UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 818
ATLANTA, GEORGIA 30303

OCT 6 1976

In Reply Refer To:
IE:II:VLB
50-390/76-8
50-391/76-8

Tennessee Valley Authority
Attn: Mr. Godwin Williams, Jr.
Manager of Power
830 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Mr. W. B. Swan of this office on August 10-13, 1976, of activities authorized by NRC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar Nuclear Plant, Units 1 and 2 facilities, and to the discussion of our findings held with Mr. J. C. Killian 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 items of noncompliance were disclosed.

We have examined actions you have taken with regard to previously reported unresolved items. These are identified in Section IV of the summary of the enclosed report.

Two 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 NRC'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 NRC'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 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,

C. E. Murphy, Chief
Reactor Construction and
Engineering Support Branch

Enclosure:
IE Inspection Report Nos.
50-390/76-8 and 50-391/76-8

cc w/encl: Mr. J. E. Gilleland
Assistant Manager
of Power

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IE Inspection Report Nos. 50-390/76-8 and 50-391/76-8

Licensee: Tennessee Valley Authority
830 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, Construction

Dates of Inspection: August 10-13, 1976

Dates of Previous Inspection: July 7-9, 1976

Inspector-in-Charge: W. B. Swan, Reactor Inspector
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

Accompanying Inspector: None

Other Accompanying Personnel: R. W. Wright, Reactor Inspector
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

T. E. Conlon, Chief
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

Principal Inspector: V. L. Brownlee _____ Date
V. L. Brownlee, Reactor Inspector
Projects Section
Reactor Construction and Engineering
Support Branch

Reviewed by: _____ Date
J. C. Bryant, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

SUMMARY OF FINDINGS

I. Enforcement Items

None

II. Licensee Action on Previously Identified Enforcement Matters

76-4-A1(II) QA Program Breakdown - Documentation of Radiographs and Weld History (Units 1 and 2)

TVA's program procedure for field surveillance failed to identify CB&I's lack of implementation of established procedures. This item remains open.

III. New Unresolved Items

The following items are listed for purpose of followup.

76-8/1 IE Circular 76-01, "Crane Hoist Control Circuit Modification" (Units 1 and 2)

IE:II letter to TVA dated July 29, 1976. TVA's report should be submitted within 90 days.

76-8/2 IE Circular 76-02, "Relay Failures - Westinghouse BF(ac) and BFD(dc) Relays" (Units 1 and 2)

IE:II letter to TVA dated August 18, 1976. TVA's report should be submitted within 90 days.

IV. Status of Previously Reported Unresolved Items

74-5/1 Valve Wall Thickness Verification Program (Units 1 and 2)

TVA informed IE:II personnel of preliminary plans relative to the valve wall thickness program. TVA will submit a formal valve wall thickness program that meets Region II letters of June 30, 1972 and February 16, 1973. This items remains open.

76-2/1 Instrumentation Procedures (Units 1 and 2)

The Instrumentation Engineering Unit is being manned and instrumentation procedure requirements are being generated for incorporation into QC procedures. This item remains open.

76-4/1 QA Program Breakdown - Documentation of Radiographs and Weld History Records (10 CFR 50.55(e))(Units 1 and 2)

TVA informed Region II of the QA program breakdown problem and reported it as a 50.55(e) item. Site investigative work is complete. Final report effort continues. This item remains open.

76-5/2 Documentation of Fabrication for Structural Steel Reactor Coolant System Supports (10 CFR 50.55(e))

TVA's final report was submitted on June 30, 1976. The report was reviewed by IE:II and found to be acceptable. Some hardware has been received and is being installed. This item is closed. (Details I, paragraph 3)

76-6/1 GE HFA Relays - Cracked Coil Spools (10 CFR 50.55(e)) (Units 1 and 2)

TVA informed IE:II that several relay coil spools have been found to be cracked and broken. TVA has identified this item to be reportable (10 CFR 50.55(e)). This item remains open. IE:II has received the first iterim report.

76-7/1 Separation of Containment Bottom Liner Plate Fill Slab from the Containment Base Slab (Unit 1)

The licensee's corrective measures are deemed adequate. This item is closed. (Details I, paragraph 4)

76-7/2 Status of CB&I Welding Supervisor Qualifications (Units 1 and 2)

The training and qualification requirements and certifications for CB&I welding supervisors who conduct quality related inspections are maintained in the CB&I home office and have not been forwarded to the site. The question as to what are the training and qualification requirements and what is the qualification status of welding supervisors working at the site is considered to be an unresolved item. This item remains open.

