



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

Report Nos. 50-369/91-29 and 50-370/91-29

Licensee: Duke Power Company
 12700 Hagers Ferry Road
 Huntersville, NC 28078-8985

Facility Name: McGuire Nuclear Station 1 and 2

Docket Nos. 50-359 and 50-370 License Nos. NPF-9 and NPF-17

Inspection Conducted: November 17, 1991 - December 14, 1991

Inspectors:	<u>W. H. VanLoorn, Jr.</u>	<u>1-6-92</u>
	P. K. VanLoorn, Senior Resident Inspector	Date Signed
	<u>T. A. Cooper</u>	<u>1-6-92</u>
	T. A. Cooper, Resident Inspector	Date Signed

Accompanying Inspector: M. N. Miller, Reactor Inspector

Approved by	<u>G. A. Bellisle</u>	<u>1/6/92</u>
	G. A. Bellisle, Section Chief	Date Signed
	Division of Reactor Projects	

SUMMARY

Scope: This routine, resident inspection was conducted in the areas of plant operations safety verification, surveillance testing, maintenance activities, followup on Licensee Event Reports and followup on previous inspection findings.

Results: In the areas inspected, 2 non-cited violations (NCVs) and 1 unresolved item (URI) were identified. The first NCV involved the failure to meet Technical Specification requirements for the storage of fuel in the Spent Fuel Pool (paragraph 2.d). The other NCV involved the failure to provide procedures for containment spray check valve testing (paragraph 7). The URI involved the review of control area ventilation inoperability corrective actions (paragraph 6).

A weakness in the control of modification training was noted; however, this was being addressed by the licensee (paragraph 2.e). Also, several housekeeping discrepancies were identified, but were promptly corrected (paragraph 2.a).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. Baxter, Support Operations Manager
A. Beaver, Operations Manager
D. Bumgardner, Unit 1 Operations Manager
*M. Cash, Performance Engineer
E. Estep, Safety Assurance Coordinator
J. Foster, Station Health Physicist
*G. Gilbert, Safety Assurance Manager
*B. Hamilton, Superintendent of Operations
B. Hasty, Emergency Planner
C. Hendrix, Maintenance Engineering Services Manager
*L. Kunka, Compliance Engineer
*T. McConnell, Plant Manager
T. McMeekin, Vice President McGuire Station
R. Michael, Station Chemist
*K. Mullen, Compliance Engineer
*M. Nazar, Performance Manager
T. Pedersen, Safety Review
R. Pierce, Instrument and Electrical Engineer
N. Pope, Superintendent of Maintenance
R. Rider, Mechanical Maintenance Engineer
*R. Sharpe, Compliance Manager
J. Silver, Unit 2 Operations Manager

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

*Attended exit interview

2. Plant Operations (71707)

a. Observations

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 (PIRs) and Operations

Incident Reports (OIRs) to determine whether the licensee was appropriately documenting problems and implementing corrective actions.

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.

The inspectors noted the presence of oil in areas where maintenance or operations activities involving the use of oil had been completed. A container of oil was found in the Unit 1 Turbine Driven Auxiliary Feedwater (TDCA) pump room the day after maintenance had been completed. On two occasions, 5 gallon containers of oil were noted adjacent to the Unit 2 personnel airlock. Both occurrences followed the completion, by operations personnel, of the addition of oil to the reactor coolant pump motor. Upon notification by the inspectors, the shift SRO had the oil removed.

