



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W., SUITE 2900  
 ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-369/95-30, and 50-370/95-30

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

Docket Nos.: 50-369, and 50-370

License Nos.: NPF-9 and NPF-17

Facility Name: William B. McGuire Nuclear Station Units 1 and 2

Inspection Conducted: December 18-22, 1995

Inspector: Rich C. Chou for Jan. 8, 1996  
 J. J. Lenahan Date Signed

Inspector: Rich C. Chou Jan. 8, 1996  
 R. C. Chou Date Signed

Approved by: [Signature] 1/8/96  
 H. Christensen, Chief Date Signed  
 Maintenance Branch  
 Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of followup on the licensee's actions to replace the reactor head vent valves on Unit 2 and observation of routine outage maintenance activities on Unit 1.

Results:

In the areas inspected, violations or deviations were not identified. The procedures reviewed are adequate and organized. They provide enough details for maintenance personnel to perform the work. The maintenance personnel are knowledgeable to the work performed and familiar with the procedures they used. However, a weakness was identified regarding housekeeping in the pipe chase areas in the Units 1 and 2 reactor buildings - paragraph 4.

Enclosure

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. Bostian, Maintenance Section Manager
- D. Brenton, Maintenance Section Manager
- \*R. Cross, Regulatory Compliance Specialist
- G. Cutrie, Mechanical Engineer
- L. Davison, Valve Engineering Supervisor
- \*P. Herran, Engineering Manager
- \*T. McMeekan, Site Vice-President
- J. Miller, Technical Specialist
- \*M. Nazar, Maintenance Superintendent
- \*J. Snyder, Manager, Regulatory Compliance
- P. Stiles, Civil Design Engineering Supervisor
- \*B. Travis, Mechanical/Civil Equipment Manager

Other licensee employees contacted during this inspection included craftsmen, engineers, technicians, and administrative personnel.

#### NRC Resident Inspectors

- \*G. Harris, Resident Inspector
- M. Sykes, Resident Inspector

\*Attended exit interview.

### 2. Review of Maintenance Procedures (62700)

The inspector reviewed the following procedures which provide instructions for corrective maintenance activities:

- IP/O/A/3090/05 (3/29/95) Installation and Maintenance of Instrument Line Fittings and Tubing.
- MP/O/A/7150/36 (12/16/94) Pressurizer Power Operated Relief Valve Corrective Maintenance.
- MP/O/A/7200/11 (12/28/94) Main Steam Isolation Valve and Valve Actuator Corrective Maintenance.
- MP/O/B/7600/102 (8/26/94) Valve Packing Removal and Replacement.
- MP/O/A/7650/44 (11/8/95) Support/Restraints (Hangers) Erection, Modification, Deletion, Removal, and Installation.

Enclosure

The inspector verified that the procedures contained appropriate written instructions for completing work activities, prerequisites, safety considerations, supplemental reference materials, inspection hold points, and post-maintenance test requirements. During the inspection documented in NRC Inspection Report numbers 50-369/92-03 and 50-370/92-03, the inspector identified a weakness in procedure number IP/O/A/3090/05 in that the procedure lacked detailed instructions for installation and inspection of compression fittings. The inspector noted that the licensee has revised this procedure to incorporate the lessons learned from the November 23, 1991 instrument line compression fitting failure at Oconee. The current procedure contains instructions for loosening and retightening fittings, initial installation of fittings including the need to scribe fitting nuts prior to tightening to insure the fittings are tightened the proper number of turns, the need to verify the correct ferrule orientation and type, QC inspection holdpoints, and references to appropriate vendor manuals and licensee procedures.

After review of the about procedures, the inspector considered that the procedures are well organized and contain detailed instructions for the maintenance personnel to perform the work. Within the areas inspected, violations or deviations were not identified.

