

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

Report Nos.: 50-369/89-18, 50-370/89-18

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

Facility Name: McGuire Nu:lear Station 1 and 2

Docket Nos.: 50-369, 50-370

License Nos.: NPF-9, NPF-17

Inspection Conducted: June 29, 1989 - July 28, 1989

Inspectors: K. WanDoorn, Semior Resident Inspector Cooper, Resident Inspector Monlo

Approved by:

ShymTock, Section Chief Β. Division of Reactor Projects

SUMMARY

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Scope:

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

Results:

In the areas inspected, no violations were identified. The licensee identified an incperable Power Operated Relief Valve which should have been discovered by post maintenance testing. A previous violation had been issued for similar problems occurring in the same time frame. Previous corrective actions appear appropriate for this problem, therefore, a violation was not cited. (See caragraph 5.b)

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- G. Addit, 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
- 前. 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 Maintanance Engineer
- *M. Sample, Superintendent of Maintenauce
- 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, Instrument & Electrical Engineer

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

NRC Resident Inspectors

*K. VanDoorn *T. Cooper

*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.

Plant Operations (71707, 71710)

The inspection staff reviewed plant operations during the report period to verify conformance with applicable regulatory requirements. Control coom 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 (TS).

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.

a. Unit 1 Operations

Unit 1 began the period at 100% power. On June 30, 1989 the Digital Electro Hydraulic (DEH) turbine control system malfunctioned. capacitor in the circuit for a status monitoring panel apparently failed which affected two 15 volt DC control power supplies. The effect was to reduce the voltage to approximately 5 volts leading to erratic behavior of the turbine governor valves. Despite sudden megawatt decreases of approximately 200, 300 and 400 megawatts the licensee successfully shutdown the plant without a trip. Operators handled the transient in a well coordinated fashion as observed by the inspector. The affected circuit card was replaced and the unit was restarted on July 1, 1989. A preventive fix is being evaluated with the vendor. The unit remained on-line the rest of the period, however, on July 5, 1989 the licensee discovered that the unit was actually running at 101-102% power for approximately 7 hours while the nuclear instrumentation (NI) was indicating 95-96% The NI channels had apparently been miscalibrated on July 2, 1989. A detailed inspection of this event was conducted by the inspector and a regional inspector and is described in NRC Report 369,370/89-21.

b. Unit 2 Operations

Unit 2 began the period at 98% in a fuel conservation coast down leading to a refueling shutdown which occurred on July 5, 1989. The unit ended the period in no mode, refueling.

c. The inspector reviewed licensee practices for removing licensed operators from the active shift based on requalification test results. The licensee requires a retest if an operator scores 70-80% on any section of the test, however, the operator would not be removed from the shift. A score of less than 70% on any section would be considered a failure and the person would be removed from the shift.

- On July 14, 1989 the licensee informed the inspector of a wiring d. problem associated with the filter preheaters power supply for the Annulus Ventilation (VE) System. The wires were found to be Teflon jacketed which can break down in a radiation environment reducing their ability to function as a moisture barrier. The licensee judged that moisture from an accident situation could cause electrical shorts and prevent operation if VE was stopped after initiation of the accident. The operations procedure was changed to restrict stopping of the system and instructions were given to operations personnel. The licensee expects to be able to correct the wiring in approximately three months. An additional problem was identified to the inspector on July 19, 1989. The licensee had discovered that the cross-connect valves between the two VE trains if left open (normal position) could result in an increase in offsite dose greater than originally assumed although below 10 CFR 100 limits. The original offsite dose calculation did not take into account higher humidity cross-flow from a possible idle train. Technical Specification (TS) 4.6.1.8.d.3 for VE requires verification that the valves can be opened. A Phase B Isolation signal starts VE and opens the valves. The cross flow design was developed to provide cooling flow through the charcoal filter of the idle train for fire prevention. The possibility for a fire is considered remote and a deluge system is available. Therefore, although the system appears to meet design basis as designed, it appears that a modified design which results in lower dose may be an improvement over the existing design. The licensee indicated that a modified design and appropriate TS change would be considered. This is Inspector Followup Item 369, 370/89-10-01: Review of Design and Technical Specification changes for Annulus Ventilation.
- e. On July 18, 1989 the licensee discussed the fuel clip replacement process which was planned during the Unit 2 outage. The licensee was planning to conduct the removal and replacement in Region 2 of the Spent Fuel Pool. The licensee is committed to store unqualified fuel in a checker board pattern in this area with physical barriers in the empty locations. The licensee indicated that the fuel clip removal device would be placed in Region 2 and no assemblies would be present in Region 2. One assembly at a time would be placed within the device for clip changeout and in addition the device physically restricts the adjacent spaces from receiving fuel. The inspector reviewed procedure PT/0/A/4550/33: Controlling Procedure for Fuel Clip Removal and drawings of the device. The licensees methodology appears to meet the licensing commitments.