The inspector noted that several Unit 1 areas, such as the safety injection pump rooms and the auxiliary feedwater pump rooms, contained debris, tools, and rolls of tape, following the completion of outage related activities. These items were reported to the licensee, who initiated clean up activities to correct them.

b. Unit 1 Operations

The Unit began this reporting period in a refueling outage and reached Mode 4 operations on December 4, 1991. The unit went critical on December 8, 1991, and resumed commercial power generation on December 10, 1991, to end the 81 day (projected 71 day) refueling outage. Full power operations resumed on December 13, 1991.

c. Unit 2 Operations

Operations continued at 100 percent power until November 24, 1991, when power was reduced to approximately 14 percent to allow a containment entry to perform maintenance on a secondary side leak on an instrument fitting, 2CSLT5540, "B" Steam Generator Narrow Range Channel 1. Repairs were completed on November 25, 1991. A slow power ascension followed, due to Axial Flux concerns. Full power operations resumed on November 26, 1991.

d. Refueling Operations

During a review of the Unit 1 Spent Fuel Pool on October 24, as required by TS 3.9.12, the licensee determined that there were 11 fuel bundles stored in the Unit 1 Spent Fuel Pool. This is contrary to the TS requirements. The TS states that storage of unqualified fuel in Region 2 of the Spent Fuel Pool will be done in a checkerboard configuration with one row between the normal storage locations and the checkerboard locations left vacant.

The licensee discovered that the vacant row had not been maintained between March 23, 1990, and October 24, 1991. The licensee took prompt corrective action to restore the vacant row to comply with the TS requirements. The licensee determined that the cause of the event was a deficient operations procedure, which did not clearly state the TS requirements. Operations procedure, OP/O/A/6550/11, Internal Transfer of Fuel Assemblies, is in the process of being revised to clarify the TS requirements which must be met for the storage of spent fuel.

The licensee performed an evaluation to determine the impact of the non-compliance on criticality safety. It was determined that the failure to maintain the vacant row between the checkerboard and normal storage locations did not increase the Spent Fuel k-eff beyond the value reported in the licensing basis.

TS 6.8.1 and Reg Guide 1.33 require that procedures be developed and implemented to perform safety related functions. OP/O/A/6550/11 was inadequate to meet the requirements of TS 3.9.12. This item was identified by the licensee and reported in LER 369/91-16. The deficient condition has been corrected and steps have been taken to prevent recurrence. Since all of the requirements of Section V.G.1, of 10 CFR 2, Appendix C are met this violation will not be cited and is identified as Non-cited Violation 369, 370/91-29-01: Inadequate Procedure for the Storage of Fuel in the Spent Fuel Pool.

e. Post Modification Training of Operators

Operations Management Procedure 1-11, Operations Modification Implementation Process, requires initiation of training prior to accepting control of equipment affected by a Nuclear Station Modification (NSM). The procedure provides for an immediate training package for selected NSMs. However, little guidance is provided.

The inspector reviewed the recent post Unit 1 outage station modification training package for operations personnel. A number of modifications appeared to affect operations; however, only one was included in an Immediate Training package. After discussions with operations staff personnel, the licensee added several NSMs to the

immediate reading material. The Operations Superintendent informed the inspectors that this program was currently under review. This review is to evaluate the written process as well as consider special training sessions. Management appears to be appropriately sensitive to the needs for improvement in this area. Further NRC review will be conducted at a later date.

One non-cited violation was identified, minor housekeeping discrepancies were noted and a weakness in control of modification training was noted which was being addressed by the licensee.

3. Engineered Safety Features System Walk Down (71717)

Selected portions of the Unit 2 Chemical and Volume Control system that were accessible in the vicinity of the charging pumps, Boric Acid Tank and Volume Control Tank were walked down to verify that the alignment of this engineered safety features system was in accordance with design flow diagrams. The review conducted found the as-built configuration, valve position and locks to be as indicated on the flow diagrams with no discrepancies. General condition of equipment was also reviewed with no problems identified.

No violations or deviations were identified.

4. Surveillance Testing (61726)

Selected surveillance tests were analyzed and/or witnessed by the resident inspection staff to ascertain procedural and performance adequacy and conformance with the applicable TS.

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.

The selected test listed below was reviewed or witnessed in detail:

<u>PROCEDURE</u>	<u>EQUIPMENT/TEST</u>
PT/O/A/4150/12	Isothermal Temperature Coefficient Measurement
PT/1/A/4252/03B	Stroke Time Testing (Valve 1CA48AB)
PT/1/A/4200/09A	Engineered Safety Features Actuation Periodic Test

Work was performed in accordance with requirements and 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 the applicable TS.

