



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

DEC 7 1977

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In Reply Refer To:
RII:BRC
50-390/77-16
50-391/77-15

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. B. R. Crowley of this office on November 7-9, 1977, 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. 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 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.

GD

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.
50-390/77-16
50-391/77-15

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

Mr. T. B. Northern, Jr.
Project Manager
Watts Bar Nuclear Plant
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Spring City, Tennessee 37381

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Knoxville, Tennessee 37902



UNITED STATES
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230 PEACHTREE STREET, N.W. SUITE 1217
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Report Nos.: 50-390/77-16 and 50-391/77-15

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Categories: A2 and A2

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

Facility Name: Watts Bar 1 and 2

Inspection at: Watts Bar site, Watts Bar Dam, Tennessee

Inspection conducted: November 7-9, 1977

Inspector: B. R. Crowley, Metallurgical Engineer
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

Reviewed by: *T. E. Conlon*
T. E. Conlon, Chief
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

12/5/77
Date

Inspection Summary

Inspection on November 7-9, 1977 (Report Nos. 50-390/77-16 and 50-391/77-15)

Areas Inspected: Routine unannounced inspection of reactor coolant pressure boundary piping (Units 1 and 2), containment vessel (Unit 2), major equipment supports (Unit 2), Unresolved Item 391/77-13U5.

Results: No items of noncompliance or deviations were identified.

DETAILS I

Prepared by: B. R. Crowley 12/5/77
B. R. Crowley, Metallurgical Engineer
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch
Date

Dates of Inspection: November 7-9, 1977

Reviewed by: T. E. Conlon 12/5/77
T. E. Conlon, Chief
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch
Date

1. Persons Contacted

a. Tennessee Valley Authority (TVA)

- *T. B. Northern, Jr., Project Manager
- *H. C. Richardson, Construction Engineer
- *A. W. Rogers, Site QA Supervisor
- *J. M. Lamb, Supervisor, Mechanical Engineering
- *L. C. Northard, Jr., Supervisor, Welding and NDE
- *R. L. Heatherly, Supervisor, QC and Records
- *C. O. Christopher, Supervisor, Civil Engineering
- *S. Johnson, Assistant Construction Engineer, Mechanical
- *J. A. Nicholls, Civil Engineer
- *C. S. Teague, QA Engineer, OEDC
- J. S. Colley, Engineering Design, QEB
- W. K. Peacher, Civil Engineer
- J. A. Kerr, Mechanical Engineer
- H. Grimaldi, Mechanical Engineer
- L. D. Bates, Mechanical Engineer
- L. J. Johnson, Mechanical Engineer
- F. D. Black, Engineering Associate, Welding

b. Contractor Organization

Chicago Bridge and Iron Company (CB&I)

C. L. Spears, QA Supervisor

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item (391/77-13U5): Defects in Polar Crane End Tie to Girder Weld (50.55(e)). All similar welds (6 welds in addition to the 2 that were originally cut to facilitate bolt installation) were ultrasonic inspected. Four of the remaining 6 welds were found to be defective. Approval was obtained to delay repair of the 4 welds until after major equipment installation as the welds did not affect lifting capability of the crane. (The reason the welds have to be repaired is from seismic analysis design). The crane was assembled, tested successfully and used to install Unit 2 major equipment.

UT inspection will be performed on the same 8 welds on Unit 1 Polar Crane and any deficient welds will be corrected in the same manner as Unit 2.

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. An unresolved item identified during this inspection is discussed in paragraph 5.

4. Independent Inspection Effort

The following areas of interest were reviewed by the inspector:

a. Unit 1

The inspector observed in-process welding on safety injection weld 1-063B-D089-10. This is a class 1, 10" diameter stainless steel weld.

Use of the correct welding procedure, the correct welding material, weld appearance, welder qualification, inspector qualification, and weld operation sheet was examined.

b. Unit 2

- (1) The inspector observed in-process welding on containment weld "7-8 Girth at Construction Opening." In addition, prepping and fitup operations for the remaining welds around the construction opening were observed.

Use of the correct welding procedure, the correct welding material, welder qualification and weld appearance was examined.

(2) The following containment weld records were reviewed:

Roof Air Assy. 1st Course - Vertical Weld RA1
Vertical Weld RA5

Roof Air Assy. 2nd Course - Vertical Weld RB6
Girth Weld "DP Girth"

Roof Ground Assy Dollar Plate - Weld DP-J

Shell Ring 10 - Vertical Weld 10K

In addition to the weld record drawings, inspector and welder qualification records for the above welds were reviewed.

c. A general walk-through inspection of the site was made. Site housekeeping and overall welding and inspection activities were observed.

In the areas inspected, no items of noncompliance or deviations were identified.

5. Containment (Steel Structures and Supports) - Observation of Work and Work Activities (Unit 2)

The inspector observed partially completed work on major equipment supports to ascertain whether activities relative to these supports were being accomplished in accordance with NRC requirements and SAR commitments. The supports were being installed in accordance with TVA QCP 4.7, "Mechanical Equipment Installation, Standard Inspections, and Documentation," TVA Field Instruction M-11, "Installation of NSSS Major Components," TVA Manufacturing and/or Installation Quality Plan (MIQP) No. 2-68-F-1, and the applicable referenced drawings.

The following equipment support activities were observed and compared with the above listed procedures and drawings in the areas of receipt inspection and storage, installation, inspection, utilization of qualified inspection personnel and calibration and use of the proper test equipment.

a. Loop 2 Reactor Coolant Pump Support

This support was temporarily in place but the pump casing had not been finally set. The as-positioned support was observed.

b. Reactor Vessel Supports

The reactor vessel was in its final position. The as-installed supports were observed.

c. Loop 3 Steam Generator Support

The steam generator was sitting on its support and being aligned with the reactor coolant hot leg piping. The as-positioned supports were observed. The final positioning and setting of the support is not to be accomplished until after final positioning of the steam generator.

