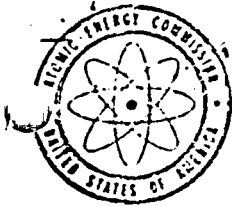


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UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION II - SUITE 818
230 PEACHTREE STREET, NORTHWEST
ATLANTA, GEORGIA 30303

TELEPHONE: (404) 826-4503

In Reply Refer To:
RO:II:VLB
50-390/74-7
50-391/74-7

JAN 6 1975

Tennessee Valley Authority
ATTN: Mr. J. E. Watson
Manager of Power
818 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Messrs. V. L. Brownlee and N. Economos of this office on December 4-5 and December 10-13, 1974, of activities authorized by AEC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar Nuclear Plants, Units 1 and 2 facilities, and to the discussion of our findings held by Messrs. Brownlee and Economos with Messrs. J. C. Killian and T. B. Northern at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations were disclosed.

Three new unresolved items resulted from this inspection and are identified in Section III of the summary of the enclosed report. These items will be examined during subsequent inspections.

In accordance with Section 2.790 of the AEC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the AEC's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office requesting that such information be withheld from public disclosure. If no proprietary information is identified, a written statement to that effect should be submitted. If an application is submitted, it must fully identify the bases for which information is claimed to be proprietary. The application should be prepared so that information sought to be withheld is incorporated in a separate paper

JAN 6 1975

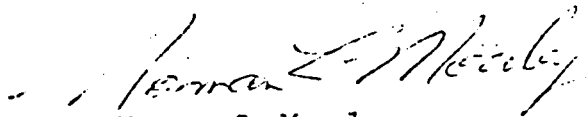
Tennessee Valley Authority

-2-

and referenced in the application since the application will be placed in the Public Document Room. Your application, or written statement, should be submitted to us within 20 days. If we are not contacted as specified, the enclosed report and this letter may then be placed in the Public Document Room.

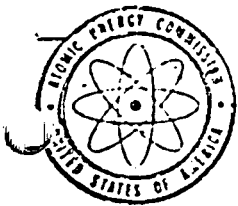
Should you have any questions concerning this letter, we will be glad to discuss them with you.

Very truly yours,


Norman C. Moseley
Director

Enclosure:

RO Inspection Report Nos.
50-390/74-7 and 50-391/74-7



UNITED STATES
ATOMIC ENERGY COMMISSION
DIRECTORATE OF REGULATORY OPERATIONS
REGION II - SUITE 818
230 PEACHTREE STREET, NORTHWEST
ATLANTA, GEORGIA 30303

TELEPHONE: 14041 828-4503

RO Inspection Report Nos. 50-390/74-7 and 50-391/74-7

Licensee: Tennessee Valley Authority
818 Power Building
Chattanooga, Tennessee 37401

Facility Name: Watts Bar Nuclear Plant Units 1 and 2
Docket Nos.: 50-390 and 50-391
License Nos.: CPPR-91 and CPPR-92
Category: A2/A2

Location: Spring City, Tennessee

Type of License: W PWR, 1160 Mwe

Type of Inspection: Routine, Unannounced

Dates of Inspection: December 4-5, 1974
December 10-13, 1974

Dates of Previous Inspection: November 19-22, 1974

Inspectors-in-Charge: V. L. Brownlee, Reactor Inspector
Facilities Section, Facilities Construction Branch
(December 4-5, 1974)

N. Economos, Metallurgical Engineer
Engineering Section, Facilities Construction Branch
(December 10-13, 1974)

Accompanying Inspectors: None

Other Accompanying Personnel: C. E. Murphy, Chief
Facilities Construction Branch
(December 4-5, 1974)

Principal Inspector: *J. C. Bryant*
V. L. Brownlee, Reactor Inspector, Facilities
Section, Facilities Construction Branch

1/2/75
Date

Reviewed by: *J. C. Bryant*
J. C. Bryant, Senior Inspector, Facilities Section
Facilities Construction Branch

1/2/75
Date

SUMMARY OF FINDINGS

I. Enforcement Action

A. Violations

None

B. Safety Items

None

II. Licensee Action on Previously Identified Enforcement Matters

A. Violations

74-6-A1-(II) Procedures (Unit 1)

The containment vessel erector had started on-site work and there was no TVA approved procedure for surveillance of field erection of containment vessels or of the contractor's QA program. This item remains open.

B. Safety Items

None

III. New Unresolved Items

74-7/1 Weld Material Control

TVA will evaluate the CB&I practice of issuing low hydrogen electrodes for a time period of one shift (approximately 10 hours). (Details II, paragraph 2)

74-7/2 TVA Surveillance Procedure (DEC-QCP-4.6 Rev. 0)

The section dealing with instrument calibration will be revised to establish more clearly the criteria under which TVA will request calibration. (Details I, paragraph 3)

74-7/3 Stop Work Authority

The CB&I QA Manual does not provide field QC (Welding Supervisors) with stop work authority. TVA has agreed to pursue this matter with CB&I. (Details I, paragraph 4)

IV. Status of Previously Reported Unresolved Items

74-4/1 Malfunction of Safety Related Switches (RO Bulletin 74-6)

TVA submitted letters of response dated July 3 and September 18, 1974, identifying their proposed corrective actions and plans. Region II will confirm implementation during subsequent inspections. This item remains open.

