



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

Report Nos. 50-369/90-13 and 50-370/90-13

Licensee: Duke Power Company
 P.O. Box 1007
 Charlotte, NC 28201-1007

Facility Name: McGuire Nuclear Station 1 and 2

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

Inspection Conducted: June 25, 1990 - July 25, 1990

Inspectors:	<u>W.K. Poethen for</u>	<u>8/7/90</u>
	P. K. Van Doorn, Senior Resident Inspector	Date Signed
	<u>W.K. Poethen for</u>	<u>8/7/90</u>
	T. Cooper, Resident Inspector	Date Signed
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Approved by:	<u>M. B. Shymlock</u>	<u>8/7/90</u>
	M. B. Shymlock, Section Chief 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, facility modifications, plant procedures, special management meeting, followup on previous inspection findings, and followup of event reports.

Results: In the areas inspected, two violations and two weaknesses were identified. One violation involved moving a control rod in the fuel building without the ventilation system operable (paragraph 2.f.). The second violation involved debris left in containment violating technical specifications (paragraph 3.b.). One weakness involved poor maintenance/surveillance of Auxiliary Feedwater System manual valve loaders (paragraph 2.f.) The second weakness involved incomplete safety analysis on LERs (paragraph 5.c.)

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- G. Addis, Superintendent of Station Services
- D. Baxter, Support Operations Manager
- J. Boyle, Superintendent of Integrated Scheduling
- *R. Broome, Project Services Manager
- D. Bumgardner, Unit 1 Operations Manager
- *E. Couch, Construction Manager
- J. Foster, Station Health Physicist
- *D. Franks, QA Verification Manager
- *G. Gilbert, Superintendent of Technical Services
- C. Hendrix, Maintenance Engineering Services Manager
- *L. Kunka, Compliance Engineer
- T. Mathews, Site Design Engineering Manager
- *T. McConnell, Plant Manager
- R. Michael, Station Chemist
- 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
- *D. Sexton, Site Design Engineer
- R. Sharpe, Compliance Manager
- *J. Snyder, Performance Engineer
- J. Silver, Unit 2 Operations Manager
- *A. Sipe, McGuire Safety Review Group Chairman
- *K. Thomas, Design Engineering Manager
- *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 reviewed. 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). The inspectors also reviewed Problem Investigation Reports to determine if the licensee was appropriately documenting problems and implementing corrective actions.

- 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, fire protection, security, equipment status and radiation control practices were observed.

- c. Unit 1 Operations

The unit remained at 100 percent power except for periodic decreases for routine maintenance and surveillance activities. Both Diesel Generators were found to have been inoperable for approximately 26 hours on June 26, 1990. This issue is the subject of special NRC Report No. 369,370/90-14.

- d. Unit 2 Operations

The unit remained at 100 percent power except for periodic decreases for routine maintenance and surveillance activities. As of July 16, 1990, the unit has continuously operated on-line for 300 days and the unit was on a licensee record run for Westinghouse Units at the end of the inspection period.

- e. During a control room observation the inspector noted that the Unit 2 Refueling Water Storage Tank (RWST) Hi Level alarm was lit. Operators had refilled the tank until the alarm was received. Station management had indicated previously that this practice would be discontinued so the availability of the alarm would be retained. The inspector notified the Operations Superintendent and further alarms were not noted during the inspection.

- f. On July 5, 1990, the inspectors conducted a visual walkdown of control room panels and auxiliary shutdown panels (ASP) of the Unit 1 and Unit 2 Auxiliary Feedwater (CA) system. During the walkdown of both units CA system, the inspectors found the following discrepancies:

- Unit 1 and 2 CA ASP Local Manual Loaders (ML) for the discharge valves to the steam generators (CA-56, CA-60, CA-40, and CA-44) were labeled in psig instead of %.
- The actual and demand needles of both units CA motor driven pumps appeared to be incorrectly set and were found to be inconsistent.

- Unit 1 CA control room ML for the discharge valves to the steam generators (1A CA-56, 1A CA-60, 1B CA-40, and 1B CA-44) were labeled 2000% instead of 100%.
- The air supply indication to 1B CA-40 ML controller was showing only 6 lbs. instead of 15 lbs.