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.

The selected maintenance activities listed below were reviewed or witnessed in detail:

<u>WORK REQUEST/PROCEDURE</u>	<u>ACTIVITY</u>
IP/O/A/3190/30 WR 05745D PM	Vital Battery Charger Preventive Maintenance
IP/O/A/3090/02 WR 09960D PM	Vital Battery Charger Preventive Maintenance

Work was performed in accordance with requirements and no violations or deviations were identified.

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

The below listed LER was 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, existence of potential generic problems, reporting requirements satisfied, and the relative safety significance of the event.

(Open) LER 369/91-17: The Control Area Ventilation System was Inoperable due to a Design Deficiency. The licensee has had repeated problems regarding design of ventilation systems (see Violation Nos. 369, 370/89-24-03 and 91-06-02). A number of generic reviews had been initiated including a special task force review. The task force was disbanded; however, the system expert has remanded to continue the review of the system. Also, a design study regarding system interaction was still outstanding. The system expert discovered the problem leading to this LER. The issue involves a Smoke Purge Exhaust Fan (SPXF) which is non-safety related and, when running, would prevent the Control Area Ventilation System (VC) from meeting TS pressurization requirements. The design basis document did not recognize the effect of the SPXF on the system and no interlock was provided with the remainder of the system. Discussion with engineering personnel and review of the licensee Fire Protection Review disclosed that the SPXF was designed for use only for

cleanup of Control Room atmosphere after a fire event. Operations personnel, however, failed to limit operation of this fan by procedure and other controls. Therefore, the root cause of this problem is considered to be primarily inadequate operations procedures. Inadequate operations procedures are considered to be a violation of TS 6.8.1. Corrective actions for this licensee identified violation were still under review by the inspector at the end of the report period. Therefore, this is Unresolved Item 369,370/91-29-02: Review of Control Area Ventilation Inoperability Corrective Actions.

No violations or deviations were identified.

7. 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 implemented. Selective verification included record review, observations, and discussions with licensee personnel.

- a. (Closed) Unresolved Item 369,370/89-03-01: Emergency Lights for Prudent and Alternate Manual Operator Actions. During the inspection conducted on March 6 - 10, 1989, the NRC inspectors reviewed the adequacy of emergency lighting to meet 10CFR 50 Appendix R Section III. J requirements. The inspectors noted that emergency lighting was provided at the locations where the Safe Shutdown Analysis had determined that manual actions were required. Emergency lighting was not provided for all locations where alternate actions were identified in procedure OP/O/A/6100/17. The inspectors expressed concern that emergency lighting in the Interior and Exterior Dog Houses was not satisfactory for operation of the Auxiliary Feedwater (AFW) flow control valves.

On December 10, 1991, as a followup to this inspection, the inspectors performed a walkdown of procedure AP/1/A/5500/24 and AP/2/A/5500/24 "Loss of Plant Control Due to Fire," to assess the adequacy of present emergency lighting. The inspectors noted adequate lighting for all primary safe shutdowns manual actions. The inspectors requested the licensee to test the emergency lighting in the Unit 1 Exterior Dog House. The emergency lighting was found not directed at the equipment required to be operated. The licensee redirected the emergency lights to better illuminate the equipment (AFW motor operated flow control valves). The inspectors considered the undirected, re-directed, emergency lighting was marginally adequate, but would allow for the identification and operation of the AFW valves. The licensee stated that the emergency lighting in the doghouse areas would be enhanced by the end of 1991. The licensee initiated a Station Problem Report to implement the corrective action process. The inspectors determined that the proposed lighting enhancement was satisfactory.

