



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report Nos. 50-390/82-21 and 50-391/82-17

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

Facility Name: Watts Bar

Docket Nos. 50-390 and 50-391

License Nos. CPPR-91 and CPPR-92

Inspection at Watts Bar site near Spring City, Tennessee

Inspector:

B. R. Crowley
B. R. Crowley

7/21/82
Date Signed

Approved by:

N. Economos
N. Economos, Acting Section Chief
Engineering Inspection Branch
Division of Engineering and Technical Programs

7/21/82
Date Signed

SUMMARY

Inspection on June 28-30, 1982

Areas Inspected

This routine, unannounced inspection involved 24 inspector-hours on site in the areas of reactor coolant pressure boundary piping (Unit 2), safety related piping (Units 1 and 2), previous inspection findings (Units 1 and 2), IE Bulletins (Units 1 and 2), and licensee identified (50.55e.) items (Unit 1 and 2).

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one violation was found in one area (Violation - Failure to Follow Procedures for Documentation of Weld Hold Points, paragraph 5.a).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Wadewitz, Construction Plant Manager
- *R. W. Olson, Construction Engineer
- *J. C. Cofield, Assistant Construction Engineer - QC Inspection Unit
- *T. W. Hayes, Supervisor Nuclear Licensing Unit
- *R. C. Miles, Project Engineer OEDC
- *S. J. Boney, Supervisor Welding Engineering Unit
- *K. G. Galloway, Supervisor Welding QC Unit
- P. W. Hurfman, Welding Engineer
- E. White, QA Auditor
- *H. G. McFarland, QA Auditor
- *P. J. Wilson, Nuclear Licensing
- *T. R. Trail, Nuclear Licensing
- K. R. Kincer, Weld Test Shop Supervisor
- S. A. Crawford, Metallurgical Engineer - NEB-EN DES
- D. T. Sokol, Mechanical Engineer - SWP-EN DES

Other licensee employees contacted included QC inspection personnel, security force members, and office personnel.

NRC Resident Inspector

T. Heatherly

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 30, 1982, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 390/82-21-01, Failure To Follow Procedures For Documentation of Weld Hold Points (paragraph 5.a.)

3. Licensee Action on Previous Inspection Findings

(Open) Unresolved Item 390/80-32-01, 391/80-25-01, Defective 3" 1500 Velon Globe Valves. The majority of the problems with these valves were with scored stems. TVA has investigated this problem and determined the cause to be the wire binding used in the packing furnished with the valves. TVA has undertaken an intensive program to change out valve packings, replacing them with Union Carbide grafoil packings. In addition to scored stems, two valves had cracked seats. This was attributed to either heat from welding

or the stem position during bonnet torquing. The inspector reviewed NCR 2694R1 which covered the above problems. Part of the corrective action listed on the NCR was to revise welding and installation procedures to prevent over heating during welding and stem position interference during bonnet torquing. The licensee could not identify where specific procedure changes were made, but stated that the valves are installed in accordance with vendor procedures. The licensee stated that this matter will be investigated further.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort (Units 1 and 2)

The inspector conducted a general inspection of the reactor buildings and auxiliary buildings to observe construction progress and activities such as welding, material control, housekeeping, and storage. The following specific welding was observed:

- a. The below listed safety related pipe welds were observed at various stages of welding. The applicable code for this welding is th ASME Boiler and Pressure Vessel Code, 1971 Edition with Addenda through summer of 1973.

<u>Weld</u>	<u>Unit</u>	<u>Size</u>	<u>Class</u>	<u>Status</u>
1-067J-T607-15	1	8" X Sch 40	3	Fitup
1-067J-T609-9	1	8" X Sch 40	3	Welding Fill Passes
2-067J-T275-19	2	1½" X Sch 40	3	Complete
2-067J-T275-18B	2	1½" X Sch 40	3	Root Welded
2-067J-T275-20	2	1½ X Sch 40	3	Fitup

This welding was examined in the areas of: use of correct procedure, use of correct welding material, welding material control, use of qualified welders, weld appearance, and weld records.