No violations or deviations were identified.

- 4. Surveillance Testing (61726)
 - a. 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 or reviewed 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:

PROCEDURE	EQUIPMENT/TEST
TT/2/A/9100/329	Reactor Vessel Thermal Mixing Data Acquisition
IP/0/A/3001/001C	Main Steam Flow Calibration Loop C Channel I (See Note)
IP/0/A/3007/17	NIS Power Range Calibration to Best Estimate Thermal Power (See Note)
PT/0/A/4450/08C	Control Room Area Ventilation Performance Test (Train A)
Notos Thorp compl	ated procedures were reviewed during followup

- Note: These completed procedures were reviewed during followup of an overpower event of July 5, 1989. Results are documented in NRC Report 369,370/89-21.
- The inspector reviewed the licensee's practices regarding the Reactor b. Vessel Level Instrumentation System (RVLIS). The TS for RVLIS does not require the upper range to be operable. The NRC and the licensee are presently reviewing whether this is acceptable. While the lower range indication would assure adequate inventory for core cooling the upper range serves to indicate decreasing level from the upper head area and is utilized in Emergency Procedures. The licensee includes RVLIS upper range in the monthly surveillance procedure, PT/1 and 2/A/4600/03D, Monthly Surveillance Items. Step 1.5 of Enclosure 13.1 requires verification that upper range indication show "Invalid" if one or more Reactor Coolant Pumps (RCPS) are running. The inspector questioned whether this surveillance was adequate in that it may be possible for the system to be valved out and still show "Invalid". The licensee was requested to evaluate this question on July 10, 1989. The licensee indicated that additional checks and controls for RVLIS are in place but not formalized. RVLIS data is being verified during Reactor Coolant System fill and vent prior to placing the system in operation. The system also contains three alarms; ICC Monicor Trouble, RVLIS Capillary Tubing Trouble, and Diagnostic Information. The licensee's practice has been to implement a high priority work request whenever these alarms are present. The licensee practice for the Magnex isolation valves is to remove the operators from the valves once the system is aligned to prevent inadvertent isolation. The licensee indicated that verification of the absence of alarms would be added to the surveillance procedure and the other practices would be formalized.

c. On July 16, 1989 the inspector was informed that a portion of a control room door seal was found missing possibly rendering the Control Room Ventilation (VC) System inoperable. VC was declared inoperable and TS 3.0.3 was entered for a short period until the door could be taped. The taping process had been previously evaluated as acceptable for sealing. The licensee later discovered through interviews that the seal had been missing during the previous performance test and, therefore, even with the seal missing VC was operable. This was confirmed with an A train VC test on July 26, 1989. A concurrent problem also existed in that the locking mechanism on the door had not been working properly. The licensee is investigating whether this rendered VC inoperable, i.e. the door could be pushed open by control room pressurization from VC rendering VC inoperable (unable to maintain control room overpressure). The licensee is continuing their investigation on VC operability, the need to improve surveillance and/or maintenance practices, root cause for the missing seal, and the need for improved practices to assure that operations personnel are promptly informed of defective lock problems. Further followup inspection will be conducted relative to the licensee's investigation. This is Inspector Followup Item 369,370/89-18-02: Review of Licensee Evaluation of Control Room Door Problems.

No violations or deviations were identified.

- 5. Maintenance Observation (62703)
 - a. Routing 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

Toroue Switch Bypass Modifications for Valves 1 and 2 CF-126B, 127B, 128B and 129B. (Variation Notices MEVN-1854 and 1769).

Portions of IP/0/B/3250/08, Calibration Procedure For Hays Republic V5A Indicators, for the B Emergency Diesel Generator.

b. On July 5, 1989 the licensee discovered two wires rolled in the reactor protection cabinet which would have prevented operation of Power Operated Relief Valve (PORV) 2NC-32B from operating in the low temperature overpressure (LTOP) protection mode. Concurrently the licensee discovered a blown fuse which would have prevented PORV 2NC-32A from operating in the LTOP mode. These two valves are one of two LTOP systems required to be operable by TS 3.4.9.3. The other required system is a Reactor Coolant System (RCS) vent of greater than or equal to 4.5 square inches with the RCS depressurized. The situation was immediately corrected, however, this appears to be a past operability question and the licensee is investigating and developing a Licensee Event Report. Initial review of the event indicated that the improper wiring occurred during maintenance activities in July, 1988 and post maintenance testing failed to identify the problem.

A previous NRC violation was issued for similar post maintenance testing problems which had occurred in the same time frame (See Report 369,370/E8-29). Therefore, this appears to be another example of post maintenance testing weaknesses previously cited. The previous violation involved incomplete testing after Nuclear Station Modifications (NSMs) to valve motor operators. The licensee reviewed other valve operator NSM packages to determine if similar problems existed but had not reviewed other NSM packages. However, the program enhancements implemented as a result of the previous violation also appear to be appropriate for this problem. Therefore, this problem is not being cited as an NPC violation at this time. Additional corrective actions were being evaluated by the licensee at the end of the inspection period. Further NRC review will be conducted upon completion of the LER.