V. Design Changes

None

VI. Unusual Occurrences

None

VII. Other Significant Findings

None

VIII. Management Interview

The exit interview was held on August 13, 1976, with Mr. J. C. Killian, Project Manager, members of his staff, and QA representative of DED, DEC and OEDC. They were apprised of the findings of this inspection as noted in this report.

DETAILS I Prepared by: E. Wallick for 9-30-76

W. B. Swan, Reactor Inspector Date
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

Dates of Inspection: August 10-13, 1976

Reviewed by: T. E. Conlon 9/28/76

T. E. Conlon, Chief Date
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

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

1. Individuals Contacted

a. Tennessee Valley Authority (TVA)

Site

J. C. Killian - Project Manager
T. B. Northern, Jr. - Construction Engineer
A. R. White - General Construction Superintendent
R. L. Heatherly - Supervisor, QC and Records Unit
A. W. Rogers - Supervisor, Site QA Unit, DEC QA Staff
R. L. Young - QA Engineer, DEC QA Staff
J. A. Nicholls - Civil Engineer

b. Contractor Organizations

Westinghouse Electric Company (W)

C. Pase - A welding specialist employee of Babcock and Wilcox Company engaged by Rotterdam Shipbuilding and Drydock Company and assigned to W as consultant on RV head modification.

2. Scope of Inspection

The inspection effort detailed below involved: follow on inspection of Category I concrete in the R.V. containment, diesel generator building and intake pumping station; follow on inspection of welding CRDM's to the reactor vessel head; inspection of installation of supports

for the reactor vessel, steam generators and reactor coolant pumps; and clearance of two previously unresolved items.

3. Previously Unresolved Item 76-5/2 Documentation of Fabrication For Structural Steel Reactor Coolant System Supports (10 CFR 50.55(e))

The licensee's final report on this matter had been received. Some support hardware manufactured by Bristol Steel and Ironworks is being installed and a schedule has been issued for delivering of the rest of the supports. This item is closed.

4. Previously unresolved Item 76-7/2 - Separation of Containment Botton Liner Plate Fill Slab from the Containment Base Slab (Unit 1)

The licensee determined that the defect was not of safety significance and therefore not reportable under 10 CFR 50.55(e). The inspector reviewed the provisions made to pressure grout individual separations and found them adequate. This item is closed.

5. Containment (Steel Structures and Supports) - Review of Quality Assurance Implementing Procedures for Supports to Reactor Vessel, Steam Generators and Reactor Coolant Pumps

The acceptance criteria for these supports are contained in W manual and drawings, ASME Section III, Division I and TVA's QAM implementing Section III.

Quality Control for the receipt, storage, installation and documentation is governed by Field Instruction WB-F1-M-11, and WBNP-QCP-1.6.

During this follow on inspection it was determined that the procedures are up to date and adequate for the work underway.

6. Containment - (Steel Structures and Supports) - Observation of Work and Work Activities for Installation of Supports for Reactor Vessel, Steam Generators and Reactor Coolant Pumps

During this follow on inspection the status of installation of these supports was found to be as follows:

a. RV Supports: In Unit 1 the large embedded support anchors had been fabricated and installed by TVA. The large partly embedded support sections supplied by Bristol were being installed and aligned. In Unit 2 the RV support anchor was positioned prior to placement of concrete in the reactor shield wall.

b. Steam Generator Supports: In Unit 1 the floor level support hardware was being positioned over the embedded bolts prior to grouting. The bolts of the embedded support anchor in Unit 2 are awaiting placement of the upper hardware.

c. Reactor Coolant Pump Supports: In Unit 1 the floor level support hardware was being positioned over the embedded bolts. In Unit 2 placement of the floor level plates over the embedded support anchor had not been started.

Acceptance criteria in the W manual was implemented by W, Bristol Steel & Iron (BST) and TVA drawings, and by TVA QAM manual for ASME Section III hardware. Dimensional control of embedded hardware was verified by the civil engineering survey parties. The upper plate sections are being installed and positioned under the surveillance of the mechanical engineering unit using Field Instruction FI-M-11.

Within the areas examined, there were no items of noncompliances identified.