- b. (Closed) Inspector Followup Item 369,370/89-03-02: Review Radio Repeater System Testing. During March 6 - 10, 1989, a Triennial Postfire Shutdown Capability Reverification and Assessment inspection was performed. The inspectors found cables for three antennas, SA-3, SA-5 and SA-6, passed through the Unit 1 cable room. The cables for two antennas, SA-3 and SA-5 passed through the Unit 2 cable room. For a fire in the areas, the licensee had not evaluated the affects of a loss of these antennas. Therefore, the licensee agreed to test the loss of these antennas on the communication system and evaluate any findings.

The inspector reviewed the results of a March 1990 radio communication test. This test was performed to determine security radio operation during a fire related shutdown from the Standby Shutdown Facility as outlined by procedure OP/O/A/6100/17. It was determined that only two antennas, SA-5 and SA-6 would cause loss of communication at the auxiliary feedwater turbine driven pump room in Unit 2. The licensee stated the operator could communicate, if necessary, by leaving the pump and going to another area for a short time. The inspectors conducted walkdowns of all areas where communications are required. The licensee stated the situation would be evaluated and appropriate short term and long term corrective action would be completed by the end of 1991.

The short term corrective action may include adding a note to procedures AP/1/A/5500/24 and AP/2/A/5500/24 regarding radio usage in the turbine driven auxiliary feedwater control rooms. Long term corrective action may require adding additional cables and/or antennas.

- c. (Closed) Inspector Followup Item 369,370/89-15-03: Molded Case Circuit Breaker Testing and Maintenance. During a June 5 - 9 and 19 - 23, 1989, inspection, the NRC Maintenance Team noted that the testing of molded case circuit breakers (MCCB) was not required in the preventive maintenance program. The team recognized that the requirements for testing electrical systems may not definitively specify testing MCCBs and the matter is considered arguable. However, the team believed the conservative approach for a planned 40-year plant life included the testing of MCCBs. The licensee indicated that the need for testing of MCCBs would be re-examined.

The licensee performed an engineering evaluation to re-examine the need for testing MCCBs. As a result of this re-examination, Nuclear Production Department Directive 3.2.e, Maintenance and Testing of Class 1E AC Molded Case Circuit Breakers, was issued. In conjunction, the licensee has initiated a program to test both AC and DC MCCBs. This program included purchasing test equipment and issuing procedure IP/O/A/3190/30, Molded Case Circuit Breaker Inspection and Functional Test. The inspector examined the test equipment and reviewed the licensee's program and test procedure for the testing of MCCBs. The licensee's engineering personnel stated that the re-examination of the MCCBs testing program would continue.

The inspectors determined that the licensee had taken a conservative and appropriate approach for evaluating the need to test class 1E MCCBs and had implemented a satisfactory test program.

- d. (Closed) Unresolved Item 369,370/89-15-06: 600 Volt AC Circuit Breaker Rating. During a June 5-9 and 19-23, 1989, inspection, the Maintenance Team noted that the system breakers, Westinghouse HFB type were rated for 600 VAC. McGuire procedure PM/PT/1A/4350/03A is performed to verify that system voltage at the transformer is maintained between 540 and 660 VAC. The team questioned whether the 660 volt maximum system voltage was consistent with the 600 volt breaker rating. The licensee furnished procurement records which stated that the rating was 600 plus or minus 60 volts in accordance with NEMA standards. In addition, the licensee stated that the system voltage was typically between 575 and 610 volts when loaded. After further consideration, the team determined the voltage rating was not related to maintenance and identified this question as an unresolved item, "to review requirements relative to this question in more detail in a future inspection".

The licensee initiated Problem Investigation Report (PIR) Serial No. O-M89-0173 dated July 27, 1989, to investigate the 600 volt rating of the Westinghouse molded case circuit breakers. Westinghouse provided Duke by telephone with a maximum allowable voltage rating of 630 VAC. As previously mentioned, Duke was under the impression that the rating was 660 volts (from procurement records). The licensee performed an "Operability Determination" as part of PIR O-M89-0173. This operability study states that the breakers in question have been tested as part of the motor control center(s) to individually withstand voltages greater than 2000 volts. Furthermore, the higher voltages, in excess of their 630 VAC rating, only occur during plant shutdown when the loads are de-energized. PIR O-M89-0173 states that no further action is required at present.

