



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

Report Nos.: 50-269/85-13, 50-270/85-13, 50-287/85-13, 50-369/85-18 and
50-370/85-19

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

Docket Nos.: 50-269, 50-270, and 50-287
DPR-55
50-369, 50-370

License Nos.: DPR-38, DPR-47, DPR-55
NPF-9 and NPF-17

Facility Names: Oconee 1, 2, and 3 and McGuire 1 and 2

Inspection Conducted: May 28-31, 1985

Inspector: W. P. Ang 6-11-85
W. P. Ang Date Signed

Approved by: J. J. Blake 6-11-85
J. J. Blake, Section Chief Date Signed
for Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection involved 24 inspector-hours on site at the Duke Power Company Engineering Offices in Charlotte, N.C., in the areas of seismic analysis for as-built safety-related piping systems (IEB 79-14); pipe support base plate designs using concrete expansion anchors (IEB 79-02); and licensee identified items.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- R. Priory, Vice President, Design Engineering
- *S. B. Hager, Chief Engineer, Civil Engineering
- *C. L. Ray, Principal Engineer, Civil Engineering
- L. Coggins, Acting Technical Services QA Manager
- W. Taylor, Supervising Design Engineer
- D. G. Cook, Supervising Design Engineer
- *K. M. Louvin, Assistant QA Engineer

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on May 31, 1985, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings with no dissenting comment. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Unresolved Item (URI) 370/84-19-01, Concrete Expansion Anchor Repair, McGuire Unit 2

The URI identified a need for further RII inspection and evaluation of licensee action to verify the adequacy of the repair of concrete expansion anchors. Specifically, the licensee was informed that it should:

- (1) Document design calculations showing that the torque performed on the repaired concrete expansion anchors provided a tensile load equivalent to two to three times the actual loads that the repaired concrete expansion anchors are designed for.
- (2) Consider a revision of their concrete expansion anchor repair procedure to provide visual inspection of the old hole for the concrete expansion anchor of the concrete.
- (3) Consider performing tests to verify the adequacy of the repair procedure used by simulating reinstallation of the concrete expansion anchor after it had pulled completely out of its hole.

The licensee's effort in response to the above noted items was reviewed.

- McGuire calculation MCC-1206.12-90-1013, Rev. 1, dated August 23, 1984, verified that the installation torque performed on repaired concrete expansion anchors provided a tensile load equivalent to a factor of 2 or greater as compared with the design loads.
- Revision 9 to DPC specification MCS-1196.02-00-0002, Specification for Field Installation of Concrete Expansion Anchors, was issued to provide more definitive inspection requirements for the concrete hole preparation for concrete expansion anchor installation in previously used holes (paragraph 5.2.1).
- The licensee did not perform the noted testing since it considered that it was not practical to duplicate the impact loading generated by a water hammer or similar occurrence. Furthermore, the licensee considered that visual inspection of the concrete and the installation torque and inspection provided adequate assurance that IEB 79-02 requirements, including applicable safety factors, would be complied with.

Based on the above noted licensee action, the Unresolved Item was closed.

- b. (Closed) URI 370/83-18-01, Identification of Design Nonconformances, McGuire Unit 2

The URI identified a need for further licensee review of the self-initiated seismic design technical audit findings and a determination of the necessity for documenting the findings on design nonconformance reports. Specifically, audit finding 17-PPDS-9 was used as an example of the findings that identified technical errors. The URI noted that the applicable calculations for audit finding 17-PPDS-9 had been corrected and no hardware changes were required. In response to the URI, the licensee's QA committee reviewed audit finding 17-PPDS-9 and determined that a design nonconformance was not required. The QA committee also determined that improvements to QA manual section PR-202, Design Nonconformances, was required to provide for potential recurring deficiencies. Revision 5 to PR-202 was issued to provide for the above noted concerns. In August of 1983, the "Final Resolution Report" for the Seismic Design Technical Audit of McGuire and Catawba was issued. The final resolution report documented the corrective action for the audit findings including generic action as applicable. The report documented a generic review performed related to McGuire I&C in response to audit finding 17-PPDS-9. The report stated that all seismic support calculations were reviewed for accuracy and completeness and revised as necessary to correct errors and correctly reference MCS-1108.00-00-0002. The report also stated that all associated seismic reports were successfully qualified. No NRC regulatory reportable items were identified.

