



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

Report No. 50-287/79-13

Licensee: Duke Power Company
Post Office Box 33189
422 S. Church Street
Charlotte, North Carolina 28242

Facility Name: Oconee Nuclear Station, Unit 3

Docket No.: 50-287

License No.: DPR-55

Inspection at Oconee Nuclear Station near Seneca, South Carolina and at Duke
Corporate Office, Charlotte, North Carolina

Inspector: <u>W. P. Ang</u>	<u>6-19-1979</u>
W. P. Ang	Date Signed
Approved by: <u>A. R. Herdt</u>	<u>6-19-79</u>
A. R. Herdt, Section Chief, RC&ES Branch	Date Signed

SUMMARY

Inspection on May 31 - June 1, 1979 and June 6-8, 1979

Areas Inspected

This routine unannounced inspection involved 30 inspector-hours onsite and the Duke Power Company corporate office in the areas of concrete expansion anchor testing procedures, work activities and records.

Results

Of the areas inspected, no apparent items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

Licensee Employees

Oconee Nuclear Site

- *J. E. Smith, Plant Manager
- *J. M. Davis, Superintendent of Maintenance
- *D. M. Thompson, Mechanical Maintenance Engineer
- *L. V. Wilkie, Mechanical Maintenance
- B. W. Carney, Mechanical Maintenance

Other licensee employees contacted included 3 construction craftsmen.

NRC Resident Inspector

- *F. Jape

Duke Corporate Office

- **J. R. Wells, Corporate QA Manager
- **S. B. Hager, Chief Engineer, Civil Engineering Division
- **R. B. Priory, Principal Engineer, Civil Engineering Division
- **C. L. Ray, Design Engineer
- M. Cline, Technical Associate, Mechanical Nuclear Division

*Attended exit interview on June 1, 1979

**Attended exit interview on June 8, 1979

2. Exit Interview

The inspection scope and findings were summarized on June 1, 1979 at Oconee Nuclear Station and June 8, 1979, at the Duke Corporate Office with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Concrete Expansion Anchor Testing Procedures, Work Activities and Records

a. Testing Results (Site)

As a result of IE Bulletin No. 79-02, Duke Power Company (DPC), initiated an inspection and test program to identify and correct deficiencies found in concrete expansion anchors for safety related pipe supports.

DPC has issued the following procedures for the inspection and test program:

- (1) MP/O/A/3018/50 Change 0 - Pipe Support Surveillance
- (2) MP/O/A/3018/51 Change 0 - Self Drilling Anchor Testing on Pipe Supports

The pipe support surveillance procedure identifies and documents "as-built" information for all safety related pipe supports and their concrete expansion anchors. The self drilling anchor test procedure is being used for verifying, on a sampling basis, the anchor design strength and its proper installation.

b. Observation of Work Activities and Record Review (Site)

The "pipe support surveillance" had been started inside the containment building. Reports on 32 hangers were reviewed. Fifteen hangers were reported to be discrepant. The discrepancies noted ranged from no hanger detailed drawings, and not per plan configuration/dimensions, to smaller than plan required bolt installed and loose concrete anchors. Approximately 100 additional preliminary reports were also available but had not yet been reviewed by site engineers.

Twelve inspections and test of self drilling concrete expansion anchors have been performed. Four (4) inspections revealed insufficient bolt thread engagement; one inspection showed a loose anchor, one inspection showed concrete cracked around 3 of 12 concrete expansion anchors in a base plate, and 2 inspections showed a total of 4 bolts welded to the backside of baseplates and no anchor shells installed in the concrete. Four of the twelve bolts inspected and tested passed. An inspection of one of the installed baseplates that had a welded concrete expansion anchor bolt did not reveal any readily apparent reason for not installing an anchor sleeve. The baseplate installation with the concrete cracked around 3 bolts was also examined. The inspection and testing of hanger number RJ-48-1036 were observed.

c. Design Engineering Work Activities

DPC Design Engineers prepared work packages for the surveillance and testing of the concrete expansion anchors. The surveillance and testing is being performed by the site and the results are being sent to the Design Engineers for evaluation and preparation of any subsequent repair instructions that may be necessary. DPC's record keeping system was reviewed to assure that all concrete expansion anchors that need to be inspected and tested, are tested, results are evaluated, and any necessary repairs are accomplished.

The surveillance and test procedures were discussed with the Design Engineers. Several inspections regarding verification of proper installation of self drilling anchors are not required to be performed by the DPC procedures. These inspections are for embedment depth of

the anchor, inspection for enlargement of base plate bolt holes and inspection for full expansion of the anchor shell by measuring cone engagement. The licensee indicated that embedment depth and bolt hole enlargement was now being inspected for at the site. However, the licensee felt that inspection for full expansion of the anchor shell was not necessary since proper installation was being verified by a static pull test at a load equivalent to $\frac{1}{2}$ th the anchor ultimate capacity. An inspector follow-up item, 50-287/79-13-01, inspections required by Procedure for IE Bulletin 79-02, was opened on the above three items to assure that inspection for proper installation is accomplished.

The DPC approach for considering base plate flexibility was discussed with Design Engineers. The DPC approach to responding to IE Bulletin 79-02 questions regarding design requirements for cyclic loads was also discussed. DPC Design Engineers indicated that tests are being performed by an independent laboratory to verify their requirements for cyclic loads and to confirm their requirements on preloading concrete anchor bolts. However, DPC felt that the noted tests may not support the desired start-up date for Oconee Unit 3.

A few sleeve or wedge type anchors may be installed at Oconee Unit 3. DPC Design Engineers feel that if these require testing, procedures used by Catawba would be issued for Oconee. The Catawba procedure for testing sleeve and wedge type concrete anchors, Construction Procedure 115, Rev. 4 was reviewed.

No items of noncompliance or deviations were identified.