The above mentioned discrepancies were brought several times to the attention of control room shift supervisors over a several day period. Subsequently, the licensee performed local surveillance on the ASP controllers and found that 1B CA-40 ML controller did not work due to a clogged filter in the air supply, and several actual and demand ML needles were not connected to the controllers. The inspectors felt that there was a weakness in the licensee's surveillance and maintenance program to ensure the ASP controllers are working properly and to assure human engineering problems are corrected.

As a result the licensee implemented evaluation of the ASP and control room to develop corrective actions for these discrepancies. It is noted that other valve position indication is available for the questioned valves and flow indication is also provided. Also the manual loader position indication is not a commitment to NRC. These valves are located near the ASP and could be operated manually if necessary. However, this problem could be a source of confusion for operators. This item will be an Inspector Followup Item, IFI -369, 370/90-13-01: Weakness In Maintenance/Surveillance of Auxiliary Feedwater System Manual Loaders.

- g. On July 10, 1990, the Control Room Senior Reactor Operator (SRO) gave a maintenance crew permission to perform work in the Fuel Storage Building. This work involved moving a control rod from one fuel bundle to another in the storage pool. The SRO was not made aware of the planned moves prior to his granting permission to start nor did he thoroughly discuss what activity was being performed when permission was requested. At the time, both trains of Fuel Handling Ventilation Exhaust System were inoperable. The Operations staff and the SRO were aware of the inoperability of the ventilation system. These systems had been addressed in the morning planning meeting for several days.

Technical Specification (TS) 3.9.11 states that the Fuel Handling Ventilation Exhaust System shall be operable whenever irradiated fuel is in the storage pool. Whenever the ventilation system is inoperable, operations involving crane operations with loads over the storage pool must be suspended.

Operations personnel became aware of the planned movement in the storage pool after one control rod had been moved. This violated the TS Action statement, constituting violation 369/90-13-02: Violation of Fuel Handling Technical Specification.

A major cause of the violation was the poor communications between the maintenance personnel and the Control Room SRO. The lack of understanding of the tasks involved in the work assignment prevented recognition of the potential TS violation.

Even though this issue was identified by the licensee, recent occurrences involving miscommunications warrant its citing. On March 15, 1990, maintenance was being performed on a Residual Heat Removal drain valve, 1ND-58. The valve had been isolated and the line drained, but a system hydro had allowed water to leak into the line due to a faulty isolation valve. Communications between operations and maintenance did not make maintenance personnel aware that there was a possibility of water in the line. When the valve was removed, approximately 750 gallons of water was spilled into the pipe chase.

One violation was identified.

3. 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 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/4252/02B	CA Valve Stroke Timing 2B Motor Driven Pump Flow Path - Quarterly
PT/2/A/4209/01A	Centrifugal Charging Pump 1A Performance Test
PT/1/A/4401/01A	Component Cooling Train 1A Performance Test
PT/1/A/4252/02B	CA Valve Stroke Timing - 1B Motor Driven Pump Flow Path - Quarterly
PT/1/A/4252/16A	Motor Driven CA Pump 1A Recirc Valve Leak Rate Test

PT/1/A/4350/26A

Auxiliary Shutdown Panel
Controls Verification

PT/1/A/4455/02A

VQ Train A Valve Stroke Timing -
Quarterly

b. Unit 1 Containment Cleanliness

During a routine entry into Unit 1 Upper Containment, on May 22, 1990, loose material was discovered by the licensee in various locations. On May 11, 1990, the licensee had performed procedure PT/1/A/4600/03F, Containment Cleanliness Inspection, following the refueling outage, prior to establishing containment integrity. This procedure states that any material which could cause loss of ECCS pump suction will be removed from containment. Examples given include plastic, cloth, rubber, paper, canvas, and hoses. The material found on May 22, 1990, included one plastic step-off pad, three paper step-off pads, one canvas tarp, and two packages of cleaning cloths.

Between the performance of the inspection on May 11, 1990, and the determination that the material was present on May 22, 1990, there were approximately 80 entries into upper containment, which had the potential for detecting the material. During the initial cleanliness inspection and during the subsequent entries, licensee personnel failed to recognize this material as not belonging in containment.

