



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
230 PEACHTREE STREET, N.W. SUITE 1217  
ATLANTA, GEORGIA 30303

*Central file*  
50-390  
391

OCT 6 1977

In Reply Refer To:

RII:VLB

50-390/77-13

50-391/77-13

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. V. L. Brownlee of this office on September 6-9, 1977, of activities authorized by NRC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar Nuclear Plant, Unit 1 and 2 facilities, and to the discussion of our findings held with Mr. T. B. Northern, Jr. 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 examinations 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 identified inspection findings. These are discussed in the enclosed inspection report.

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 (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is

contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will 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:

RII Inspection Report Nos.  
50-390/77-13 and 50-391/77-13

cc: J. E. Gilleland  
Assistant Manager of Power  
830 Power Building  
Chattanooga, Tennessee 37401

T. B. Northern, Jr.  
Project Manager  
Watts Bar Nuclear Plant  
P. O. Box 2000  
Spring City, Tennessee 37381

Stan Duhan  
400 Commerce Street  
E4D112  
Knoxville, Tennessee 37902



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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230 PEACHTREE STREET, N.W. SUITE 1217  
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Report Nos.: 50-390/77-13 and 50-391/77-13

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Categories: A2, A2

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

Facility-Name: Watts Bar Nuclear Plant, Units 1 and 2

Inspection at: Watts Bar Dam, Tennessee

Inspection conducted: September 6-9, 1977

Inspectors: V. L. Brownlee  
T. D. Gibbons  
R. D. Davis (Inspector Trainee)

Reviewed by:

*J. C. Bryant*  
J. C. Bryant, Chief

Projects Section

Reactor Construction and Engineering Support Branch

*10/2/77*  
Date

Inspection Summary

Inspection on September 6-9, 1977 (Report Nos. 50-390/77-13 and 50-390/77-13)

Areas Inspected: Licensee action on previously identified unresolved items; design control; electrical components and systems; raceway in spreading room; fire protection; containment overpressure and leak rate tests.

Results: No items of noncompliance were identified.

DETAILS I

Prepared by:

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

10/5/77  
Date

Dates of Inspection: September 6-9, 1977

Reviewed by:

J. C. Bryant, Chief  
J. C. Bryant, Chief  
Projects Section  
Reactor Construction and Engineering  
Support Branch

10/5/77  
Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

\*T. B. Northern, Project Manager  
\*A. W. Rogers, Supervisor, QA Unit  
\*R. L. Heatherly, Supervisor, QC&R Unit  
J. R. Fifrick, QA Unit  
\*J. S. Colley, ENDES QEB  
\*J. H. Purdue, Supervisor, Electrical Engineering Unit  
\*R. D. Anderson, Electrical Engineer  
\*T. W. Hayes, Supervisor, Instrumentation Engineering Unit  
J. W. Ferguson, Mechanical Engineer

The inspector also talked with 14 other licensee employees including members of the engineering units, welders, QA personnel, QC inspectors, QC and Records Room personnel.

\*Denotes those attending the exit interview.

2. Licensee Actions on Previous Inspection Findings

- a. (Closed) Unresolved Item (390/77-4U2): Safety Injection Pump Motor 1A: TVA submitted the Final Construction Deficiency Report on August 26, 1977. The report was reviewed and found to be acceptable to RII. The inspector verified that the corrective actions as stated in the report were completed. RII has no further questions regarding this matter.
- b. (Closed) Infractions (390/77-77-7N1 and 391/77-7N1): Failure to Follow Welding Material Control Procedures: RII has evaluated TVA's letter of response dated August 8, 1977, and concurs

with the exception to the proper stating of the details of the infraction. Paragraph 4.a of Details I, under weld No. 1-062A-DO22-09, should have read as follows:

During observation of this weld, the inspector noted that the welder's filler material (1/16" and 3/32" ER 308) was not identified with a flag tag. For each piece of bare wire, the welder had snipped off the end carrying the flag tag identification. The removed tags were retained at the weld area and the welder was in possession of a properly executed weld material requisition. Although material identification was not lost, this practice is considered to be in nonconformance with TVA specification 1.M.3.1(e), "Specification for Welding Material Control," paragraph 3.2, which requires that "After welding materials have been removed from container or packages, they shall be identifiable by type until consumed." This finding represents noncompliance . . . ."

The corrective actions identified in the licensee letter of response are found to be acceptable. The inspector held discussions with the welding and NDE supervision and reviewed the corrective actions during this inspection. This item is closed.

