



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA ST., N.W., SUITE 3100  
 ATLANTA, GEORGIA 30303

Report Nos.: 50-390/87-10 and 50-391/87-10

Licensee: Tennessee Valley Authority  
 6N11 B Missionary Place  
 1101 Market Street  
 Chattanooga, TN 37402-2801

Docket Nos.: 50-390 and 50-391 License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Conducted: May 30, 1987 - June 20, 1987

Inspectors:	<i>G. A. Walton for</i>	<i>August 24, 1987</i>
	G. A. Walton, Senior Resident Inspector Construction	Date Signed
	<i>P. G. Humphrey for</i>	<i>August 24, 1987</i>
	P. G. Humphrey, Resident Inspector	Date Signed
	<i>T. B. Powell for</i>	<i>August 24, 1987</i>
	T. B. Powell, Resident Inspector	Date Signed
Approved by:	<i>S. A. Elrod</i>	<i>September 2, 1987</i>
	S. A. Elrod, Section Chief Division of TVA Projects	Date Signed

SUMMARY

Scope: This routine inspection was conducted in the areas of licensee action on inspector identified items, followup of licensee identified items, fire prevention and fire protection, preoperational test program implementation verification, testing of pipe support and restraint systems, design changes and modifications, observation of electrical work, allegations, Quality Assurance inspection of performance, and weld verification.

Results: Four Unresolved Items were identified in this report and concern design control of modifications, use of stick-on electrical wiring fasteners, Quality Control (QC) hold points and procedure adequacy relating to Post Weld Heat Treatment (PWHT).

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*G. Toto, Site Director
- \*D. M. Lake, Construction Project Manager
- R. A. Pedde, Unit 2 Nuclear Project Manager
- H. C. Johnson, WBN Quality Assurance
- J. A. McDonald, Licensing Manager
- \*H. B. Bounds, Engineering Project Manager
- J. P. Mulkey, Quality Assurance Supervisor
- \*L. Peterson, Quality Control Supervisor
- R. D. Tolley, Design Services Manager
- J. L. Collins, Mechanical Maintenance Supervisor
- M. K. Jones, Engineering Group Supervisor
- H. M. De Souza, Electrical Maintenance Supervisor
- \*R. D. Schulz, Licensing Supervisor
- \*T. Horst, Site Representative
- \*S. W. Spencer, Licensing Engineer
- \*K. G. Lawless, Assistant to Weld Evaluation Project Manager
- \*A. M. Overton, Watts Bar Nuclear (WBN) Information Services Manager
- \*J. T. Beard, Licensing Engineer
- \*K. Ashley, Nuclear Engineer
- \*W. L. Byrd, Acting Plant Manager
- \*T. Hayes, DNC-PROC [Department of Nuclear Construction-Procedures]

Other licensee employees contacted included engineers, technicians, nuclear power supervisors, and construction supervisors.

#### \*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on June 22, 1987, with those persons indicated by an asterisk in paragraph one above. The following new items were discussed:

- Unresolved Item (URI) 390,391/87-10-01, "Design control of Modifications". (Paragraph 9)
- URI 390, 391/87-10-02, "Use of Stick-on Electrical Wiring Fasteners". (Paragraph 10)
- URI 390, 391/87-10-03, "Quality Control (QC) Hold Points". (Paragraph 12)
- URI 390/87-10-04, "Procedure Adequacy for Post-Weld Heat Treatment" (Paragraph 13)

The licensee acknowledged the inspection findings with no dissenting comments. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection period.

### 3. Unresolved Items

Unresolved Items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations.

Four Unresolved Items were identified in this report and are discussed in paragraphs 9, 10, 12 and 13.

### 4. Licensee Action on Inspector Identified Items (92701)

- a. (Open) URI 391/86-21-04, "Control of Qualified Replacement Parts". Inspection Report 86-21 documented that Quality Control Instruction, QCI-1.20, Rev. 10, "Site Control of Procurement", did not provide instructions for a documented engineering evaluation of "off-the-shelf" or equivalent part replacement in safety-related equipment. Significant Condition Report (SCR) 7601 was issued by the licensee to identify this deficiency.

The licensee has indicated to the Inspector that QCI-1.20 will be revised to implement the engineering evaluation requirement. This item will remain open pending the inspector's review of the revision.

