



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

Report Nos.: 50-269/87-39, 50-270/87-39, and 50-287/87-39

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

Docket Nos.: 50-269, 50-270,
and 50-287

License Nos.: DPR-38, DPR-47, and
DPR-55

Facility Name: Oconee 1, 2, and 3

Inspection Conducted: September 28 - October 2, 1987

Inspector: H. J. Whitenor / for 10/27/87
J. J. Lenahan Date Signed

Approved by: H. J. Whitenor / for 10/27/87
F. Jape, Chief, Test Program Section Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was in the areas of the reactor building tendon surveillance program, the snubber surveillance program, and IEB 80-11.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

M. Addis, Mechanical Engineer, Maintenance Service
*J. M. Davis, Technical Services Superintendent
F. Linsley, Civil Engineer, Construction
*T. C. Mathews, Assistant Engineer, Compliance
M. S. Tuckman, Station Manager
J. Weir, Civil Engineer, Project Engineering

Other licensee employees contacted included six construction craftsmen, and one QC inspector.

NRC Resident Inspectors

*J. C. Bryant
P. H. Skinner
*L. D. Wert

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on October 2, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

The licensee did identify some material as proprietary during this inspection, but this material is not included in this inspection report.

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. Snubber Surveillance Program, Units 1, 2, and 3 (70370)

The inspector examined procedures and quality records related to the snubber surveillance program and inspected selected snubbers on safety-related piping systems. Acceptance criteria utilized by the inspector are specified in Technical Specifications 3.14 and 4.18.

a. Review of Snubber Surveillance Procedures - Unit 1

The inspector examined the following procedures which control snubber surveillance activities.

- (1) Procedure number MP/O/A/3018/09, Functional Testing of Hydraulic Snubbers
- (2) Procedure number MP/O/A/3018/59, Functional Testing of Mechanical Snubbers
- (3) Procedure number MP/1/A/3018/10, Visual Inspection of Inaccessible Hydraulic Snubbers
- (4) Procedure number MP/1/A/3018/11, Visual Inspection of Accessible Hydraulic Snubbers
- (5) Procedure number MP/1/A/3018/19, Visual Inspection of Inaccessible Mechanical Snubbers
- (6) Procedure number MP/1/A/3018/30, Visual Inspection of Accessible Mechanical Snubbers

b. Inspection of Snubbers - Units 1-3

The inspector performed a visual inspection of the snubbers listed below and verified that the snubbers were not damaged, that attachment to the supporting structure and piping was secured, that sufficient fluid was present in the hydraulic snubber reservoirs, and that leakage of fluid was not occurring. Snubbers examined were as follows:

- (1) Snubber numbers 1-20B-20-515 DE001* and DE002* on the Unit 1 reactor building purge system.
- (2) Snubber numbers 2-20B-20-515 DE001* and DE002* on the Unit 2 reactor building purge system.
- (3) Snubber numbers 3-208-20-515 DE001* and DE002* on the Unit 3 reactor building purge system.
- (4) Snubber numbers 3-01A-3-0-2403D DE008* and 3-01A-3-2-2403D-SR8, SR9, and SR10 on the Unit 3 main steam system.
- (5) Snubber number 2-01A-0-550-R14 on the Unit 2 turbine stop valves.
- (6) Snubber numbers 3-01A-0-550-R14 and R15 on the Unit 3 turbine stop valves.

*Denotes mechanical snubbers, all other snubbers listed are hydraulic.

c. Review of Quality Records - Units 1-3

The inspector reviewed quality records documenting the results of functional tests performed on snubbers. Records examined were as follows:

- (1) Results of functional tests performed on Unit 1 hydraulic snubbers in March 1986 and September 1987 and on Unit 1 mechanical snubbers in February 1986.
- (2) Results of functional tests performed on Unit 2 hydraulic snubbers in March 1985 and August 1986 and on Unit 2 mechanical snubbers in September 1986.
- (3) Results of functional tests performed on Unit 3 hydraulic snubbers in January 1987 and on Unit 3 mechanical snubbers in February 1987.

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

6. Post-Tension System Surveillance Program - Unit 1 (61701)

a. Surveillance of Tendons in Exterior Wall of Reactor Containment Building

The inspector examined procedures and quality records related to the surveillance of tendons in the exterior wall of the Unit 1 containment building. Acceptance criteria utilized by the inspector appears in Technical Specification 4.4.2. The inspector reviewed procedure number MP/O/A/1400/22, Tendon - Reactor Building - Surveillance, which specifies the requirements for inspection and surveillance of these tendons. The inspector reviewed the records documenting the surveillance inspections performed on dome tendon numbers 1D28, 2D28, and 3D28 in September 1987. These records included tendon lift-off forces and results of anchorage inspections. The inspector also examined the tendon stressing ram calibration records. No deficiencies were identified during the surveillance inspection of the above listed tendons. The surveillance inspection of the vertical and horizontal tendons is still in progress.

b. Reactor Building Secondary Shield Wall Tendon Surveillance

The inspector examined procedures and observed work activities related to surveillance of tendons in the secondary shield wall. The secondary shield wall consists of removable reinforced concrete blocks which contain horizontal and vertical tendons which provide the strength to resist postulated design loads. The criteria for the surveillance inspection is contained in Duke Power Design Specification number OSS-011F-00-00-0001, Specification for Reactor