(Open) Unresolved Items (390/77-9U1 and 391/77-9U1): AR Relay. TVA submitted the first interim report on August 8, 1977. Westinghouse identified the problem to TVA on July 8, 1977. TVA was informed that 98 of the subject type relays are installed in the solid state protection system panels. TVA has identified 40 of the subject type relays in other systems. This matter is fully documented in Noncompliance Reports 879R-888R.

TVA was informed that this matter would remain open pending receipt of the final report.

### 3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in paragraphs 6, 7 and 8.

4. Independent Inspection Effort

a. Containment Strength and Leak Rate Test (Unit 1)

The inspector reviewed the following CB&I procedures:

- (1) Vessel Contract Instruction for Strength, Leak and Leakage Rate Testing, VCI-72-4333/34.
- (2) Vessel Solution Film Test Procedure, VST-72-4333/34.
- (3) Vessel Overload Test Procedure, VOT-72-4333/34.
- (4) Vessel Leakage Rate Test Procedure, VLT-72-4333/34.

The procedures have been approved for use by the TVA Civil Engineering Branch. A TVA design engineer will be onsite to monitor the tests and be the engineer of record. TVA onsite engineering unit personnel will perform surveillance checks of CB&I activities during the tests. TVA onsite QA personnel will perform overall spot checks to assure implementation of contract and procedure QA requirements.

The inspector held discussions with TVA QA and responsible mechanical engineers, reviewed the procedures and observed the instrumentation and air supply hookup. No items of noncompliance were identified.

b. Polar Crane (Unit 2)

TVA has identified a defective weld in one end tie to girder. The problem was identified during girder assembly when the tie box to girder bolt holes would not align. Design directed that the weld be cut and bolt holes aligned and rewelded. During the cutting exercise a slag line in the root pass of the weld was identified. TVA decided to perform ultrasonic examination of similar welds.

The inspector observed the testing setup and held discussions with the responsible engineers. TVA was informed that this item would be carried as an unresolved item (No. 391/77-13U1 - Polar Crane).

5. Partial Mid-term Construction Permit QA Inspection (Units 1 and 2)

The inspector performed a review and evaluation of the licensee's site design control program. WBNP-QCP 1.13, "Preparation and documentation of Field Change Requests," is the controlling procedure.

The inspector reviewed the procedure and selected 18 field change requests from the electrical and mechanical units to verify procedure implementation. The inspector checked the units files against the QC records room master files and the master print room drawings. The Field Change Requests (FCR) were filled out properly; unit files and the QC records room files were in order and the master print room drawings were either noted or updated to reflect the FCR changes.

Subsequent to the review of field change requests, the inspector reviewed the TVA Audit WB-G-77-02, "Preparation and Documentation of Field Change Requests," June 13-22, 1977. The audit was performed and documented in accordance with established procedures.

No items of noncompliance were identified.

6. Reactor Coolant Loop Analysis

Westinghouse reported to TVA that in performing the final reactor coolant loop analysis they had discovered discrepancies in the previous analysis. These discrepancies include misinterpretation of the reactor coolant pump tie rod and reactor vessel support stiffness. These errors resulted in revised seismic and LOCA displacements of the reactor coolant loop branch nozzles. These displacements have been used by TVA's contractor for piping analysis purposes.

Westinghouse and TVA are investigating to determine what corrective actions are required. A Construction Deficiency Report (10 CFR 50.55(e)) will be filed. This matter is identified as Unresolved Item Nos. 390/77-13U1 and 391/77-13U1.

7. Change In Flood Level

As a part of flood plan analyses for Bellefonte, Watts Bar flood level was reviewed. Preliminary Analyses contain data which might change Watts Bar flood level.

TVA is evaluating this matter and will submit a Construction Deficiency Report (10 CFR 50.55(e)). This matter is identified as Unresolved Item Nos. 390/77-13U2 and 391/77-13U2.

8. T-Pipe Computer Program

TVA discovered a coding error in the response spectrum analysis portion of the T-Pipe Computer Program. TVA has determined that the error created a potential for piping supports to be placed incorrectly which would allow excessive acceleration and displacement to occur such as to incur damage and possible failure. The T-Pipe Program was used to evaluate 10 plant piping system problems. A real analysis is being performed to determine the impact of this deficiency.

A Construction Deficiency Report (10 CFR 50.55(e)) will be filed. This matter is identified as Unresolved Item Nos. 390/77-13U3 and 391/77-13U3.

