



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

Report Nos. 50-438/82-27 and 50-439/82-27

Licensee: Tennessee Valley Authority
 500A Chestnut Street
 Chattanooga, TN 37401

Facility Name: Bellefonte

Docket Nos. 50-438 and 50-439

License Nos. CPPR-122 and CPPR-123

Inspection at Bellefonte site near Scottsboro, Alabama

Inspector: J. R. Harris for 9-17-82
 J. R. Harris Date Signed

Approved by: T. E. Conlon 9-17-82
 T. E. Conlon, Section Chief Date Signed
 Engineering Inspection Branch
 Division of Engineering and Technical Programs

SUMMARY

Inspection on August 30 to September 3, 1982

Areas Inspected

This routine, unannounced inspection involved 30 inspector-hours on site in the areas of structural concrete and licensee action on previously identified items.

Results

Of the two areas inspected, no violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *W. R. Dahnke, Project Manager (Outgoing)
- *L. S. Cox, Project Manager (Incoming)
- *F. Gilbert, Construction Engineer
- *J. T. Barnes, QA Unit Supervisor
- *J. Olyniec, Supervisor, Civil Engineering Unit
- R. Norris, Assistant Supervisor, Civil Engineering Unit
- D. Norris, Civil Engineer, Civil Engineering Unit

Other licensee employees contacted included four construction craftsmen, three technicians, two security force members and three office personnel.

NRC Resident Inspector

*J. D. Wilcox

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 3, 1982, with those persons indicated in paragraph 1 above. The licensee acknowledged the inspection finding. The following item was opened:

Unresolved Item, 438, 439/82-27-01, Corrective Action on CDR 438/82-016 and CDR 439/81-023, Lack of Rebar at the Main Steam Flued Head.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 7.

5. Independent Inspection Effort (92706)

The inspector examined the following areas:

- a. Concrete batch plant

- b. Soils and concrete laboratory and currentness of calibration of laboratory equipment
- c. Specifications, drawings, and procedures for cement mortar lining of the essential raw cooling water pipelines
- d. Ongoing work operations in the cement mortar lining of the essential raw cooling water pipelines

6. Containment Structural Concrete (47054) - Unit 2

The inspector observed partial placement of wall pour number R2-10-13a in the Unit 2 secondary containment building. Acceptance criteria appear in the following documents:

- a. Section 3.8 and 17 of the SAR
- b. Specification G-2
- c. Procedures BNP-QCP 5.2, 5.3, 5.4, 5.11 and 5.12
- d. Drawing numbers 4RW0725-X1-1R8, 4RW0725-X1-2R7, 4RW0725-X1-3R3, 4RW0726-X1-1R7, 4RW0726-X1-2R9, 4RW0726-X1-3R3, 4RW0726-X1-4R4, and 4RW0726-X1-5R5

Forms were tight and clean. Rebar was properly installed and clean. Examination of the batch plant indicated proper mixes were being delivered and that materials were being controlled. Samples for temperature, slump, air content, unit weights, and strength met frequency requirements. Concrete placement activities pertaining to delivery time, free fall, flow distance, and consolidation conformed to procedure and specification requirements. Examination of the pour card indicated that required preplacement inspections were performed. Post placement inspection showed that proper curing controls were being maintained.

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

7. Licensee Identified Items (92700)

- a. (Closed) CDR 438/81-23 and CDR 439/81-36, Dimensionally Nonconforming Anchorage Material. This item was reported to NRC Region II on May 5, 1981. The licensee submitted interim reports on June 5, August 19, and November 13, 1981 and February 2 and April 13, 1982. The final report was submitted on July 22, 1982. As a result of a shophead/bushing failure during stressing at the Braidwood nuclear plant, the contractor for the Bellefonte post-tensioning system, INRYCO, Inc. checked the dimensions on unstressed anchorage materials at the project site. This dimension check disclosed that some of the anchorage material was oversized and some undersized. As a result of this problem, INRYCO performed a computer analysis which compared the pitch, and major and minor diameters of all bushings and field anchor heads which had not yet been stressed. This analysis gave the combination of anchor heads

and bushing which would result in anchorage components capable of withstanding 110% of the guaranteed ultimate tensile strength (GUTS) of the tendon per code requirements. The maximum stress imposed on the anchorage components, which occurs during stressing, is 80% GUTS. In order to evaluate the design capacity of the anchorage components which had been stressed prior to identification of this problem, INRYCO used a statistical analysis method (Monte Carlo simulation). The statistical analysis indicated that there is a 97% plus probability that these anchorage components were acceptable. The licensee documented the dimensionally nonconforming anchorage heads on 34 nonconformance reports (NRCs) which have been closed out. TVA has no other nuclear plants with a prestressed containment. This item is closed.

- b. (Open) CDR 438/82-016 and CDR 439/81-03, Lack of Rebar at the Main Steam Flued Head. This item was reported to NRC Region II on February 27, 1981. The licensee submitted interim reports dated March 31, June 3, August 31, and November 20, 1981 and March 11, 1982. The final report was submitted on August 5, 1982. While chipping concrete to disposition NCR 1308 the licensee discovered that some reinforcing steel was missing at the main steam flued head. The licensee has subsequently performed a detailed design analysis to correct this deficiency. Review of the final report and discussions with responsible engineers disclosed the following unresolved item.

The final report under the paragraph titled Corrective Action states that inspectors have been reinstructed to report installation conflicts between embedments and rebars to the construction engineering organization for coordinated modification with the design project organization.

Discussions with responsible engineers indicated that no instructions on this problem were given until May 1982 which is fifteen months after discovery of the problem. Also discussions with two QC inspectors who are currently inspecting reinforcing steel and embedment placement indicated they could not recall being instructed on reporting conflicts between embedments and rebars. Retraining 15 months after discovery of a problem does not appear to meet the requirement of Criterion XVI which indicates that prompt corrective action should be taken when nonconformances are discovered. Cause of this nonconformance and corrective action taken to correct the problem will be examined in further detail in future NRC inspections. Corrective action taken on this item was identified to the licensee as Unresolved Item 438, 439/82-27-01, "Corrective Action on CDR 438/82-016 and 439/81-023"

This item remains open.