During inspection of the support, the inspector found that the Field Instruction M-11 did not agree with the MIQP operation sheets in every detail. Step by step documentation was being performed in accordance with QCP 4.7 and the MIQP operation sheets. Further investigation revealed that, during installation of the Unit 1 steam generator, it was determined that the installation sequence of M-11 needed to be modified. The sequence used was documented on the Unit 1 MIQP operation sheets. The Unit 2 MIQP operation sheets were issued to install the generator in the sequence determined to be necessary during Unit 1 installation. Field Instruction M-11 was never updated to agree with the required installation sequence. This item is considered to be unresolved and is identified as item number 77-15-01.

- d. The vendor documentation and receipt inspection records for the reactor vessel supports, the loop 2 pump support, and the loop 3 generator support were reviewed as outlined in paragraph 6 below.
- e. Qualification of inspection personnel involved in inspecting the vessel supports, loop 2 pump support, and loop 3 generator support were reviewed.
- f. Miscellaneous support parts such as billits and jacking bolts were observed in storage.

In the areas inspected, no items of noncompliance or deviations were identified.

6. Containment (Steel Structures and Supports) - Review of Quality Records (Unit 2)

The inspector reviewed the quality records described below relative to containment steel structures and equipment supports to ascertain whether these records reflected work consistent with NRC requirements and SAR commitments.

a. Major Equipment Supports

- (1) The following material and quality records for the reactor vessel supports, loop 2 pump support, and loop 3 steam generator support were reviewed and compared with the requirements of TVA QCP 1.6 "Receipt Inspection, Storage, Withdrawal, and Transfer of Permanent Material":

TVA QC Checklist and Shipping Release Nos. 59, 60, 61, 62, 43, 44, 58, 56 and 52

TVA Receiving Form 209 Nos. WBNP77-7841, 77-4550, 77-8308, 77-7621, 77-6390, 77-7252 and 75-8015

Westinghouse QC release for the Westinghouse part of reactor vessel support.

TVA NSSS QA release No. 1

TVA Receiving Inspection Checklist for Westinghouse Supports

The records were reviewed in the areas of material certification records and receiving inspection reports.

- (2) The following installation and inspection records for the reactor vessel supports, loop 2 pump support and loop 3 generator support were reviewed and compared with the requirements of QCP 4.7:

Operation Sheets: 2-68-F-1-6, 2-68-F-1-9 and 2-68-F-1-21

Inspection personnel training records.

The records were reviewed in the areas of compliance with construction procedures, supports located as specified, compliance with testing requirements, verification of quality requirements and verification of inspection personnel qualifications.

b. Containment

Material and quality records for the following containment steel were compared with the requirements of CB&I's "Nuclear QA Manual for ASME III Products Division 4 Construction," Section 4.0, "Material Control:"

Knuckle ring plates (MK 401-1) - Serial Nos. 1 thru 30

The records were reviewed in the areas of material certification records and receiving inspection reports.

In the areas inspected, no items of noncompliance or deviations were identified.

7. Reactor Coolant Pressure Boundary Piping - Observation of Work and Work Activities (Units 1 and 2)

The inspector observed in-process work relative to reactor coolant pressure boundary piping to determine whether work was being accomplished in accordance with NRC requirements and SAR commitments. The fabrication code is the ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, 1971 Edition with addenda through the summer of 1973. The following activities were observed relative to conformance with inspection and work performance procedures, record keeping requirements, installation specification requirements, issuance and use of specified materials and utilization of qualified inspection personnel.

a. Unit 1

Safety injection pipe SI 164 was inspected during installation. Field Welds 1-063B-D090-05 and 1-063B-D-090-08 were in process. In-process handling, protection and installation were observed.

Surge line piping SPIN WAT-RCPCFB was observed stored in the reactor building. Handling and protection were observed.

RHR line MK 74-RHR-66 was observed stored in place in the reactor building. Handling and protection were observed.

b. Unit 2

Hot leg piping for loops 2 and 3 were being fit to the reactor vessel. The inspector also observed handling and protection of all hot and cold leg piping which was in its approximate installation position.

In the areas inspected, no items of noncompliance or deviations were identified.

8. Reactor Coolant Pressure Boundary Piping - Review of Quality Records (Unit 1)

Quality records for the following reactor coolant pipe were reviewed to determine whether the records reflected material/ component characteristics consistent with applicable requirements (see paragraph 7 above for the applicable piping code):

- a. Safety Injection line SI 164, RHR line MK 74-RHR-66, Surge Line SPIN WAT-RCPCFB

For these pipe components, the inspector reviewed records relative to material certification and receipt inspection. This included TVA's form 209's (Receiving Reports), TVA receiving inspection checklists and for the surge line piping, TVA's NSSS QA release and Westinghouse's quality release.

- b. Loop 1 hot leg piping, Loop 1 cold leg piping, Loop 2 cold leg piping, Loop 3 hot leg piping, Loop 3 cold leg piping

For these pipe components the inspector reviewed installation inspection records to ascertain that the required scope of inspection was performed and recorded and that records confirmed that specifications and procedures were met. This included review of the completed MIQP operation sheets for installation of the above piping.

- c. Storage records for the reactor coolant and surge line piping were reviewed.

In the areas inspected, no items of noncompliance or deviations were identified.

9. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection and summarized the scope and findings of the inspection. In addition to the general scope of the inspection, the unresolved item of paragraph 5 was discussed in detail.