### 3. Replacement of Unit 2 Reactor Head Vent Valves (62700)

On December 15, 1995, Unit 2 reactor operators noticed a sudden increase in identified reactor system leakage from 0.5 gallons per minute (gpm) to 8.5 gpm. The reactor operators initiated a shutdown of Unit 2 from 100 percent power. The source of the 8.0 gpm increased leakage was determined to be the reactor head vent system. This system contains two parallel one inch diameter flow paths, with two closed Target Rock solenoid valves installed in series in each flow path. The licensee decided to replace all four valves. These valves were originally scheduled for replacement during the next (March, 1996) refueling outage. The valves were replaced under minor modification number MGMM-7905. The inspector reviewed the modification package and verified it contained the following: 10CFR50.59 evaluation, written instructions sufficient to accomplish work, post-maintenance test instructions, inspection hold points, supplemental procedures and reference materials, environmental qualification data, and equipment data sheets. The new valves were installed under work order numbers 95040359 and 95040364.

The inspector examined the new valves after installation was completed, witnessed QC inspection of the two reinstalled pipe supports, hanger numbers 2MCR-NC-4086 and 4087, and reviewed quality records which documented installation of the new valves and reinstalled pipe supports. The following documents were reviewed: weld filler material data sheets; weld process control data sheets; and quality control inspection reports for visual inspection of welding and pipe hangers (supports). No discrepancies were identified.

Enclosure

The inspector also reviewed the maintenance records from 1985 to date for the reactor head vent valves. The records show that maintenance performed on the valves included replacement of fuses and limit switches, adjustments to position indication switches, upgrading of environmental qualification seals and gaskets, and troubleshooting of various electrical problems. The records did not indicate any mechanical maintenance had been performed on the valve internals. The Unit 1 head vent valves are scheduled for replacement during the current refueling outage.

Within the areas inspected violation or deviations were not identified.

#### 4. Housekeeping and Material Condition (62700)

The inspector walked down the Units 1 and 2 auxiliary and reactor buildings and examined condition of equipment and housekeeping. With the exception of an overspanned rad waste pipe in Unit 2, and a damaged instrument line track in Unit 1, the material condition of equipment was good. The piping is non-safety/non-seismic and are drains from two sinks on the reactor building operating floor. The licensee issued Problem Investigation Process (PIP) number 2-M95-2226 to document the overspanned rad waste pipe.

Housekeeping in the auxiliary buildings was excellent. Except for the pipe chase areas, housekeeping in both reactor buildings was satisfactory. Housekeeping in the pipe chase areas was poor. The inspector found grit and debris (pieces of tape, nails, screws, wire ties, etc,) in the proximity of the Unit 1 sump. The inspector also noted debris in other areas in the Unit 1 pipe chase. Although Unit 1 is currently in a refueling outage, the inspector concluded that this debris was present since at least the last outage. In Unit 2, the inspector also noted that grit and debris such as a cloth rag, pieces of tape, miscellaneous hardware items, were present in the pipe chase area. This debris was not cleaned up after the last outage. The inspector identified the poor housekeeping in the pipe chase areas in the reactor buildings as a weakness in the licensee's maintenance program.

During the walkdown inspection in Unit 1, the inspector also observed ongoing corrective maintenance activities. These included testing of capacitors on the 1D reactor coolant pump (RCP), inspection of the 1A RCP seals for leaks, and installation of compression fittings on the 1D steam generator instrument tubing. The inspector noted that licensee personnel involved in these activities were knowledgeable, were following procedural requirements and were complying with QC inspection holdpoints.

Within the areas inspected, violations or deviations were not identified.

Enclosure

## 5. Observation of Valve Maintenance Activity

During the current Unit 1 refueling outage, the licensee will perform maintenance on approximately 501 valves which include 152 Air Operated Valve (AOV); 216 General Valves (GNV); and 133 Motor Operated Valves (MOV). The actual numbers of valves may be changed as a result of other activities such as shutdown testing and system walkdowns. The licensee has 10 teams to perform the valve maintenance. Each team consists of 11 people including a supervisor and is divided into 3 or 4 subgroups depending on the job requirements. The McGuire Nuclear Station maintains 3 teams during normal plant operation. The remaining 7 teams are borrowed from the Oconee and Catawba Nuclear Stations. The total work force for valve maintenance during the refueling outage is approximately 140 people including personnel from Technical Support and the Vendors.