74-5/1 Valve Wall Thickness Verification Program

TVA (DED) will submit a valve wall thickness program that meets Region II letters of June 30, 1972, and February 16, 1973. This item remains open.

74-6/1 Letter and Analysis Report on Concrete Pour Collapse at Control Building (10 CFR 50.55(e))

TVA has submitted an interim report, December 6, 1974. The final report will be submitted by January 15, 1975. This item remains open.

V. Design Changes

None

VI. Unusual Occurrences

None

VII. Other Significant Findings

None

VIII. Management Interview

Inspection of December 4-5, 1974: The inspector met with Mr. T. B. Northern, Construction Engineer, and other members of the site staff. The new unresolved item (74-7/1) listed in Section III above was discussed in detail. Other subjects discussed, for which no corrective action was required, included: CB&I on-site organizational/functional alignment and site control of electrical equipment and material relative to receipt, storage, inspection, and records.

Inspection of December 10-13, 1974: The inspector met with Mr. J. C. Killian, Project Manager, and members of his staff. The two new unresolved items (74-7/2 and 3) listed in Section III above were discussed in detail. Other subjects discussed, for which no corrective action was required, included: Receipt and inspection of RPV for Unit 1, review of QC documents for the RPV, and review of CB&I's QA Manual with respect to construction.

DETAILS I

Prepared by:

Nick Economos
N. Economos, Metallurgical Engineer
Engineering Section
Facilities Construction Branch

Jan 31, 74
Date

Date of Inspection: December 10-13, 1974

Reviewed by:

L. L. Beratan
L. L. Beratan, Senior Inspector
Engineering Section
Facilities Construction Branch

12-31-74
Date

All information in Details I applies equally to Units 1 and 2 except where identified with a specific reactor.

1. Individuals Contacted

Tennessee Valley Authority (TVA)

J. C. Killian - Project Manager
T. B. Northern Jr. - Construction Engineer
J. M. Lamb - Supervisor, Mechanical Engineering Unit
L. C. Northard - DEC Site QA

2. Reactor Pressure Vessel - Unit No. 1

a. Receipt and Storage QC Records

The reactor pressure vessel (RPV) and head for Watts Bar Unit 1 were unloaded from the shipping barge and set in temporary storage on December 9, 1974. The work was performed using field construction procedure FG-4, which contains provisions for lifting and transporting of major equipment. A check list system was used to provide specific instructions for the handling and lifting of the equipment. A review disclosed that the appropriate lists had been completed and verified by the cognizant TVA engineer. The lift was performed with a Manitowoc liftcrane rated at 600 tons. The crane had been tested successfully prior to the lift. Also the inspector reviewed results of soil compaction tests performed on the storage areas. Other QC records reviewed included receipt inspections for the vessel, closure head, studs, nuts and washers.

The atmosphere inside the vessel will be monitored through a colormetric device which registers changes in color with changes in moisture conditions inside the vessel. TVA will maintain surveillance and if needed will make the necessary adjustments to provide for a proper atmosphere while the vessel is in storage. No deficiencies were identified.

b. QC Record Review

The documents which accompanied the vessel to the site include (1) TVA's QC checklist and shipping release. This contains line item sign-offs for material quality certification, heat treat records, nondestructive examination, repair records, weld procedure, personnel qualifications. Document certification was provided by Lloyd's Register Industrial Services. (2) The manufacturer's, The Rotterdam Dockyard Company, QC release and data report, on form No. N-1 dated October 16, 1974. (3) Westinghouse W Q release No. 00308 which was signed by the W senior QA engineer and TVA's material engineer. Section III of the ASME Code including the 1971 winter addenda is applicable to vessel fabrication requirements. There were no questions.

3. Review of QC System - Containment Welding

Division 4 of the CBI, quality assurance manual contains those quality control procedures used for the fabrication, inspection and testing of field welds in the liner and containment vessel. Certain sections within this division contain measures for material receiving inspection, process control, welding material control, welding procedure and personnel qualifications and, a description of the off-site and on-site CBI organizational structure. Special supplements added to the manual, for this site only, include provisions for increased weld electrode control, preheat and interpass temperature requirements, and reports of major repairs to TVA. Within these areas the review disclosed that the Manual did not provide on-site QA with specific work stop authority. Neither the licensee or CBI could verify that such a provision was contained in the QA manual. The licensee and CBI agreed to pursue the question with their respective organizations and report to RO at a later date. The inspector stated that this matter would be identified as an unresolved item.

