



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

AUG 08 1984

Report Nos.: 50-390/84-51 and 50-391/84-40

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

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Dates: July 9-13, 1984

Inspection at Watts Bar site near Spring City, Tennessee

Inspector: *R. W. Wright*
R. W. Wright

8/2/84
Date Signed

Accompanying Personnel: M. F. Runyan

Approved by: *C. M. Upright*
C. M. Upright, Section Chief
Division of Reactor Safety

8/3/84
Date Signed

SUMMARY

Areas Inspected

This routine unannounced inspection involved 35 inspector-hours on site in the areas of licensee actions on previous inspection findings, QA inspection of civil (earthwork) activities, and review of the Engineering Change Notice (ECN) program.

Results

Of the three areas inspected, no violations or deviations were identified in two areas; one violation was found in the ECN area (Inadequate prior measures to assure ECN work was complete).

8412280176 841031
PDR ADDCK 05000390
G PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Wadewitz, Project Manager, WBNP
- *H. J. Fisher, Construction Engineer, WBNP
- *S. Johnson, Quality Manager, WBNP
- *A. W. Rodgers, Supervisor, QA Unit, Const. QAB
- *J. D. Slewski, QA Evaluator, Const. QAB
- *T. W. Hayes, Supervisor, Nuclear Licensing Unit, WBNP
- *R. C. Miles, Project Engineer, Project Managers Staff, WBNP
- W. S. Woodlee, Soils QC Inspector, WBNP
- D. E. Knight, Soils QC Inspector, WBNP
- J. M. Stiner, Concrete & Soils, QC Section Supervisor, WBNP
- J. E. Smith, Document Control, Unit A Supervisor, WBNP
- M. S. Johnson, Document Control, Unit B Supervisor, WBNP
- M. A. Wright, ECN Coordinator, Document Control, Unit B, WBNP
- R. B. Jones, III, Modifications & Additions, Unit A Supervisor, WBNP

Other licensee employees contacted included construction craftsmen, technicians, site engineers, QA/QC, and office personnel.

NRC Resident Inspectors

- *W. B. Swan
- *C. W. Caldwell
- W. Holland
- M. Shymlock

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on July 13, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the following findings:

Violation 390/84-51-01, 391/84-40-01: Prior measures to assure ECN work was complete, paragraph 6.

3. Licensee Action on Previous Enforcement Matters

(Closed) Violation 390/83-49-01 and 391/83-38-01: Failure to correct conditions adverse to quality in a timely manner. This matter is closed based on the corrective actions specified in the licensee's final report dated April 25, 1984, which were verified by the NRC inspectors during inspection 50-390/84-40 and 50-391/84-34 and based on the release of a TVA policy statement (OQA 840613005) issued by the Manager of Power which stresses the importance and responsibility attached to the issue.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. QA Inspection of Civil (Earthwork) Work Performance (35061B)

The Class 1 backfill compaction and testing activities in the Trench "B" area (an underground barrier designed to prevent potential soils liquefaction) immediately over the 24-inch trash sluice pipe that passes through Trench "B" were monitored by the inspector. This inspection was performed to determine whether site work is being performed in accordance with NRC requirements and SAR commitments, the QA/QC program is functioning in a manner to assure requirements and commitments are met, and that prompt and effective action is taken to achieve permanent corrective action on significant discrepancies.

a. The following acceptance criteria were examined to verify the inspection objectives:

(1) Drawing numbers 10N213-1-R1 and 10N213-2-R4, Underground Barriers for Potential Soil Liquefaction.

(2) QC Procedures

WBNP-QCP-2.01, R6, Earthfill and Backfill Placement, Inspection, and Documentation.

WBNP-QCP-2.06, R4, Granular Fill Placement, Inspection and Documentation.

(3) Specification G-9, R5, General Construction Specification for Rolled Earthfill for Dams and Power Plants.

The inspector reviewed the above listed acceptance criteria utilized for the subject earthwork operations to determine if the latest revisions were employed and in agreement with the SAR and to determine if these documents adequately describe critical points and methods of placement as well as inspection and hold points which properly reflect design intent.

b. Field Inspection

Select earthfill and granular fill materials were observed placed in 4-inch layers and compacted with rollers (Case 85 Vibromax Romag and Bomag BW 60) and wackers, respectively. In place field density (sand cone) testing of earthfill materials and Troxler nuclear surface moisture - density testing of granular fill materials placed at the toe of the pipe and the holding pond embankment were observed by the inspectors. The inspector observed the craftsmen at work and conducted discussions with randomly selected personnel and determined that their

knowledge of fill placement and compaction operations was adequate to provide the required quality of workmanship. The inspector also monitored the laboratory (one-point proctor) testing performed on the select earthfill material. Both compacted (earth and granular) fill materials were found to exceed their minimum specified compaction requirements of 95% standard proctor density with a moisture control of $\pm 3\%$ of optimum and 80% relative density, respectively.

c. Quality Control

The inspector reviewed the following inspection records associated with the subject fill placements to determine their adequacy, whether deficiencies submitted by inspection personnel received proper corrective action where applicable, and if work and work controls were adequate: fill compaction test (sand cone method), compaction test curves for borrow area 12, granular backfill compaction data (nuclear surface moisture-density gauge), and backfill daily reports.