During observation of the above welding, the inspector noted that the purge check and fitup inspection hold points for weld 1-067J-T609-9 had not been documented on the "Fabrication Control Operation Sheet". Two or three fill pass layers had been welded in the joint. Paragraph 2.3 of Section 4.1, "Process Control" of the NCM Manual and paragraph 6.1.3 of site QCI 4.3, "Process Control, Welding Surveillance, And Weld

Procedure Assignment". require that the TVA inspector witness, verify or conduct an acceptable examination before work can proceed to the next operation and that all operations and hold or witness points shall be signed off and dated on the operation sheet after acceptance of the designated function. This failure to follow procedure is considered to be in violation of 10 CFR 50, Appendix B, Criterion V, as implemented by paragraph 17.1A.5 of the FSAR, and is identified as Violation 390/82-21-01, Failure to Follow Procedure For Documentation of Weld Hold Points. After identification of the problem, the licensee issued NCR 4192R. Investigation revealed that the required inspection (purge check and fitup) had been made but the inspector failed to document his inspections.

- b. The inspector observed in-process welding on Unit 2 restraint PDO 1-13 on drawing 48W1701-12. The applicable code for this welding is AWS Structural Welding Code D.1.1. Use of correct welding procedure, use of qualified welder, use of correct welding material and weld appearance were examined.

Within the areas inspected, no violations, except as noted in paragraph a., or deviations were identified.

6. Licensee Identified Items (LII) (Units 1 and 2)

Prior to this inspection, the licensee identified the following items considered reportable under the requirements of 10 CFR 50.55(e):

- a. (Closed) Item 390/80-27-10, 391/80-21-09, Emergency Gas Treatment System Fire Protection System (NCR WBN NEB 8011). On August 18, 1980, TVA notified RII of a potential 50.55(e) item concerning the emergency gas treatment system being supplied with an automatic open head water spray system versus closed head spray nozzles. The final Construction Deficiency Report was submitted on September 17, 1980 and stated that the open head nozzles would be replaced with closed head nozzles. The report has been reviewed and determined to be acceptable by RII. The inspector held discussions with responsible licensee personnel, reviewed Engineering Change Notice 2912, and reviewed closed out NCR WBN NEB 8011 R1 to verify corrective actions stated in the report.
- b. (Closed) Item 390/80-06-01, 391/80-05-01, Defective Pipe Supports (NCR 2019R). On January 30, 1980, TVA notified RII of a potential 50.55(e) item concerning defective pipe supports. An interim report was issued on February 29, 1980. The final Construction Deficiency Report was submitted on April 28, 1980. The report has been reviewed and determined acceptable by RII. The inspector held discussions with responsible licensee personnel and reviewed closed out NCR 2019R. All hangers identified by the NCR as being defective have been repaired and re-inspected. However, based on this problem and IE Bulletin 79-14, all hangers are being re-inspected. To date approximately 13,000 have been re-inspected and approximately 7100 remain to be re-inspected.

This excludes Fire Protection and Control Air Systems. This 50.55(e) item is being closed and the re-inspection program will be followed under IE Bulletin 79-14.

- c. (Open) CDR 80-09. (Units 1 and 2) Improper Materials Used in Auxiliary Board Room Air Conditioning System (NCR 2597R1). On September 15, 1980, TVA notified RII of a potential 50.55(e) item concerning the lack of traceability for copper tubing in the auxiliary board room air conditioning system. A final Construction Deficiency Report was submitted on October 14, 1980. Supplements to the final report were submitted on August 6, September 4 and December 29, 1981. Much of the copper tubing in the subject air conditioning system is unidentified. Therefore, the exact type and condition (temper) of material installed cannot be positively determined in all cases. Based on pressure calculations, the licensee has determined that of the possible tubing materials, only type "M" in the annealed condition will not meet internal pressure requirements. The licensee has attempted to rule out the use of type "M" annealed material based on (1) type "M" tubing is only available in the hard temper except for special orders for which there is a considerable surcharge and large order requirements - no special orders have been placed, (2) hard material will withstand denting, kinking, and other deformation effects from handling and installation - annealed tubing in the sizes in question cannot withstand such physical abuse without showing these indentations. No such indentations were noted in the subject tubing, and (3) ultrasonic thickness measurements and conductivity measurements were taken to correlate conductivity with hardness. Based on the above, the licensee concluded that no type "M" annealed material was installed.