7. Containment (Steel Structures and Supports) - Review of Quality Records for Supports to Steam Generators, Reactor Vessel, and Reactor Coolant Pumps

The acceptance criteria for records set forth in the PSAR, Appendix B and in the W and TVA QA manuals are implemented in detail by TVA and BSI drawings and by the documentation requirements of field instruction FI-M-11.

During this inspection, the receiving inspection reports for hardware supplied by BSI were examined. The records included copies of shop release certifications stating that all shop test and inspection requirements had been met.

Discussions were held with the field civil engineers concerning records for embedded portions of the supports. No survey field notes are kept except where field conditions force deviations from the dimensions shown on the drawings. Such changes are noted on working drawings and are to be shown on the as built drawings. Records being generated by the mechanical engineers in accord with FI-M-11 were not yet available for inspection.

Within the areas examined, there were no items of noncompliance identified.

8. Safety Related Components Observation of Work and Work Activities Assembly and Installation of RPV Head and Control Rod Drive Mechanisms

A follow on inspection was made of CRDM installations on the RV heads for Units 1 and 2.

Acceptance criteria for this work are set forth in the W project manual and drawings and in ASME Section III, Division I and the implementing OEDC QAM.

Quality Control and documentation are guided by procedures WBND-QCP 4.12 RI and -4.53R3. The ASME authorized inspector participates in various inspections and tests and signs off on predetermined hold points.

A consultant from B&W was on site with a special designed welding and machining tool which will be used to remove and restore a seal weld lip on a riser on the head of Unit 1. He was engaged in training the TVA employees who will be doing this work. These activities were observed.

The completed seal weld on each CRDM is pressure tested with water. W has asked that the term "hydrostatic test" not be used for these individual test to avoid confusion with the final system hydrostatic test. A minor leak was detected on the seal weld of the CRDM at grid location P-10 on the Unit 2 head. The weld was repaired using repair procedure GT-58-C-1 and the weld was accepted after retest.

Within the areas examined, there were no items of noncompliance identified.

9. Safety Related Components Review of Quality Records: Assembly and Installation of RPV Head and Control Rod Drive Mechanisms

Recordkeeping criteria are stipulated in the W manual and in Section III, Division I of the ASME Code. Provision for implementation is provided by extensive record forms and check lists appended to WBNP-QCP-4.12 R1.

This inspection was a second follow on inspection of the work and QC records for the CRDM installations. W, the authorized ASME inspector and TVA mechanical engineers and inspectors have been closely following the work and documentation. The field weld operations sheet MlQP No. 1-85-F-1-31 requires 16 signoffs for each weld.

The documents generated during the installation work are kept in an interim fire proof file in the office of the mechanical engineering supervisor. Records for 38 seal welds on the Unit 2 RV head had been completed and were reviewed.

TVA is performing pressure testing and PT of the seal welds. The data was available for review and was examined.

Within the areas examined, there were no items of noncompliances identified.

10. Independent (Non-scheduled) Inspection Effort

A follow on inspection was made of the Category I concrete program in three structures: the 757 foot elevation floor in RB1; the roof of the diesel generator building; and the intake pumping station walls.

No concrete was placed in these areas during the inspection. Extensive forming for placements had previously been done but the work crews were diverted to other areas. A recently completed wall placement in the intake pumping station was visually inspected. Earth fill and compaction at the rear of the pumping station was observed. Several visual inspections were made of forming and placement of embedments in the RB floor. The licensee was questioned about the concrete mixes and placement techniques to be used since unusually crowded rebar and embedments are involved. The licensee

stated that these matters had been resolved with design engineering. Difficulties in the precision placement of the embedments for the upper steam generator supports delayed placement of concrete in this area. Criteria for concrete and earth compaction are spelled out in the PSAR Category 1 structures

Requirements as set forth in TVA General Construction Procedure G-2, WPNP-QCP-2.2, entitled "Concrete Placement and Documentation" are documented by construction drawing details and notes. The drawings for the RB floor and the intake pumping station intake channel were rechecked for details.

Excavation for the channel between the intake pumping station is underway. The inspector observed the work and noted that the dewatering contractor, Moretrench America Corporation, who began pumping on July 20, 1976, has lowered the water table sufficiently to keep the excavation dry except for occassional ponding from heavy rainfall.

Within the areas examined, there were no items of noncompliance identified.