Building Secondary Shield Wall Post-Tension Tendon Surveillance. The inspector reviewed procedure number MP/O/A/1400/21, Tendon - Secondary Shield Wall - Surveillance. This procedure, which is based on the design specification, specified the inspection and surveillance requirements for the secondary shield wall tendons. The procedure also contains the tendon surveillance acceptance requirements. The inspector witnessed stressing operations for verification of the lift-off force in Unit 1 vertical tendon 8V. The inspector also witnessed detensioning and retensioning of the tendon. The operations were performed in accordance with the requirements of procedure MP/O/A/1400/21. The inspector examined the anchorage assemblies and buttonheads on tendon 7V and on the lower end of tendon 8V and the condition of the tendon wires at both ends of tendon 8V. Corrosion level on tendon wires was noted on Corrosion Level 1; no visible corrosion.

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

7. (Closed) IE Bulletin 80-11, Masonry Wall Design

a. Background

The licensee responded to IE Bulletin 80-11 in letters to NRC dated July 7, October 28, and November 4, 1980. In the October 28 letter, the licensee requested an extension until the end of December 1981 to complete the design reanalysis of the masonry walls. The licensee submitted interim progress reports concerning the status of the masonry wall evaluation to NRC Region II on February 9, March 9, June 30, and September 30, 1981. In letters dated July 13, 1981, June 15, 1982, September 7, 1983, and October 20, 1983, to the NRC Office of Nuclear Reactor Regulation (NRR), the licensee responded to requests for additional information concerning masonry wall design. Based on the information provided in these letters, NRR accepted the design methodology used to qualify 217 of 299 masonry walls. The remaining 82 walls had been qualified by use of arching action theory, which did not meet NRC design evaluation criteria.

In order to resolve the acceptability of the arching criteria, the licensee proposed to conduct a confirmatory test program. An outline of the proposed test program was submitted to NRR in a letter dated October 5, 1984. Based on the licensee's submittal pertaining to IEB 80-11, NRC issued a Safety Evaluation Report (SER) which was transmitted to the licensee in a letter dated March 14, 1985. This SER documented NRC acceptance of the licensee's criteria used to evaluate 217 masonry walls and acceptance of the licensee's test program to provide additional data pertaining to the acceptability of the use of arching theory to qualify the remaining 82 walls. The licensee completed the testing program and submitted the results to NRC in a letter dated March 10, 1986. (The arching theory confirmation test program details and data is considered to be proprietary information.)

In an SER attached to a letter dated June 25, 1987, Subject: Confirmatory Test Program on the Arching Action Theory for Masonry Walls, NRR concluded that the licensee's test program validated the use of arching action theory to qualify the 82 unreinforced concrete masonry walls.

b. Inspection of Modifications to Masonry Walls

During the design reevaluation, the licensee decided to initiate a repair program on "non-typical" masonry walls in order to insure that an adequate margin of safety would be maintained. The walls that were modified were those that were generally taller (approximately 18 to 19 feet) than the typical 12 to 14 foot high walls in the plant and/or those located in areas anticipated to experience greater seismic accelerations. The analysis did not indicate these walls were unsafe in their existing configuration, but an added margin of safety was provided by the upgrades. The wall repairs (upgrades) were completed under Nuclear Station Modification (NSM) 1717.

The inspector examined the completed NSM 1717 documentation. The documentation included the following:

- (1) Safety Evaluation Report
- (2) Design drawings showing modifications to be completed for approximately 50 walls
- (3) Variation Notices written against various design drawings
- (4) Controlling work /inspection procedures including:
 - (a) Procedure MP/O/A/1000/03, Dismantling and Erecting of Seismic Concrete Masonry Walls
 - (b) Procedure MP/O/A/1800/35, Controlling Procedure for Concrete Anchor Installation
 - (c) Procedure MP/O/A/1800/43, Repair of Abandoned Drill Holes Less than Two Inches in Diameter
 - (d) Procedure MP/O/A/1000/02, Fabrication and Erection of Miscellaneous Steel for Upgrade of Masonry Walls
- (5) Material certification records for structural steel used in various masonry wall modifications
- (6) QC inspection records for inspection of welding related to wall modifications for wall numbers 527, 642, 656, 688, 695, 696, 699, 644, 676, 686, 1045, 1444, 1450, 1654, 1683, 1684, and 1728

- (7) QC inspection records for inspection of installation of concrete expansion anchors for modifications to wall numbers 527, 642, 656, 688, 695, 696, and 699.

The inspector also performed a walkdown inspection to examine the completed modifications to the following masonry walls: wall numbers 14, 23, 522, 534, 686, 1042, 1043, 1047, 1654, and 1671.

During the walkdown inspection, the inspector compared the completed wall modification with the details shown on the respective design drawing showing details of the masonry wall stiffeners.

c. Conclusions

Based on an inspection conducted January 6-9, 1981 (see Inspection Report 50-269,270,287/87-01), inspection of the completed wall modifications during the current inspection, the results of the licensee's testing program to qualify use of arching action theory and on Safety Evaluation Reports issued by NRR (attachments to March 14, 1985 and June 25, 1987 letters to Duke Power Company), the inspector concluded that the licensee has complied with the requirements of IE Bulletin 80-11. IEB 80-11 is closed.

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