During a review of past occurrences, the licensee determined that a previous instance of this type of event had occurred. During a QA audit in June 1989, loose mopheads were found in the Unit 1 Upper Containment area. Corrective actions were taken, but they did not prevent the later occurrence. In addition, the licensee did not recognize the earlier occurrence at the time it occurred as being reportable as a violation of the Technical Specification surveillance requirements.

Technical Specification 4.5.2.c requires:

Each Emergency Core Cooling System subsystem shall be demonstrated operable by a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the Containment Sump and cause restriction of the pump suction during LOCA conditions. This visual inspection shall be performed:

- (1) For all accessible areas of the containment prior to establishing containment integrity, and
- (2) Of the areas affected within containment at the completion of each containment entry when containment integrity is established.

In both events, Technical Specification surveillance requirements were violated, in that debris was not removed from the Upper Containment, as required. These are examples of violation 369/90-13-03: Failure to Follow Containment Cleanliness Technical Specifications, Multiple Examples.

Normally, NRC does not issue a Notice of Violation for licensee identified items, however, since the licensee had numerous opportunities to discover the problem but failed to do so, the licensee failed to report the previous event, and the original Safety Analysis was incomplete a violation is being issued.

At the request of the inspectors the licensee performed a Safety Analysis on the debris in the Upper Containment, which evaluated the probability of the various items clogging drains, pumps, and heat exchangers. The conclusions were that none of the items found in containment would have affected the required accident performance of the containment spray system, the residual heat removal system, or the containment air return fans. It is unlikely that specific items that were found would have impacted the performance of the emergency systems. They would either have remained in place or would have been blocked from entering sumps or drains by physical barriers. The only drain that had the potential for being blocked was the floor mounted drain in the refueling water canal. However, five other drains provide sufficient return flow to the containment sump to compensate for this possibility.

c. Containment Cleanliness Procedures

The inspector reviewed the licensee procedures utilized to implement the containment cleanliness requirements per Technical Specifications 4.5.2.c.1 and 4.5.2.c.2. Procedure PT/1/A/6600/03F, is used to satisfy requirements for TS 4.5.2.c.1 and Station Directive 3.1.8, Access to the Reactor Building, satisfies TS 4.5.2.c.2.

Some weaknesses were noted in the use of the Station Directive. Being a Station Directive instead of a procedure, the level of review and approval of the TS surveillance is less than it would be if the surveillance was performed under a procedure. No final management review and approval is performed on the Station Directive enclosures.

The completion of the enclosure for the Station Directive was not always thorough and controlled. The inspector found cases where the enclosure did not specify which unit it was being completed for, where the enclosure was not completed until several days after the entry, where the enclosure was not completed but a note was included saying the personnel who had made the entry were not available, and where the enclosure specified a job in progress, but did not reference where the cleanliness inspection following the completion of the job was completed.

These weaknesses were discussed with the licensee, who acknowledged their existence and committed to take corrective action. These actions will be reviewed during followup of the violation described above, and LER 369/90-12.

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.

<u>Activity</u>	<u>Work Request/Procedure</u>
Perform PM Oil Analysis and Vibration on Auxiliary Feedwater Pump and Turbine	08506B PM
Replace the MRL Series 5311 Double Row Thrusting Bearing on Auxiliary Feedwater Turbine Driven Pump to the New Departure Series 5311 Double Row Thrusting Bearing With Twelve Balls Per Row	503642 MNT
Investigate and Repair Problem With 2RNP5870 (RN to 2NS Hx Flow)	142455 OPS
Investigate to Repair Channel 2 Feed Flow For 1B S/G	141565 OPS
Investigate and Repair 1CA-40 Loca: Manual Loaded	142463 OPS
Perform PM/PT Analog Channel Operational Testing on Containment Gas Channel 2 EMF 39 (L)	08910B PT
Perform PM/PT Analog Channel Operational Testing on Containment Particulate Channel 2 EMF 38 (L)	08909B PT
Perform PM/PT Channel Functional Test on All RPS Channel 3 Functions	08907B PT