The inspector observed portions of repack activities on valves 1HM VA 0106 and 1NV-235. Valve 1HM VA 0106 is a Motor Operated Gate Valve to isolate 1C Reheater Separator Stage Drain Tank in Moisture Separator Reheater Bleed Steam System. Valve 1NV-235 is a Manual Operated Globe Valve in Chemical and Volume Control System to isolate 1B Centrifugal Charge Pump.

Valve 1HM VA 0106

The inspectors attended the 6:30 AM Maintenance Group Meeting to observe the activities and understand the conditions for performing the repack of valve 1HM VA 0106. After the meeting the team supervisor describes the activities for his team members to include tools required, existing conditions, workability, work order, procedures, etc. The meeting was good which gave a general condition and activity for the plant to the Team Supervisors. The Supervisor gave more details for each valve to his subgroups.

The work order for repacking valve 1HM VA 0106 was 95077213. The procedures required were :

- MP/O/B/7600/102 Valve Packing Removal and Replacement
- MP/O/B/7650/137 Removal of Gasket and Packing Material Containing Asbestos
- STD FME Foreign Material Exclusion Guidelines
- \* MP/O/A/7600/048 Handcock Model 950 Gate Valve Correction
- \* IP/O/A/3066/002A Installation, Removal, and Setup of Rotork

Enclosure



Note: \* denoted procedures that were added due to the removal of actuator required after field walkdown to review workability.

The team found that the actuator was installed upside down. The team determined that it would be difficult to perform the repacking without the removal of the actuator due to the limited working space available. Therefore, the Work Order was revised to add two procedures, MP/O/A/7600/048 and IP/O/A/3066/002A, to perform removal, inspection, and maintenance of the actuator.

The sequence of component removal were actuator, valve, valve stem, and the wedge of the valve stem. During the inspection of actuator and valve the team discovered following problems :

- The primary switch located inside of actuator was found broken. This could give a false light indication in the control room. It required further investigation to determine the actual cause and effect on the operation.
- The upper flange of the valve body was found to have cavities about 1/4 inches deep due to steam erosion.
- The seat and wedge of the valve were also found to have cavities due to steam erosion. The cavities look like pockets that were about 3/16 inches in diameter.

The preliminary determination was to repair the actuator and replace the valve. A Problem Investigation Process (PIP) was issued to investigate the root cause and find a resolution to prevent the problem recurrence. This valve had a history of leaking since 1987 and was repaired several times without a notice of steam erosion on the seat and wedge of the valve.

#### Valve INV-235

The Work Order for this valve maintenance was 95068200. The scope was to repack the valve. The valve is located in Room 0630, at El. 724' of Auxiliary Building. The procedures used during the repacking were as follows :

MP/O/B/7600/02 Valve Packing Removal and Replacement

MP/O/B/7650/137 Removal of Gasket & Packing Material

STD FME Foreign Material Exclusion Guidelines

STD SRP-3 Asbestos Hazard MSD 270.5.3.4

Enclosure

The required tools were hydropneumatic packing remover, packing pullers, packing picks, packing pusher, mirror, and light. The inspector observed following activities:

- The Work approval by a senior reactor operator.
- The contact of Health Physics Personnel to check the dose in the area to be worked.
- The verification of the valve identification to ensure that the work was on the correct valve.
- The verification that the valve was isolated and the isolation valves were red tagged.
- The verification that the valve had been drained.
- The installation of a water collection funnel made from a plastic sheet under the valve to collect and drain the water during the repacking.
- The removal of the packing gland stud nuts.
- The removal of the gland follower.
- The use of packing pullers, picks, and remover to remove packing.
- The removal of the lantern ring and the remaining packing.

The inspectors noted licensee personnel followed the procedures step by step. The procedures were adequate in details. The inspector was satisfied with the work performed by the maintenance personnel. The team members appeared to be knowledgeable on the work and procedures. Within the areas inspected, violations or deviations were not identified.

#### 6. Exit Interview

The inspection scope and results were summarized on December 22, 1995, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.