



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

Report Nos.: 50-414/85-29

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

Docket No.: 50-414

License No.: CPPR-117

Facility Name: Catawba 2

Inspection Conducted: June 28 - July 5, 1985

Inspectors: H. L. Whitener
H. L. Whitener

7-26-85
Date Signed

J. B. Macdonald
for J. B. Macdonald

7-26-85
Date Signed

Approved by: F. Jape
for F. Jape, Section Chief
Engineering Branch
Division of Reactor Safety

7-26-85
Date Signed

SUMMARY

Scope: This routine, announced inspection entailed 97 inspector-hours on site in the areas of containment structural integrity testing and containment integrated leak rate testing.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Cox, Superintendent, Technical Services
- J. Snyder, Supervising Engineer, Performance Testing
- W. Suslick, Assistant Engineer, General Office
- S. Korellis, Associate Engineer, General Office
- *R. Jones, Test Engineer, Performance
- *M. Carwile, Associate Engineer, Performance
- R. Scarborough, Assistant Engineer, Performance

Other licensee employees contacted included leak rate personnel.

NRC Resident Inspectors

- *P. Skinner
- K. Vandoorn

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 5, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings.

Licensee management stated that the half pressure Type A test was aborted in that spurious noise introduced through the instrumentation system adversely affected the test results before the test could be completed. Consequently, the first periodic Type A test for Unit 2 will be a full pressure test.

The licensee further stated that instrumentation repairs were in progress in preparation for performing the full pressure Type A leak rate test.

The inspector acknowledged agreement with the position taken by licensee management and stated that the test results of the full pressure Type A test would be reviewed on receipt of 90 day leak rate test report.

No dissenting comments were received from the licensee.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Containment Structural Integrity Test (SIT) - Unit 2 (63050B)

a. Review of Test Procedure

The inspector reviewed test procedure number TP/2/A/1200/06, Containment Initial Integrated Leak Rate Test and Structural Integrity Test, to determine if test activities were in accordance with FSAR Section 6.2.6, FSAR Table 14.2.12-1, Section III (1971 Edition, including Summer 1972 addenda) of the ASME code, and NRC requirements. The test procedure specified the prerequisites to be completed prior to the start of the test, test equipment, the method and sequence for application of the test load (pressure), and acceptance criteria. The test pressure was specified to be between 110 to 115 percent of the containment design pressure (15 psig) per FSAR and ASME requirements.

b. Observation of Test Activities

The inspector witnessed portions of the containment pressurization and confirmed that the maximum test pressure of 16.618 PSIG fell within the specified range of 110 to 115 percent of the containment design pressure. The maximum test pressure was held for the required time period. Licensee engineers from design engineering performed an inspection of the reactor containment building after maximum test pressure had been obtained to verify that the structure performed as expected during the SIT. No abnormal conditions were observed.

c. Review of Test Records

The inspector reviewed the result of observations by design engineers during inspection of reactor building summarized in Memo to File dated July 2, 1985, Subject: Catawba Nuclear Station, Unit 2, Containment Vessel Structural Integrity Test, File No. CN-1144.09. The conclusions of the design engineers were that the containment vessel behaved as anticipated during the SIT.

Within the areas inspected, no violations or deviations were identified.

6. Containment Integrated Leak Rate Test - Unit 2 (70307, 70313)

The inspectors reviewed and witnessed test activities to determine that the primary containment integrated leak rate test was performed in accordance with the requirements of Appendix J to 10 CFR 50, ANSI 45.4 and the test

procedure TP/2/A/1200/06, "Containment Initial Integrated Leak Rate Test and Structural Integrity Test".

Selected sampling of the licensee's activities which were inspected included: (1) review of test procedure to verify that the procedure was properly approved and conformed with the regulatory requirements listed above; (2) observation of test performance to determine that test prerequisites were completed, special equipment was installed, instrumentation was calibrated, and appropriate data were recorded; and (3) preliminary evaluation of leakage rate test results to determine that the calculated leak rate is within the acceptance limit. Pertinent aspects of the test are discussed in the following paragraphs.

a. General Observations

The inspector witnessed and/or reviewed portions of test preparation, containment pressurization, temperature stabilization and data processing during the period of June 28 - July 5, 1985. The following items were verified.

- (1) The test was conducted in accordance with an approved procedure maintained at the test control center. Procedure changes and test discrepancies were properly documented in the procedure.
- (2) Selected test prerequisites were reviewed and found to be completed.
- (3) Selected plant systems required to maintain test control were reviewed and found to be operational.
- (4) Special test instrumentation was reviewed and found to be installed and calibrated.
- (5) Problems encountered during the test were described in the test event log.
- (6) Temperature, pressure, dew point, and flow data were recorded at 10 minute intervals. Data were assembled and retained for final evaluation and analysis by the licensee. A final ILRT report will be submitted to the Office of Nuclear Reactor Regulation.

b. Integrated Leak Rate Test Procedure Review

The inspectors reviewed the test procedure (TP/2/A/1200/06) to verify that adequate test controls, acceptance criteria and valve alignments were specified. Enclosure 13.8 of the procedure lists those penetrations which were not aligned in accordance with Appendix J to 10 CFR 50 and specifies that Type C testing will be performed on these penetrations and the results added to the 95% upper confidence limit for the Type A test result.

Some procedural discrepancies relating to the stabilization time at test pressure and temperature stabilization criteria were discussed with the licensee and resolved. The Type A test as performed met all requirements in these areas. The procedure specified a mass point leak rate analysis using a linear regression technique in accordance with the equations of ANSI/ANS 56.8-1981. The ANSI 56.8 method is considered a technically valid analysis on a 24 hour data base.

c. Integrated Leak Rate Test Performance

(1) Method

The containment leak rate was determined by the mass point analysis using linear regression techniques on a minimum of 24 hours of data recorded at 10 minute intervals for the half pressure (7.34 PSIG). The half pressure test was aborted and a full pressure (14.68 PSIG) test was performed. A supplemental test was performed to verify the full pressure Type A test result and instrument system response.

(2) Test Description

A structural integrity test was performed at greater than 110% of design pressure. Subsequently containment pressure was reduced to 85% of half pressure (Pt) for 24 hours to allow for outgassing and stabilization of the containment atmosphere. The containment was then pressurized to 22 PSIA (half pressure) and allowed to restablize. The half pressure Type A test was initiated at 8:30 a.m. on July 2, 1985. Due to an initial high leakage rate and the isolation of leakage paths the test was restarted at 5:00 p.m. on July 2 and terminated at 2:50 p.m. on July 3. The test was aborted at 2:50 p.m. as a result of large step changes in test parameters which resulted in an increasing trend in leak rate. Instrumentation problems became increasingly severe as the test progressed. The licensee checked and repaired the instrumentation and elected to perform the full pressure test without repeating the half pressure test. This requires that the next Type A tests be performed at full pressure. The inspector did not witness the full pressure test but was informed by the licensee by telephone on July 9 that the test was successfully concluded July 8. The mass point leak rate of 0.12 wt% per day and 95% upper confidence limit of 0.126 wt.% per day meet the acceptance limit of 0.15 wt% per day. A supplemental test was performed and met the .25 La limits. These results will be reviewed on receipt of the 90 day leak rate test report.

Within the areas inspected, no violations or deviations were identified.