- b. (Closed) Inspector Followup Item (IFI) 391/81-26-02, "Procedural Delineation of All Systems". During Inspection 390/81-29, 391/81-26 it was identified that Administrative Instructions (AI) were inadequate for control of systems being turned over from construction to operations. In Inspection Report 85-13, revised AI's were reviewed and found adequate and IFI 390/81-29-02 was closed. It has been determined 391/81-26-02 was not also closed due to an administrative oversight. This item is considered closed.
- c. (Closed) URI 391/87-03-02, "Implementation of Procedure Change". During inspection 87-03, a concern was identified that the craft foreman is responsible for the dispositioning of Inspection Rejection Notices (IRN) issued by Quality Control Inspectors against the work their crews performed. The program has now been changed by a new procedure, Quality Control Procedure (QCP)-1.02, Rev. 0, "Inspection Rejection Notice". Under the new program, the responsible engineering unit dispositions the IRN that now becomes a permanent record. This item is considered closed.
- d. (Closed) URI 390/86-17-06, "Linear Indication In Radiographs". This item discussed weld 1-062A-T091-17, which had a linear indication present on the radiographic film that was not previously dispositioned by licensee personnel during their review of construction

radiographs. The licensee's investigation has determined that the linear indication present in the radiographic film was not in the weld joint, but in a fillet weld that attached orifice assembly 3N48591, to the inside of the pipe in the area of the pressure boundary weld discussed above. Westinghouse technical personnel, including the design organization, performed an evaluation of the condition and, by memorandum dated December 16, 1986, advised the licensee that the noted condition meets all American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section III requirements for a fillet weld. The licensee has modified the film evaluation sheet to properly reflect disposition of the (non-relevant for the full penetration weld) indication observed in the radiographic film.

An NRC contractor, knowledgeable in radiographic film review, performed an evaluation of the subject radiographic film on-site on May 28, 1987. His evaluation concluded that the radiographic indication is typical, represents the root of the fillet weld and is acceptable. Based on this review, this item is closed.

Within this area, no violations or deviations were identified.

5. Followup of Licensee Identified Items (92700)

(Closed) IFI 390, 391/87-03-01, "Failure of Control Room Heating, Ventilating and Air Conditioning (HVAC) System". The inspector reviewed the licensee's final report of the task force investigation of this incident which involved a fan motor fire in the control room ventilation system. This report identified the events, contributing factors, and corrective actions to prevent recurrence of this and similar events. Various Nonconforming Condition Reports (NCRs) have been initiated by the licensee to document corrective action commitments. Based on corrective actions and commitments by the licensee, this item is closed.

Within this area, no violations or deviations were identified.

6. Fire Prevention and Fire Protection - Unit 2 (42051)

During plant tours, the inspectors conducted observations of fire prevention and protection activities in areas containing combustible materials where ignition of these materials could damage safety-related structures, systems or components. The observations included verification that applicable requirements of Administrative Instruction (AI) 9.9, Rev. 17, "Torch Cutting, Welding, and Open Flame Work Permit", Security Procedure 2, Rev. 26, "Fire Protection Plan", AI 1.8, Rev. 10, "Plant Housekeeping" and WBNP Quality Control Instruction (QCI) 1.36, Rev. 13, "Storage and Housekeeping" were being implemented with regards to fire prevention and protection.

Within this area, no violations or deviations were identified.

7. Preoperational Test Program Implementation Verification - Unit 1 (71302)

The inspectors conducted routine tours of the facility to make an independent assessment of equipment conditions, plant conditions, security, and adherence to regulatory requirements. The tours included a general observation of plant areas to determine if fire hazards existed and observation of other activities in progress, e.g., maintenance and preoperational testing, to determine if they were being conducted in accordance with approved procedures. Also, observed were other activities which could damage installed equipment or instrumentation. The tours included evaluation of system cleanliness controls and a review of logs maintained by test groups to identify problems that may be appropriate for additional followup.

Within this area, no violations or deviations were identified.