The inspector reviewed PIR O-M89-0173 and discussed this issue with NRR. It was agreed there is no safety concern when the plant is shutdown and the circuit breakers are lightly loaded; although, the voltage may slightly exceed the breakers rating.

- e. (Closed) Unresolved Item 369,370/89-17-01: High Range Radiation Monitors do not meet Accuracy Factor of 2 Specified in R.G. 1.97. During an Environmental Qualification (EQ) inspection June 5 - 9, 1989, the high range radiation monitors (HRRM) were identified as not meeting the accuracy factor of 2 as specified in Regulatory Guide (R.G.) 1.97. The accuracy factor of 2 was not met on the low end of the scale due to low penetration leakage resistance as determined by calculations. The manufacturer's minimum allowable insulation resistance was 5×10^8 (E-8) ohms. The licensee was in the process of working with the HRRM vendor to determine an acceptable fix.

The inspector reviewed PIR Serial No. O-M87-0042 issued March 9, 1987, to resolve the accuracy problem with the HRRMs. The problem was heat insulation degradation of cables and penetration feed-through due to a harsh environment (LOCA) which can cause the HRRMs to not meet the RG 1.97 accuracy requirements. The cables furnished with the HRRMs were considered to be a misapplication and needed to be replaced. The licensee has issued Nuclear Station Modifications (NSM) MG 12293 for Unit 1 and MG 22293 for Unit 2 to route new cables for the HRRMs. The licensee stated that both units will be completed during the next refueling outages scheduled in 1993. The inspector considered this as appropriate.

- f. (Closed) Inspector Followup Item 369/90-11-04: Weakness Regarding Control of Scaffolds and Ladders. The licensee has developed improved guidance in this area. The inspector verified that this guidance had been incorporated in procedure MP/O/B/7700/85: Erecting and Dismantling Scaffolding.
- g. (Closed) Violation 369/91-13-02: Failure to Follow Procedure for the Painting of the Annulus Doors. The licensee has completed corrective actions outlined in the response dated August 15, 1991. Appropriate personnel have been trained on the event and changes have been made to the process to prevent recurrence.
- h. (Closed) Violation 370/91-13-02: Failure to Follow Procedure Leading to the Unplanned Start of the Auxiliary Feedwater Pump. The licensee has completed the corrective actions discussed in the letter dated August 15, 1991. Procedures revisions have been issued to clarify requirements for possession of procedures while performing an activity.
- i. (Closed) Unresolved Item 369,370/91-22-01: Evaluation of Licensee's Failure to Include Containment Spray Check Valves in the Test Program. Further review of this issue disclosed that leakage could affect offsite and Control Room dose and that these valves should be considered containment isolation valves. Also, the valves should have been included in a test program. Technical Specification 6.8.1 requires procedures to be established and implemented covering activities recommended in Appendix A of Regulatory Guide 1.33 which includes procedures for surveillance tests. Contrary to this requirement, test procedures were not established for three Containment Spray check valves in each train. This licensee identified violation is not being cited because the criteria specified in Section V.G.1 of the NRC Enforcement Policy were satisfied. This is identified as Non-Cited Violation 369,370/91-29-03: Failure to Provide Procedures for Containment Spray Check Valve Testing.

8. Exit Interview (30703)

The inspection scope and findings identified below were summarized on December, 16, 1991, with those persons indicated in paragraph 1 above. The following items were discussed in detail:

Non-cited Violation 369,370/91-29-01: Inadequate Procedure for the Storage of Fuel in the Spent Fuel Pool (paragraph 2.d).

Non-cited Violation 369,370/91-29-03: Failure to Provide Procedures for Containment Spray Check Valve Testing (paragraph 7).

Unresolved Item 369,370/91-29-02: Review of Control Area Ventilation Inoperability Corrective Actions (paragraph 6).

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.