEEE Standard 279-197, states: "If the protective action of some part of the system has been bypassed or deliberately rendered inoperative for any purpose, this fact shall be continuously indicated in the control room."

RG 1.47 states the following: "The following comprises an acceptable method for implementing the requirements of Section 4.13 of IEEE STD 279-1971 and Criterion XIV of Appendix B to 10 CFR Part 50 with respect to indicating the bypass or inoperable status of portions of the protection system, systems actuated or controlled by the protection system, and auxiliary or supporting systems that must be operable for the protection system and the system it actuates to perform their safety-related functions:

- (1) Administrative procedures should be supplemented by a system that automatically indicates at the system level the bypass or deliberately induced inoperability of the protection system and the systems actuated or controlled by the protection system.

- (2) The indicating system above should also be activated automatically by the bypassing or deliberately induced inoperability of any auxiliary or supporting system that effectively bypasses or renders inoperable the protection system and the systems actuated or controlled by the protection system.
- (3) Automatic indication should be provided in the control room for each bypass or deliberately induced inoperable status that meets all of the following conditions:
 - (a) Renders inoperable any redundant portion of the protection system, systems actuated or controlled by the protection system, and auxiliary or supporting systems that must be operable for the protection system and the systems it actuates to perform their safety-related functions;
 - (b) is expected to occur more frequently than once per year; and
 - (c) is expected to occur when the affected system is normally required to be operable.
- (4) Manual capability should exist in the control room to activate each system-level indicator provided."

This is identified as a deviation of the above commitment in that the method of system level bypass of VC/YC is inadequate to provide indication of an inoperability or bypass. This is Deviation 369,370/89-16-01: Failure to Meet Commitment to Provide Bypass Indication for Control Room Ventilation System.

One deviation was identified as described above.

4. 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 test results were adequate.

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

<u>Procedure</u>	<u>Equipment/Test</u>
PT/1/A/4252/01A	Motor Driven Auxiliary Feedwater Pump 1A Performance Test.
PT/2/A/4204/01A	Residual Heat Removal Pump 2A Performance Test.

During the report period, the licensee notified the inspector that the Standby Nuclear Service Water Pond (SNSWP) temperatures had shown an increase from 48 degrees F to 60 degrees F. This occurred after Nuclear Service Water (RN) had been aligned to the SNSWP for several days for ongoing maintenance work on RN valves. With the continuing upward trend in SNSWP temperature and expected warmer weather the licensee has a long term operability concern. The Technical Specification limit of 78 degrees F at the intake structure (essentially the bottom of the SNSWP) could conceivably be reached if the condition continued. By the end of the report period, SNSWP temperature had risen to 68 degrees F.

Long term operability calculations for vital loads supplied by RN assume that RN will supply the vital loads for a minimum of 12 1/2 hours with 78 degree F (or lower) water. To supply that amount of water at least 7 meters of water above the point at which the temperature is measured is required to be present in the SNSWP. The calculated and measured bulk temperature at this point is approximately 3 degrees F higher than at the bottom of the SNSWP. Therefore, the potential exists to adhere to Technical Specifications limitations yet exceed the temperature assumptions used for component operability calculations.

While no present operability concern exists the licensee is continuing to perform an evaluation on methods to cool the SNSWP and to determine if changes to the surveillance, such as temperature measurement location, or changes to the Technical Specifications are required.

No violations or deviations were identified.

5. Maintenance Observations (62703)

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.

<u>Activity</u>	<u>Work Request/Procedure</u>
Trouble Shoot Erroneous Open Signal for Valve 2CA-15	WR 138971

No violations or deviations were identified.

6. Licensee Event Report (LER) Followup (90712,92700)

a. The below listed Licensee Event Reports (LER) were reviewed to determine if the information provided met NRC requirements. The determination included: adequacy of description, verification of compliance with Technical Specifications and regulatory requirements, corrective action taken, existence of potential generic problems, reporting requirements satisfied, and the relative safety significance of each event. Additional inplant reviews and discussion with plant personnel, as appropriate, were conducted for those reports indicated by an (*). The following LERs are closed:

*369/88-31: The Standby Shutdown Facility Was Inoperable Because Required Surveillances Were Cancelled-Management Deficiency. The inspector reviewed the Justification for Continued Operation/Operability program which was implemented as a corrective action for this event.

369/88-49: Train 1B Residual Heat Removal Pump Was Manually Stopped Because It Became Air Bound Due To Insufficient System Venting. This event was an example in a previously issued NRC Violation (369,370/89-11-01). Further followup will be conducted relative to the violation.