8. Testing of Pipe Supports and Restraint Systems - Unit 1 (70370C)

The inspector toured areas of the Unit 1 auxiliary building and reactor building. Numerous snubbers and restraints were observed. Visual examinations were conducted to check for deterioration and physical damage to mechanical snubbers. Visual examinations were also conducted to check for damage to base support plates, fasteners, locknuts, brackets, and clamps associated with these installed pipe supports.

Within this area, no violations or deviations were identified.

9. Design Changes And Modifications - Unit 1 (35744)

The inspector reviewed the licensee's procedures utilized to modify equipment to determine if all attributes, i.e., ASME, Environmental Qualification (EQ), Seismic, and Class 1E, had been adequately addressed to prevent invalidation of certifications during the modification and replacement process. Nuclear Engineering Procedure (NEP) 6.1, Rev. 0 "Change Control" and Watts Bar Engineering Project Procedure (WBEP-EP) 43.02, Rev. 1, "Engineering Change Notices", do not adequately require an evaluation to assure that the modification will not invalidate the vendor's certificate of compliance.

American National Standards Institute (ANSI Standards), N45.2.4-1972, and N45.2.8-1975, require that modifications, including planning of activities for safety-related equipment, be performed in a manner to ensure quality at least equivalent to that specified by the original design bases and requirements. Institute of Electrical and Electronic Engineers (IEEE) Standard 323-1971 Section 6 requires that modifications of class 1E electrical equipment be evaluated to determine their effect on the equipment qualification and that the analysis or data and evaluation which demonstrates the effect of the modification shall be added to the qualification documentation.

The standards do not appear to be adequately incorporated into the above procedures and therefore, this issue is Unresolved Item 390, 391/87-10-01, "Design Control Of Modifications", pending review of the licensee's evaluation.

Within this area, no violations or deviations were identified.

#### 10. Electrical-Observation of Work (51053)

The cleanness and workmanship of the wiring and components in electrical panels were observed. Some electrical wiring fasteners (supports), which attach the wiring to the inside of the panels, were found to be detached. These fasteners are made of a teflon material with an adhesive backing to secure the fastener to the panel. The inspector questioned the adequacy of these supports to perform the intended function throughout the life of the plant and their ability to withstand a seismic event. The following examples list, by panel, locations where these stick-on fasteners were observed to be loose from the panel:

- 480-V shutdown Board 1A1-1 1-BD-212-A1-A
  - o Rear of vertical compartment #3
  - o Front of compartment #6
- 480-V Shutdown Board 1B2-B 1-BD-212-B2-B
  - o Rear of vertical compartment # 10
- 5th Diesel Generator Relay Board O-ARB-82-C-S
  - o Rear of panel at the recorder
- 5th Diesel Control Board O-PNL-82-C-S
  - o Inside panel
- Junction Box OJB2921547A
  - o Elevation 737, Near Column A7-W

This issue will be carried as Unresolved Item 390, 391/87-10-02, "Use of Stick-on Electrical Wiring Fasteners", pending review of the licensee's evaluation.

Within this area, no violations or deviations were identified.

#### 11. Allegations (92705B)

Allegation OSP-86-A-0115 (Previously RII-86-A-0228) "Poor Quality Welds In Piping In Steam Generators".

a. Concern

Vendor-supplied welds for use in the top of steam generators did not comply with the vendors drawing in that they were not full penetration welds. Furthermore, the welds were of lesser quality than welds made on site and double standards exist.

b. Discussion

The inspector looked at the welds in question in the presence of the allegor and determined they were not full penetration welds.

In addition, the inspector performed further inspections, met with Westinghouse (the vendor) representatives and reviewed TVA employee concern number ECP-86-WB-531-01, dealing with the same subject. The licensee's conclusions are summarized below:

- (1) The welds in question are drain lines and have no safety significance [i.e., are not safety related.]
- (2) Westinghouse analyzed the weld conditions and determined they are acceptable.
- (3) Westinghouse revised the applicable drawing to show partial penetration welds.
- (4) TVA approved the drawing change on September 15, 1986.
- (5) The licensee's investigation report on this issue concluded the concern was substantiated, corrective actions have been taken, no further concerns are involved and no further actions are necessary.

c. Conclusion

Based on the inspector's review of the above item, this allegation is closed.