4. TVA, QA Surveillance of Liner and Containment Welding

The licensee's procedure, DEC-QCP-4.6 Rev. 0, contains provisions for QA surveillance of field erection of the containment vessel and the contractors QA program. Under requirements of this procedure TVA is maintaining an up-to-date record of daily surveillance activities. The inspector's review of these records and procedure disclosed that paragraph 6.3.4 (Calibration), of the aforementioned surveillance procedure, contained certain ambiguous statements as evidenced by the following; calibration will be performed when desirable. The inspector stated that in its present form, the criteria under which TVA would require instrument calibration had not been defined and therefore it could not be determined how often calibration would be performed, what guidelines would be used to establish the need for calibration and who had the authority to request instrument calibration.

The licensee agreed to review and remove these ambiguities. TVA was advised that this would be treated as an unresolved item.

5. QC Record Review

For complete and partially completed field welds the inspector reviewed weld history records which provided line item sign-offs for weld joint and welder identification, fit-up and completed weld inspections. Also the records contained spaces for signing-off of nondestructive examinations and testing. None of the welds had reached this stage of fabrication at the time of this inspection.

In addition the inspector reviewed quality certifications and receipt inspection reports of steel plate material and weld electrodes. Within the area of field nonconformances the inspector selected one, generated for piece number mk. 27-21. In this case the steel plate had been incorrectly flame-cut during the fit-up operation. The inspector noted that the plate had been put on hold.

Welding on the liner began during the week of November 18 and was 65% complete at the time of this inspection.

6. Observation of Welding Performance

For weld joints where welding was completed and for others in progress, the inspector verified weld number, location, weld procedure application, welder's qualification, weld electrode type and size, preheat, line current, metal transfer characteristics and bead profile. No deficiencies were identified.

7. Weld Electrode Storage and Distribution

As stated previously CBI's quality assurance manual under section 8 of Division 4 "Construction," contains provisions for weld rod control including receipt inspection, quality certifications, pre-issue storage requirements, issue control, disposition of issued but unused material. Also pursuant to TVA imposed supplemental requirements, CBI is maintaining a daily log of material issued to each welder, daily oven temperature checks and restricted access to the issuing station. Also CBI was maintaining three ovens close to the work area for storage of issued electrodes. In this manner they are minimizing the quantity of electrodes in each welder's pouch while at work.

In reference to the question regarding the quantity of electrodes issued to welders mentioned in Details II paragraph 2 of this report the licensee indicated that the matter was being reviewed with CBI; the status of this item has not changed. No deficiencies were identified.

DETAILS II

Prepared by: *V. L. Brownlee*
V. L. Brownlee, Reactor Inspector
Facilities Section
Facilities Construction Branch

12/20/74
Date

Dates of Inspection: December 4-5, 1974

Received by: *J. G. Bryant*
J. G. Bryant, Senior Inspector
Facilities Section
Facilities Construction Branch

12/24/74
Date

All information in Details I applies equally to Units 1 and 2 except where information is identified with a specific reactor.

1. Individuals Contacted

a. Tennessee Valley Authority (TVA)

T. B. Northern - Construction Engineer
J. M. Lamb - Mechanical Engineering Unit Supervisor
L. J. Johnson - Mechanical Engineer
J. A. Morgan - Mechanical Engineer, Welding and NDE
R. L. Heatherly - QC and Records Supervisor
A. R. White - General Construction Superintendent
J. H. Perdue - Supervisor, Electrical Engineer
T. W. Hayes - Electrical Engineer
H. C. Richardson - Assistant Construction Engineer
S. Johnson - Principal Mechanical Engineer
B. L. Majors - Construction Engineer, Mechanical
C. E. Thompson - QA Engineer
A. W. Rogers - QA Engineer
T. B. Bucy - Office Engineer, Civil

b. Contractor Organizations

Chicago Bridge and Iron Company (CB&I)

G. R. Holloway - Assistant Welding QA Manager
M. L. Gilmore - Field Foreman
B. Roby - Site QA Engineer
G. L. Blanchard - Welding Supervisor
T. C. Thompson - Welding Supervisor

2. Reactor Building Steel Containment Vessels

Discussions with CB&I QA/QC and field production personnel verify that the field organizational/functional alignment is as described in the CB&I QA manual. The inspector examined procurement, storage, issue and control of welding materials; welder qualification records; and physical liner erection activities within the reactor cavity. One area of concern was generated regarding the CB&I QAM, Division 4, Section 8.0 which permits the issue of low hydrogen electrodes for a one shift (approximately 10 hours) time period. TVA was asked to evaluate this practice in light of their own weld material control procedure (DEC-QCP-4.1, Rev. 0, 1/11/74) which permits issue of low hydrogen electrodes for a maximum of 4 hours and with manufacturer recommended practices. Nothorn stated that he would generate an inquiry to engineering for evaluation and resolution of this matter.

3. Electrical - Implementation of QA Program

Discussions with TVA on-site electrical engineers; examination of the controlled and open storage facilities; followup of equipment tagging, equipment and record traceability, control of nonconforming material and equipment; and examination of field QC records and contract files identified no departures from the field QA/QC program and procedures.