*369/88-28: Main Steam Isolation By-Pass Valve Safety Solenoid Valves Were Installed At The Wrong Location - Design Deficiency. This was an original construction problem. The licensee has since conducted generic reviews of air operator designs per NRC generic Letter 88-14.

*369/89-07: Non-Safety Related Components Found To Be Installed Between Safety Related Solenoids And Valve Operators On YC and RN Valves. This was an original construction problem discovered during the licensee review for NRC Generic Letter 88-14. The specific problem has been corrected and the generic review should have served to identify any similar problems. The inspector is concerned with timeliness of corrective actions for this problem. The questionable design was identified by Design Engineering (DE) in early 1989. A Problem Investigation Report was not issued until March 10, 1989 and appropriate compensatory measures were not taken until April 6, 1989. This approximate three month time period to address an operability concern is not considered timely and, therefore, this event would normally be cited by NRC for inadequate corrective action. However, we have previously expressed our concern relative to timeliness in NRC Report 369, 370/89-14. Therefore this issue is not being cited

separately. Further followup of licensee corrective actions on timeliness will be conducted during review of the licensee response to NRC Report 369, 370/89-14.

- b. An event where a non-safety related positioner was found to be installed between a safety-related solenoid and the valve actuator is described in LER 369/89-06, Non-Safety Components were Installed Between Safety-Related Solenoids and Valve Operators On A Containment Isolation Valve. This event involved the Unit 1 Chemical and Volume Control (NV) System letdown orifice containment isolation valve, 1WV-459A. Although other valves are available for isolation of the letdown line, TS require this valve to close upon a Containment Isolation signal. This improper installation was accomplished according to licensee IAE personnel during implementation of a Nuclear Station Modification. IAE personnel also indicated that the cause of the event was confusing instructions to craft personnel which included an instrument drawing which did not meet the normal standard and an instrument list which had the wrong component listed. The inspector reviewed these documents to confirm the apparent root cause. The LER identified the only corrective action as fixing the specific valve. It appears that there may be modification program weaknesses which led to the confusing instructions and other valves could have been affected. Also no preventive corrective action was taken.

10 CFR 50, Appendix B, Criterion III requires that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of systems and components. Also design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. The above problem is an example of failure to implement adequate measures for design control. The NRC may refrain from issuing a Notice Of Violation for licensee identified violations if the violation was or will be corrected, including measures to prevent recurrence, within a reasonable time. This event is being cited since corrective actions were inadequate. This is Violation 369,370/89-16-02: Failure to Implement Adequate Design Control Measures for Air Operated Valve Components.

One violation was identified as described above.

7. Follow-up on Previous Inspection Findings (92702)

(Closed) Violation 369,370/89-05-03: Inoperable Diesel Generators due to Starting Air Interface with Instrument Air. Further review of this issue documented in our letters dated May 15, 1989 and June 14, 1989 have resulted in this issue being classified as a non-cited violation. Therefore this item is closed and a new item established which is

Non-Cited Violation 369,370/89-05-03: Inadequate Design Control Measures Affecting Diesel Generator Starting Air System. The item will remain open pending the licensee's long term corrective action commitments.

No violations or deviations were identified.

8. Licensee Quality Assurance Program Implementation (35502) Units 1 and 2

An internal office evaluation of the licensee's quality assurance program implementation was conducted by reviewing recent inspection reports, SALP reports, open items, licensee corrective actions for NRC inspection findings, and licensee event reports. Particular emphasis was placed on all new items since the end of the last SALP period (August 1, 1988 to May 31, 1989).

All functional areas appeared to be satisfactory. There were no significant trends noted. Strengths were noted in site management and management involvement. It was also noted following the steam generator tube rupture on Unit 1 that the licensee established an effectively managed and technically competent recovery team to determine the cause of the rupture and implement corrective actions. A weakness continues in the area of procedure adherence and attention to detail.

9. Exit Interview (30703)

The inspection scope and findings identified below were summarized on June 28, 1989, with those persons indicated in paragraph 1 above. The following items were discussed in detail:

Deviation 369,370/89-16-01: Failure to Meet Commitment to Provide Bypass Indication for Control Room Ventilation System.

Violation 369,370/89-16-02: Failure to Implement Adequate Design Control Measures for Air Operated Valve Components.

The licensee stated that their review of the Bypass Indication System design deviation was not complete and, therefore, had not determined if the deviation would be denied.

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