- The concern that the welds did not comply with the vendors' drawing is substantiated, however, analysis has shown that the welds were acceptable.
- The concern that welds made off-site were of lesser quality [in general] than welds made onsite could not be substantiated.
- The concern that a double standard exists could not be substantiated except where applicable codes do define different quality levels based on importance to safety.

The drain lines discussed in (1) above are internal drain lines rather than pressure boundary piping and have minimal safety significance.

Within this area, no violations or deviations were identified.

## 12. Quality Assurance (QA) Inspection of Performance (35061)

The inspector held discussions with the site QA manager regarding the concern that QA personnel were not sufficiently involved in assigning Quality Control (QC) hold points in non-ASME construction activities. TVA's QA Topical Report TR 75-1A, Rev. 9, Paragraph 17.1.10, indicates "For safety-related construction activities which are non-ASME Code, inspection hold-points are identified in the project quality control procedures and indicate that a Division Nuclear Quality Assurance (DNQA) inspector must witness, verify, or conduct an examination before the work can proceed to the next operation."

The licensee advised the inspector that hold points and implementation of work plans are controlled by Quality Control Instruction (QCI) 1.60, "Work Control". Paragraph 6.1.4 requires the individual preparing the work plan to develop a step-by-step list of all work and hold points on Attachment H. Attachment H forms part of the workplan and is titled "Description of Work".

A review of Workplan J5067AZ used to install hanger 2067-A450-25-248 revealed that hold points were not established for QC inspections. A Nonconforming Condition Report (NCR) number 7081 was issued November 6, 1986, and identified that hold points were not addressed in the workplan. The corrective action was "Use-As-Is" with the statement "The above referenced Attachment "H" is adequate and fulfills the requirements of WBN-QCI-1.60 Section 6.1.4." The NCR was closed on February 23, 1987.

In discussions held with the QA manager, it was revealed that QC does not have the opportunity to review workplans and establish hold points. After evaluation of this concern, the licensee issued the following Condition Adverse to Quality Reports (CAQRs):

- WBP-87-0201 "Quality Control Procedures (QCP) do not contain QC hold points".
- WBP-87-0217 "QA does not review Construction Work Plans".

This item is Unresolved Item 390,391/87-10-03, "QC Hold Points", pending review of the CAQR's dispositions.

Within this area, no violations or deviations were identified.

## 13. Weld Verification - Unit 1 (55150)

The inspector reviewed Process Specification 2.M.1.1 titled "Specification For Post Weld Heat Treatment" for compliance with ASME Section III and the Final Safety Analysis Report (FSAR). The review was performed in anticipation of the Post Weld Heat Treatment (PWHT) planned for main steam weld 1-001A-D001-01. The licensee planned to use specification 2.M.1.1 (by reference in a workplan) and re-PWHT this weld to correct the original PWHT, which was deficient in time-at-temperature. The following discrepancies were noted:

- The specification failed to require temperature monitoring during heatup and cooldown at temperatures between 600°F and 800°F.
- The specification failed to identify location of thermocouple placements.
- The specification failed to address procedure and personnel qualification requirements.
- The specification failed to address the allowable temperature spread, i.e., 250°F maximum spread, during heating and cooling.
- The specification failed to adequately address requirements for the width of the heated band.
- The specification failed to address the allowable temperature spread, i.e., 100°F maximum, during the holding period.
- The specification failed to address equipment calibration of PWHT equipment.

The above items are required by ASME Section III, 1971 Edition including Summer 1973 Addenda. In addition, the inspector observed other items which need to be addressed to successfully perform PWHT and return the system to its original state.

- The specification should address the use of temporary supports adjacent to welds being PWHT to prevent sagging of the pipe when the metal is at high temperature.
- The specification should address the thermocouple removal from the pipe and require proper nondestructive examinations of the affected areas.
- The specification should address the use of spare thermocouples, such as the number, location and criteria used when switching to the spares.
- The specification should address the amount and type of insulation to be placed over the heated and adjacent area affected by the PWHT.

After these concerns were expressed to the site director, a temporary hold was placed on the workplan and the PWHT was not performed. Instructions were issued by the site director to revise the PWHT specification in a manner consistent with the licensee's commitment.

This item is Unresolved Item 390/87-10-04, "Procedure Adequacy of PWHT" pending further action by the licensee.

Within this area, no violations or deviations were identified.

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