Perform PM/PT Channel
Functional Test on All AP
Channel 2 Functions

08691B PT

b. Post Maintenance Section XI Testing

Violation 369/90-11-07: Failure to Follow Maintenance Procedure, addresses signing-off a Work Request without all required testing completed. Specifically, the ASME Section XI leak test was not done, even though the Work Request required it to be completed. The inspector, while reviewing completed Problem Investigation Reports determined that this has happened in another instance in the recent past. PIR 1-M90-0123 addresses a Work Request that was completed on February 25, 1990, but was not reviewed by the licensee until April 26, 1990, at which time it was noted that MP/O/A/7700/45, The Controlling Procedure for System Leakage Testing of ASME Mechanical Connections and/or ASME Section XI Suitability Evaluation, was not completed. This is considered another example of violation 369/90-11-07.

No violations or deviations were identified.

5. 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:

369/90-11	Partial Engineered Safety Feature Actuation Occurred when a Valve Repositioned Because of Unknown Reasons.
369/90-14	Both Trains of the Control Room Ventilation System Were Inoperable Because of a Procedure Deficiency (Violation issued in Report 369,370/90-11).
370/90-06	Inadvertent Unit 2 Train B Engineered Safety Features Actuation Occurred Because of a Shorted Light Socket on the Diesel Generator Load Sequencer Panel.

- b. LER 370/90-05 describes a situation whereby operators failed to declare Containment Spray System (NS) Train B inoperable when a Nuclear Service Water System (RN) flow meter was made inoperable. On August 1, 1989 a plant modification (NSM) was implemented which added flow transmitters and control board flow meters for RN flow to NS

heat exchangers (HX). This allowed operations personnel to maintain the NX HXs in wet layup and appropriate procedure changes were implemented on October 9, 1989. A Work Request was implemented on January 17, 1990 to repair the flow meter for Train B NS. NS was not declared inoperable and the instrument was not declared operable until January 25, 1990. Without the flow meter operable the proper RN valve throttle position could not have been directly determined. However other parameter indications would have been available such as RN pump discharge flow and pressure, flows of RN to other systems cooled by RN, and equipment temperature monitors. This situation would have made it more difficult for operators and, therefore, the NS System should have been declared inoperable.

A contributing cause for this event was the fact that operators were not provided training regarding the NSM. A previous violation was issued for failure to train operators regarding an NSM (See violation 369,370/88-30-02). The licensee's NSM Manual, Section 7.8.7 requires that, prior to returning a system to service, personnel training shall be completed, as appropriate. The corrective action for the previous violation included procedure changes and personnel training which appear to have been appropriate. A new person in the operations staff apparently made an error in judgement. Therefore, it does not appear that previous corrective actions were insufficient. In addition, the primary root cause of this problem was failure to include the new instrument in the TS Reference Manual and it is not clear that training would have prevented the problem. Therefore, this problem is not being considered a repeat violation. The LER will remain open pending completion of licensee corrective actions.

- c. During a review of LERs the inspectors noted that the Safety Analysis Sections of LERs were sometimes incomplete. While the most significant aspect of the situation was described, additional information which more fully describes the safety significance of the event was not included. LERs found deficient were 369/90-10, 369/90-12, 369/90-13 and 370/90-05. LER 369/90-12 described a situation whereby debris was found in containment (see paragraph 2.b.) The Safety Analysis described a possible scenario of the Containment Sump being clogged but failed to describe the possibility of the material getting to the sump and failed to evaluate the possible effect on upper to lower Containment drains. LER 370/90-05 described a situation whereby a flow instrument was out of service (see paragraph b. above). The Safety Analysis failed to define additional indications available to operators. The licensee agreed that the above referenced four LERs were deficient and indicated that LER supplemental reports would be issued. This issue is considered a weakness and will be carried as Inspector Followup Item 369,370/90-13-04, Weakness Regarding Incomplete Safety Analysis in LERs.

One violation was identified as described above.

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.

(Closed) Inspector Followup Item 369,370/89-01-06: Weakness in Written Guidance on Use of Procedures. Procedure changes which clarify and provide additional guidance covering each of the areas previously identified in Report No. 369,370/89-01 have been implemented. Therefore, this item is closed.