No viclations or deviations were identified.

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

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.

*LER 369/89-10: Main Feedwater and Auxiliary Feedwater Isolation Valves Were Potentially Inoperable Because Of A Manufacturing Deficiency. The inspector reviewed documentation of torque switch bypass modifications completed as a short term corrective action. The licensee is planning to supplement this report defining long term corrective actions.

*LER 369/89-11: A Technical Specification Surveillance Was Missed Because The Wrong Component Was Declared Operable Due To A Lack Of Attention To Detail. The inspector reviewed the corrective actions taken and interviewed various licensee staff personnel to determine their familiarity with the corrective action requirements. LER 369/89-12: Six Ice Condenser Intermediate Deck Doors Were Inoperable Because Of An Accumulation Of Ice Due To Other/Unknown Reasons. The inspector reviewed the corrective actions and determined that the incident was resolved.

LER 370/89-04: All Power Range Excore Detectors on Unit 2 Were Declared Inoperable Because The Transient Power Mismatch Was Exceeded.

7. Followup of NRC Bulletin (92701)

Bulletin No. 88-10: Molded Case Circuit Breakers. The licensee initiated a discussion with the inspector to update the status of this issue. The licensee recently identified that the original scope of their review of breakers in the warehouse was inadequate in that breakers ordered as more than one piece had not been included. Some breakers were discovered as having been received in two pieces and therefore should have been removed The licensee from safety-related stock until they were evaluated. indicated that the Bulletin response would be updated. The licensee's original response committed to retain any breakers taken out of stock for one year. The licensee has since experienced a parts shortage and desires to use some breakers in non-safety-related applications. The inspector indicated that this appeared acceptable as long as safety-related equipment was not affected and the amended response describes that affected breakers would be used in non-safety-related applications as necessary. The licensee also indicated that breaker spare parts inspections had revealed apparent refurbished components subject to the same operability questions as identified in the Bulletin for complete breakers. The inspector suggested that this be documented to NRC in the additional response or other report as appropriate. This information was verbally forwarded by the inspector to NRC/NRR.

No violations or deviations were identified.

- 8. Followup On Previous Inspection Findings (92701)
 - a. (Closed) Inspector Followup Item 369,370/88-31-22: Followup of QA Department Personnel Training and Subsequent Improvements in QA Surveillances and Audits. The inspector held discussions with licensee personnel and reviewed documentation of various QA surveillances and audits. Audits reviewed included NP-88-14 (Performance, Refueling and Inservice Inspection), NP-88-03 (Quality Assurance Department), NP-88-15 (Fire Protection), NP-88-18 (Operations Activities) and NP-88-30 (Corrective Action). Surveillance documentation review included Surveillance Nos. MC-88-40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52 and 53 and Summaries for Surveillance Nos. MC-89-01, 02, and 07. Also reviewed was a letter to the station manager dated June 2, 1989 summarizing surveillance findings for the March 1 through May 31, 1989 time frame.

It was noted that the corporate audits remain heavily weighted toward documentation review although they are not devoid of field observation. A consultant was used for a fire protection audit and the inspector witnessed a Senior Reactor Operator (SRO) from another Duke plant conducting an audit. The corporate auditors are completing extensive operations training (46 weeks). On-site surveillance personnel have completed this training.

The corporate program is complemented by a diverse on-site surveillance program often weighted toward field observation. Findings were supported and a number of findings were more significant than minor paperwork problems and indicated a good technical knowledge of activities associated with an operating plant. It is noted that the Quality Assurance (QA) Department is in a lead role for the Self Initiated Technical Audits (SITA) and previous NRC review has shown these audits to be thorough and valuable. The site QA Manager is presently in SRO school which will further bolster QA Technical expertise. Also an experienced Maintenance Superintendent has been added to the SITA staff. In addition an NRC maintenance inspection team recently reviewed audits and surveillances for maintenance and found no problems. (See Report 369, 370/89-15)

b. (Closed) Inspector Followup Item 379,370/88-31-23: Verify Improvements in Licensee Followup of QA Audit and Surveillance Findings. The inspector reviewed followup of selected findings from the above listed audits and surveillances and held discussions with QA personnel. Items appeared to be closed out in a timely manner with appropriate corrective actions. The NRC maintenance team also reviewed this area for maintenance audits with no problems identified.

No violations or deviations were identified.

9. Exit Interview (30703)

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

Inspector Followup Item 369,370/89-18-01: Review of Design and Tech Spec Changes for Annulus Ventilation (paragraph 3.d.).

Inspector Followup Item 369,370/89-18-02: Review of Licensee Evaluation of Control Room Door Problems (paragraph 4.c.)

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.