Based on the above noted licensee action, the URI was closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Pipe Support Baseplate Designs Using Concrete Expansion Anchors (IEB 79-02) and Seismic Analysis for As-Built Safety Related Piping Systems (IEB 79-14), Oconee 1, 2 and 3

On June 21, 1984, the licensee submitted a revised response to the subject Bulletins. The licensee response stated that 5833 pipe supports had to be modified as a result of IEB 79-14. The response further stated that approximately 60% or 3500 pipe supports, had already been modified. The response committed to completion of all repairs/modification by March 1, 1986. The response was reviewed and discussed with the licensee including the Design Engineering Vice-President. The licensee stated that special construction crews had been formed to facilitate completion of the pipe support repairs/modifications. A concerted effort had been exerted during the recent Unit 2 outage, and will be continued through the Unit 3 outage in August 1985 and the Unit 1 outage in early 1986. Of the original 5833 pipe supports requiring modification, the licensee stated that approximately 4200 had been completed to date. It was further reiterated that all operability concerns for the supports requiring repair had been previously resolved.

Pending licensee completion of IEB 79-02 and IEB 79-14 requirements, the Bulletins were left open.

No violations or deviations were identified.

6. Licensee Identified Items

a. (Closed) LER 82-94, Containment Spray Heat Exchanger Foundation, McGuire Unit 1

The preliminary LER dated November 8, 1982, reported that both trains of the Containment Spray System were inoperable due to improper welds on both heat exchanger supports. RII Inspection Report 50-369/82-42 documented an inspection regarding the subject LER and a review of the licensee's design calculations and conclusions. Subsequently, on November 19, 1982, the licensee submitted a final report on the subject LER. The final report concluded that the subject condition was not reportable since the structural integrity of the supports would not be compromised under design basis loadings conditions. However, the licensee also issued nonconforming item report numbers MC-526 and MC-568 documenting reinspections of additional supports, identification of additional discrepancies and subsequent design acceptance of the discrepancies as found.

Based on the above noted licensee action, the LER was closed.

- b. (Closed) CDR 369/80-38-03, Containment Vessel Dynamic Movements due to Postulated LOCA not Properly Considered in Criteria Analyzed Piping, McGuire Unit 1.

CDR 369/80-33-03 identified the original discrepancy on the above noted subject. In conjunction with the corrective action for CDR 369/80-33-03, the licensee identified a problem regarding consideration of the vessel LOCA movements in alternate piping analysis and submitted it as an additional item for CDR 369/80-33-03. RII Inspection Report 50-369/80-38 documented an inspection of licensee action regarding CDR 369/80-33-03. During the inspection, the NRC inspector was informed of the additional item and opened licensee identified item 369/80-38-03. However, the inspector misunderstood the discrepancy to be the lack of evaluation of the short term dynamic LOCA effects on the vessel rather than the effect of the vessel LOCA movement on alternate analyzed piping.

RII Inspection Report 50-369/81-25 inspected licensee action regarding CDR 369/80-33-03 and closed the subject CDR. RII Inspection Report 50-370/83-18 inspected the entire reported problem for Unit 2 and closed CDR 370/80-20-02. However, CDR 369/80-38-03 was not closed.

Licensee action regarding CDR 369/80-38-03 was inspected. The licensee submitted supplement 1 to the report on the subject discrepancy on January 9, 1981. The licensee issued Revision 9 to specification MCS-1206.02-04-0000, Alternate Analysis Criteria for DPC Piping Classification B, C, and F in the Reactor and Auxiliary Buildings. Paragraph 2.6.I of the specification requires that piping subjected to LOCA loads would have to be "rigorously" analyzed. The NRC inspector randomly selected originally "alternately" analyzed piping stress analysis problems NI-104-1, NI-104-2, NI-104-3, NI-105-1 (Safety Injection), NS 501, NS 502, NS 503, NS 504 (Containment Spray), NV 520 and NV 525 (Chemical and Volume Control). The inspector determined that the Safety Injection System stress problems selected were affected by vessel LOCA movements and were "rigorously" analyzed by the licensee as a result of the specification change.

Based on the licensee action noted above, the CDR was closed.

7. (Closed) Inspector Followup Item (IFI) 369/80-04-02, Concrete Expansion Anchor Safety Factors, McGuire Unit 1

The IFI noted that the licensee's concrete expansion anchor safety factors committed to on their August 20, 1979 response to IE Bulletin 79-02 did not meet the IEB 79-02 requirements. On May 21, 1982, the licensee revised its IEB 79-02 response and provided commitments for complying with IEB 79-02 safety factor requirements. URI 80-29-03 and IFI 80-38-02 identified concerns similar to IFI 80-04-02 and were closed by RII Inspection Reports 369/80-38 and 369/81-25, respectively. IEB 79-02 was closed for Unit 1 by RII Inspection Report 369/81-25.

Based on the above noted items, IFI 369/80-04-02 was closed.