UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-369/79-29

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

Facility Name: McGuire

Docket No. 50-369

License No. CPPR-83

Inspection at McGuire Site

Inspected by: P T Burnett for
H. L. Whitener — 10-18-79 Date Signed

A H Johnson
A. H. Johnson — 10/18/79 Date Signed

Approved by: P T Burnett
P. T. Burnett, Acting Section Chief, RONS Branch — 10 18-79 Date Signed

SUMMARY

Inspection on August 16-23, 1979.

Areas Inspected

This routine, announced inspection involved 175 inspector-hours onsite in the area of containment integrated leak rate testing which included inspection of the test procedure, instrument calibrations, data processing, valve alignment and problems encountered during the test.

Results

In the area inspected, one apparent item of noncompliance was found (Infraction-Failure to follow valve alignment procedure-paragraph 6).

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DETAILS

1. Persons Contacted

   Licensee Employees

   *M. Sample, Projects and Licenseing
   *L. Weaver, Performance Engineer
   *M. Pacetti, Test Engineer, Performance
   R. Pacetti, Engineer, Corporate Office
   H. Pham, Test Coordinator
   *R. Tropasso, Shift Test Coordinator
   G. Galbreath, Shift Test Coordinator
   A. Kientz, Shift Test Coordinator
   B. Johansen, Standby Shift Test Coordinator
   *M. Watts, Engineering Services (I&C)

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were reviewed with licensee representatives as indicated in paragraph 1 during the inspection on August 23, 1979, and by subsequent telephone communications on August 30, 1979. The licensee indicated to the inspector during the August 30, 1979 telephone communication that in addition to the vent valve found closed by the inspector (See paragraph 6) an additional vent valve NC 103 on penetration M216 was found closed by the plant operation personnel. The licensee agreed to add the leakage determined by local testing penetration M216 and M355 to the upper 95% confidence limit of the type A test along with other identified add-on leakage prior to determining the acceptability of the test.

   The licensee and inspector discussed the problem of the personnel air lock seals deflating when instrument air is removed and the licensee stated that this concern is being turned over to the licensee design group for resolution.

3. Licensee Action on Previous Inspection Findings

   Not inspected.

4. Unresolved Items

   Unresolved items were not identified during this inspection.

5. Containment Integrated Leak Rate Test

   The inspectors witnessed the performance of the primary containment integrated leak rate test (CILRT) to determine that the test was conducted in

accordance with the requirements of 10 CFR 50, Appendix J, ANSI N45.4, FSAR Section 6, and preoperational test procedure TP/1/A/1200/06. Selected sampling of the licensee's activities which were inspected included: (1) review of TP/1/A/1200/06 to verify that the test procedure was properly approved and conformed to regulatory requirements (Detailed review of valve alignments and NRC positions were discussed with the licensee during a previous inspection and documented in IE Report No. 50-369/78-30); (2) observation of test performance to determine test prerequisites were completed, special equipment was installed and calibrated and that appropriate data was recorded and analyzed and (3) preliminary evaluation of leakage rate test results to verify that leak rate limits were met Pertinent aspects of the test are discussed in the following subparagraphs.

a. General Observations

The inspector witnessed and/or reviewed portions of the test preparation, containment pressurization, temperature stabilization, leak chasing, and data processing in the period August 16-23, 1979. The following items were noted:

(1) The test was conducted in accordance with an approved procedure maintained at the test control center. Changes to the procedure were documented.

(2) A sampling of test prerequisites were reviewed and found to be complete. Personnel airlocks were tested using a temporary procedure and are identified for retest at a later date. This matter will be followed at a later inspection to verify retest and to review possible generic issues (369/79-29-03).

(3) A sampling of plant systems required to maintain test control were reviewed and found to be in service as required.

(4) A sampling of penetration valve alignments were observed and several discrepancies identified. This matter is discussed in paragraph 6.

(5) A sampling of special test instrumentation was reviewed and found to be installed and calibrated. Instrument checks were performed prior to the test.

(6) Data required for the performance of the containment leak rate calculation were recorded at 15 minute intervals. Data were assembled and retained for final analysis and evaluation.

(7) Problems encountered during the test were described in the test event log.

b. Evaluation

Final analysis of the leak rate data will be perfo ed by the licensee and will be reported in the test report to the Office of Nuclear Reactor Regulation (NRR). The inspector's preliminary review indicates that the leakage rate achieved was less than 0.75 Lam. Add-on leakage for isolated leakage paths will be included in the final evaluation of containment leak rate.

6. Test Sequence and Identified Problems

The licensee conducted a structural integrity test and then depressurized the containment to 13.5 psig for a period of 6 hours to permit outgasing. The containment was then pressurized to 14.8 psig for the type A test at 7:36 p.m. on August 16. At 8:40 a.m. on August 17, licensee personnel were sent into containment to relocate RTD's 38-47 in the upper condenser, away from the defroster. The inspectors noted that there was no ice in the ice condenser; therefore, the licensee recalculated the volume fraction of each compartment and associated fraction for each RTD. At 00:35 a.m. on August 18, 1979 the temperature stabilization was completed and the 24 hour test began. At approximately 11:15 p.m. on August 18, while verifying valve alignments the inspectors found that containment penetrations M386 and M359 were not properly isolated and vented. The licensee then isolated and vented the instrument air lines through these penetrations. The licensee elected to enter containment at 4:40 p.m. on August 19 to check instrument airline fittings from the door seals back to the seal air accumulator since the inner door seal air is fed from these penetrations and leakage would cause the door seals to deflate. During this containment entry RTD -4 signal was repaired. At 5:00 a.m. on August 20, test pressure was reached and at 7:00 a.m. the inner door seals of the upper personnel air lock deflated causing a pressure loss. The licensee elected to use outer door as the pressure boundary and continued the test, after completing the 4-hour stabilization period at 3:50 p.m. on August 20. At 11:00 p.m. on August 20, the inner seal of the inner door of the lower emergency air lock deflated and licensee personnel vented this hatch every 30 minutes until 7:00 a.m. on August 21. Due to this venting the licensee restarted the test at 7:00 a.m. on August 21, using the outer door of the emergency hatch as the pressure boundary.

The 24-hour test was completed at 9:40 a.m. on August 22, and then the supplemental leak rate verification test was initiated. The verification test was completed at 9:46 p.m. on August 22.

During the inspection (random sample) of penetration valve alignments inside containment, after containment depressurization, the inspector found that vent valve KC331 on penetration M355 was closed and signed off open when required to be open as per procedure TP/1/A/1200/06.

This is an apparent item of noncompliance for failure to follow procedure (79-29-01).

7. Test Method and Results

The licensee used a normalized absolute mass technique to determine the containment leakage. Primary varibles of temperature, pressure and dewpoint were input into the computer at 15 minute intervals for upper containment, lower containment and ice condenser volumes. Total containment leakage was obtained from the summation of these compartment leakages.

The inspector's independent calculations of leak rate and upper (95%) confidence limit agreed with the licensee's values of 0.11 and 0.115 percent per 24 hours obtained by the computer. The composite leakage measured after imposing a 0.2% per day leakage on the 0.11 measured leak rate was within the acceptance limits of 0.25 La.

The inspectors concluded that the containment meets the required type A leak rates limits. However, the final leak rate must include all identified add-on leakage. This matter will be reviewed upon submittal of the leak rate test report to the NRC (369/79-29-02).