The inspector reviewed the applicable QC inspection procedures (paragraph 5a.) to determine if the frequency, timing, and acceptance criteria for the inspection was adequate. The number of QC inspectors provided for the coverage of the subject fill placement was satisfactory. Discussions were conducted with randomly selected placement and testing inspectors to determine if their knowledge of the activities they were observed inspecting was adequate and to determine whether they felt their findings and concerns received proper management attention. The Region II inspector concluded that licensee management was attentive and responsive to inspector identified problems. The earthwork inspectors examined were knowledgeable of their inspection functions and acceptance criteria and were proficient in the performance of their assigned tasks.

Examination of the subject inspector's training, qualifications, and certification records revealed that their personnel were well qualified in the duties they performed.

d. Nonconforming Item Reports

The inspector reviewed selected reports of earthwork construction discrepancies that have occurred during work activities to verify that the corrective action accomplished the following:

- *Corrected the items
- *Determined the cause of the deficiency
- *Considered reportability to NRC
- *Instituted effective action to prevent recurrence

Nonconformance reports reviewed included the following: NCR Nos. 5131 RO, 5257 RO, 5659 RO, and 5668 RO.

e. Materials and Equipment

The inspector examined the below listed field and laboratory testing equipment observed used during the subject fill placement. This equipment was checked for both current calibration stickers and proper calibration records to support those stickers.

| | |
|---------------------------------|------------|
| Cone Volume (Jug #1 & Plate #1) | ID WB/CV-1 |
| Penetrometer | ID WB/PE-2 |
| Laboratory Scales | ID 326858 |
| | ID WB/DB-1 |
| Moisture Teller #2 | ID WB/MT-2 |
| Proctor Mold | ID WB/M-2 |
| 5.5 lb. Hammer | ID WB/CH-1 |
| Troxler Model 3411-B | ID WB/NG-2 |

The inspector verified that the fill materials used met specification requirements.

f. QA Surveillances

The inspector reviewed the following QA Surveillance reports which were performed on various phases of earthwork operations: Report Nos. CO3S840141-C00, 107S18400122-00, 107S18400123-00, and 107S18400104-00.

The above surveillances were examined to determine if they were meaningful, effective, reflect quality performance, and whether corrective actions taken as a result of surveillance findings were proper, timely, and complete.

Within the earthwork activities area examined, no violations or deviations were identified.

6. Review of the Engineering Change Notice Program (ECN) (35100B)

The inspector examined Rev. 0 through Rev. 7 of procedure WBNP-QCI-1.09, Disposition of Engineering Change Notices to determine the evolution of change controls that have occurred in the subject procedure. As with all procedures at WBNP, the status and adequacy of the subject ECN procedure were routinely reviewed and revised by the licensee to enhance its controls and reflect the current mode of doing business. Review of the subject ECN procedure disclosed no problems with Rev. 5 through the current Rev. 7. However, the inspector concluded that the measures established prior to Rev. 5 were inadequate to verify that ECN work accomplished under their direction was satisfactorily complete for all work disciplines. During the interim periods that Rev. 0 through Rev. 4 controlled, these measures did not require all responsible engineering units and modification and addition units to sign the ECN completion sheet in the possession of the ECN coordinator (even if they had no work involvement); consequently, some ECNs were prematurely closed by the ECN coordinator for which work still remained to be accomplished. The inspector identified formerly closed ECNs

2247, 1808, 1680, and 2813 all of which have to be reopened to fully complete the original scope of work as examples of this problem. Discussions with the present ECN coordinator revealed that all current open ECNs (including those initiated prior to Rev. 5) posed no problem in that they will be closed in accordance with the requirements of Rev. 7.

At the exit interview, this discrepancy was identified as Violation 390/84-51-01, 391/84-40-01; Inadequate Prior Measures to Assure ECN Work Was Complete. The inspector raised the following concerns which should be answered to resolve this violation:

- ° The status of all other closed ECNs to date. Have any of these been prematurely closed also?
- ° Assurance that all design changes initiated by EN DES have been properly completed at WBNP.
- ° Does TVA's "as-constructed" drawing program, when using the accountability program for verification of work done, use the completed ECN as the sole verification or is there other data in that program that can ascertain that the work required by the ECN was completed?