(Closed) Inspector Followup Item 369,370/89-18-01: Review of Design and Technical Specification Changes for Annulus Ventilation. This issue involved whether the licensee should change how Annulus Ventilation (VE) cross connect valves were operated and whether a TS change would be appropriate to improve system operation. The system is more efficient with cross-connect valves shut but TSs require the valves to be capable of opening. The licensee has determined that a TS change is not necessary and modifications have been initiated to delete the auto-open feature. The modification has been completed for Unit 1 and is scheduled for Unit 2 during the upcoming outage in September, 1990. Licensee actions appear to be appropriate.

(Closed) Violation 369/90-04-03: Failure to Follow Procedure During a Modification. The inspector verified that training of appropriate personnel has been conducted to ensure a thorough understanding of the cause and correct procedure adherence was re-emphasized to the personnel involved in authorization for the torque change.

No violations or deviations were identified.

7. Plant Procedures (42700)

Technical Specification 6.8.1 requires that written procedures be established, implemented, and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33, Revision 2, February 1978.

Regulatory Guide 1.33, Revision 2, February 1978, Appendix A, requires that any safety-related activities should be covered by written procedures. The inspector reviewed the plant procedures listed below to determine whether these procedures were consistent with regulatory requirements and licensee's commitments. These procedures were also reviewed in the areas of the approval process, the engineering safety evaluation, and the technical content.

<u>Procedure</u>	<u>Description</u>
RP/0/A/5700/00	Classification of Emergency
RP/0/A/5700/01	Notification of Unusual Event
RP/0/A/5700/02	Alert
RP/0/A/5700/04	General Emergency
RP/0/A/5700/10	NRC Immediate Notification Requirements
AP/1/A/5500/01	Steam Leak
AP/1/A/5500/04	Loss of Reactor Coolant Flow
AP/2/A/5500/14	Loss of RHR System
AP/1/A/5500/21	Loss of Component Cooling System
AP/2/A/5500/12	Loss of Letdown, Charging or Seal Injection
AP/1/A/5500/20	Loss of Nuclear Service Water
OP/1/A/6100/01	Controlling Procedure for Unit Startup
OP/2/A/6100/02	Controlling Procedure for Unit Shutdown
OP/2/A/6200/01	Chemical and Volume Control System
OP/1/A/6150/02A	Reactor Coolant Pump Operation
OP/1/A/6400/05	Component Cooling Water System
OP/1/A/6250/06	Main Steam System
OP/1/A/6400/06	Nuclear Service Water System

The procedures reviewed were found to be acceptable. Administrative and maintenance procedures have been previously reviewed during routine maintenance and operations inspections. Emergency procedures will be the subject of a special NRC team inspection scheduled for August, 1990.

No violations or deviations were identified.

8. Management Meeting (30702)

On July 16, 1990, licensee plant and corporate management met with NRC representatives to discuss initiatives that both were undertaking that would impact licensee actions.

Quality Assurance program initiatives, such as Self Initiated Team Assessments (SITAs) were presented. Improvements being implemented by the licensee Transmissions Department to reduce and prevent transmission related events at the licensee nuclear facilities were discussed, such as the proceduralization of the tasks performed by that group.

The NRC representatives discussed the policy for escalated enforcement actions for maintenance related violations. It was pointed out that even though the policy was in affect, it has not yet been implemented.

9. Exit Interview (30703)

The inspection scope and findings identified below were summarized on July 25, 1989, with those persons indicated in paragraph 1 above. The following items were discussed in detail:

Inspector Followup Item 369,370/90-13-01: Weakness in Maintenance/Surveillance of Auxiliary Feedwater System Manual Loaders (paragraph 2.f.)

Violation 369/90-13-02: Violation of Fuel Handling Technical Specification (paragraph 2 g.)

Violation 369/90-13-03: Failure to Follow Containment Cleanliness Technical Specification, Multiple Examples (paragraph 3.b.)

Inspector Followup Item 369,370/90-13-04: Weakness Regarding Incomplete Safety Analysis in LERs (paragraph 5.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.