This item was previously reviewed during the inspection covered by RII report 50-390/82-06 and 50-391/82-04. During that inspection the inspector requested, for review, the results of hardness tests conducted on the unidentified material. The data was not available for review at the site. During the current inspection, the inspector reviewed the UT measurements and conductivity data which the licensee stated could be correlated with the hardness or temper of the material. The inspector noted that this data, without other evidence, is not that convincing. Site licensee personnel indicated in the exit interview that some of the material from the system had been sent to the lab for hardness testing. Hardness testing in place is not feasible. The inspector noted that if material is available for hardness testing, hardness data would greatly improve evidence that no annealed type "M" material is installed. The licensee stated that the status of the hardness testing would be checked and RII notified of results. On July 6, 1982 TVA (EN DES and Licensing) contacted RII (Economos and Crowley) and stated that to their knowledge no material was available for testing but they would verify this point. They also indicated that their procurement documentation would be re-checked to insure that no special orders were placed for annealed type "M" material. TVA agreed to supplement their final report based on the above discussion.

During review of LII items, the inspector reviewed a number of items where final reports had been furnished but the date for completion of corrective action was "prior to fuel load" or subsequent letters to RII had extended the completion date to a later date. The inspector pointed out to the licensee the need to establish and meet firm commitment dates of completing corrective action in order that review of corrective action and close out of items can be accomplished in an orderly and timely manner. The licensee stated that this need had been recognized and steps were being taken to establish and meet firm dates.

7. Reactor Coolant Pressure Boundary Piping (Welding) - Review of Quality Records (Unit 2)

The inspector reviewed the quality records described below relative to reactor coolant pressure boundary pipe welding to determine whether these records reflected work accomplishment consistent with NRC requirements and SAR commitments. The applicable code for this welding is the ASME Boiler Pressure Vessel Code, Section III, Subsection NB, 1971 Edition with Addenda through summer of 1973 as implemented by TVA Specification G29M and the Watts Bar Nuclear Plant Quality Control Procedures and Quality Control Instructions.

- a. The records for the following completed welds were reviewed in the areas of: visual and dimensional inspections, weld history, preheat and interpass temperature, NDE, weld repair, welder qualification, and inspector qualification, as applicable to each weld:

<u>Weld Number</u>	<u>Pipe Size, Inches</u>
2-074B-D031-04	14 X 1.250
2-074B-D031-03	14 X 1.250
2-074B-D031-02	14 X 1.250
2-063B-D193-04	3 X .438
2-063B-D193-05	3 X .438
2-063B-D193-02	3 X .438

- b. The inspector reviewed the following nonconformance reports (NCR's) relative to welding to determine whether records were complete, legible, retrievable and properly closed out. (Note-These NCR's did not necessarily apply to reactor coolant pressure boundary pipe welding, but welding in general.)

NCR - 2785R
 2800R
 2854R
 2912R
 2944R
 3084R

- c. The inspector reviewed records of the following QA audits relative to welding:

<u>Audit</u>	<u>Date</u>
WB-W-81-02	6/12/81
WB-W-82-04	5/19/82
WB-W-81-05	5/19/82
WB-W-82-05	6/16/82

The following deficiencies were chosen for further investigation to determine whether proper, timely, and adequate corrective action was taken:

<u>Audit</u>	<u>Deficiency</u>
WB-W-81-02	#1
WB-W-82-04	#1
WB-W-81-05	#1

Within the areas inspected, no violations or deviations were identified.

8. IE Bulletins (IEB's) (Units 1 and 2)

(Closed) IEB 79-BU-03A, Longitudinal Weld Defects in ASME SA-312, Type 304 Stainless Steel Pipe. The licensee's responses dated August 5, 1980 and July 2 and July 16, 1981 have been reviewed and determined to be acceptable by RII. These responses state that SA-312 and A-312, type 300 series fusion welded pipe is not used or planned for use in safety related systems subject to design stresses greater than 85 percent of code allowables. The Bulletin is closed for units 1 and 2.