9. Exit Interview

The inspector met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection on September 9, 1977. The inspector summarized the scope and findings of the inspection as follows: Licensee action on previously identified unresolved items; new unresolved items; design control; containment overpressure and leak rate tests; and polar crane.



DETAILS II

Prepared by:

T. D. Gibbons

T. D. Gibbons, Electrical Engineer  
Engineering Support Section No. 1  
Reactor Construction and Engineering  
Support Branch

9/30/77  
Date

Dates of Inspection: September 6-9, 1977

Reviewed by:

T. E. Conlon

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

9/30/77  
Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

- \*T. B. Northern, Jr., Project Manager
- \*A. W. Rogers, Site QA Supervisor
- \*J. S. Colley, QA Engineer
- \*J. H. Perdue, Electrical Engineering Unit Supervisor
- \*R. D. Anderson, Electrical Engineer

\*Denotes those attending the exit interview.

2. Licensee Actions on Previous Inspection Findings

- a. (Closed) 76-11/5 Nonconformance Report No. 554 "Relays-Shutdown Board Logic Panels" (Units 1 and 2).

The licensee identified 440 relays which have been removed and returned to the vendor. This action completes the requirement of the nonconformance. This unresolved item is closed.

- b. (Open) 390/77-8U1, 391/77-8U1 Procedures - Fire Prevention/Protection

The licensee has prepared draft fire plans which are now in the review process. This item will remain open.

3. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraph 4.

4. Independent Inspection Effort (Units 1 and 2)

The inspector observed the tray installations in the spreading room for Units 1 and 2. It was noted that portions of the tray system were at a level which caused serious egress limitations. The inspector discussed this with the licensee representatives. This item will be unresolved pending further review of the applicable commitments. This item will be identified by 390/77-13U4 and 391/77-13U4.

This inspector observed the preparations for the pressure test of containment 1. This is contract completion test for the liner contractor..

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

5. Electrical (Components and Systems II) Observation of Work and Work Activities (Unit 1)

The inspector selected batteries O-BAT-236-2E and O-BAT-236-1D and DC bus and distribution panels O-BD-236-1D and O-BD-236-2E for inspection. The batteries, while not in service, are being kept on a charge. The inspector examined the work and work records in the areas of receipt inspections, storage, handling, identification, inspection procedure implementation, nonconformance control, protection, and separation. The qualifications of four inspectors were verified.

The inspector selected six motors as follows 1-MTR-62-AOP-A, 1-MTR-62-AOP-B, 1-MTR-62-104B 1-MTR-62-108B, 1-MTR-68-8, and 1-MTR-68-13. The inspector examined receiving inspections, storage identification, handling, installation and associated QC inspection activities.

Four motor operated valve operators were selected as follows 1-FCV-67-66A, 1-FCV-67-67A, 1-FCV-67-68A and 1-FCV-67-65A. The motor operators were examined to assure receiving inspection, identification, storage, handling, installation and inspection had been completed to the QAM requirements.

The inspector selected two battery chargers O-CHGR-236-1D and O-CHGR-236-1S, two transfer switches O-VSW-236-1DCS and O-VSW-236-1D, a vital AC panel 1-BD-235-1D and a static inverter 1-INV-235-1D for inspection. The applicable work and work records

were reviewed in the areas of receiving inspection, acceptance requirement, identification, installation, nonconformance control, protection, cleanliness control, calibration and trip settings where applicable, location, separation, redundancy and control of QC procedures.

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

6. Electrical (Components and Systems II) Review of Quality Records (Unit 1)

The inspector selected the items identified in paragraph 5 for a quality records review. The records were reviewed to assure that FSAR and QAM requirements were met in the areas of receiving inspection, vendor certifications, source inspection, shipping releases, storage, storage inspection, handling, cleanliness, installation, inspections, calibration if required and post installation protection. A group of eighteen nonconformance reports were reviewed for status, legibility, Q.C. review and retrievability, and status of corrective action.

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

7. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the site inspection on September 9, 1977. The inspector summarized the scope of the inspection:

a. Licensee Actions on Previous Inspection Findings

- (1) Unresolved Item 390/77-8U1 and 391/77-8U1, open
- (2) Unresolved Item 77-11/5 (Units 1 and 2), closed.

b. Unresolved Item 390/77-13U4 and 391/77-13U4, open.

c. Electrical (Components and Systems) Observation of Work and Work Activities.

d. Electrical (Components and Systems) Review of Quality Records.

There were no items of noncompliance identified.