



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

Report Nos.: 50-390/87-07 and 50-391/87-07

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: April 30, 1987 - May 10, 1987

Inspectors:	<i>G. A. Walton for</i>	<i>June 3, 1987</i>
	G. A. Walton, Senior Resident Inspector Construction	Date Signed
	<i>P. G. Humphrey for</i>	<i>June 3, 1987</i>
	P. G. Humphrey, Resident Inspector	Date Signed
	<i>Thomas B. Powell for</i>	<i>June 3, 1987</i>
	Thomas B. Powell, Resident Inspector	Date Signed
Approved by:	<i>S. A. Elrod</i>	<i>June 3, 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, fire prevention and fire protection, preoperational test (Preop) program implementation verification, dimensional inspection of pipe support and restraint systems, safety-related heating, ventilating and air conditioning (HVAC) systems, and the licensee's "Employee Concerns Special Program."

Results: One violation involving the failure to identify, evaluate, and disposition drawing discrepancies and one Unresolved Item involving missing support calculations were identified.

## 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, Watts Bar Nuclear (WBN) Quality Assurance
- \*J. A. McDonald, Licensing Manager
- R. C. Miles, Modifications Manager
- H. B. Bounds, Engineering Project Manager
- B. S. Willis, Operations and Engineering Superintendent
- B. F. Painter, WBN Construction
- J. P. Mulkey, Quality Assurance Supervisor
- L. Peterson, Quality Control Supervisor
- R. Norman Jr., Operations 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. R. Grau, Preoperational Test Section Supervisor
- C. A. Borelli, Plant Compliance Staff, Nuclear Engineer
- R. D. Schulz, Licensing Supervisor
- \*S. W. Spencer, Licensing
- \*V. Kaminsky, Plant Manager's Office
- \*J. A. Thompson, Modifications, Plant Manager's Office
- \*W. L. Byrd, Acting Plant Manager
- \*J. W. Coan, Division of Nuclear Engineering
- \*G. Atwood, Division of Nuclear Engineering
- \*J. M. Snider, Licensing
- \*T. Hayes, Division of Nuclear Construction
- \*F. Smith, Division of Nuclear Construction
- \*F. E. Laurent, Division of Nuclear Construction - Welding Task Group
- \*T. L. Hurst, Site Representative
- \*K. B. Knowles, Division of Nuclear Engineering
- \*R. E. Kirk, Division of Nuclear Engineering

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 May 11, 1987, with those persons indicated by an asterisk in paragraph one above. The following new items were discussed:

- Violation 390, 391/87-07-01, "Failure to Identify, Evaluate, and Disposition Nonconforming Conditions". (Paragraph 8)
- Unresolved Item (URI) 390, 391/87-07-02, "Missing Calculations". (Paragraph 8)

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. Licensee Action on Previous Enforcement Items (92702)

- a. (Closed) Inspector Followup Item (IFI) 390/86-20-04, 391/86-20-02; "Accessibility of Quality Assurance (QA) Procedures In The Field." This IFI identified that the on-site document control system prohibited removal of a controlled document, such as a procedure, from the office for use in the field. This prevented Quality Control (QC) inspectors from having ready reference to the procedure when performing inspections.

The licensee has issued Standard Operating Procedure SOP-QMO-04, "Control and Issue Of Controlled Drawings, Procedures, and Documents Within Nuclear Power Quality Control Units." This procedure requires inspectors to have in their possession, controlled documents and drawings required to perform inspections. The procedure became effective September 22, 1986. In addition, an internal memorandum dated January 26, 1987, advised all QC supervisors that the procedure was issued and to have their units comply with it.

During normal routine tours, the inspector verified the implementation of the procedure. In each area reviewed, copies of the drawings and applicable procedures were present with the QC inspector performing work in the field. This item is closed.

- b. (Closed) IFI 391/85-36-03, "Adequacy Of Lighting For Interpreting Liquid Penetrant Results." This IFI questioned the adequacy of procedure QCP-4.13-PTM, "Liquid Penetrant Examination-Mechanical," in regard to the adequacy of light while evaluating liquid penetrant results. The licensee has responded to this item by clarifying that the requirement for adequate lighting is specified in the above procedure which duplicates the requirements stated in the applicable

American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Section III. A more specific requirement, i.e., minimum of 32.5 foot candles, is a recommended lighting requirement specified in ASME Code Section V, which the licensee has not committed to. The licensee has further clarified that all personnel performing liquid penetrant examinations are qualified in both the specific and practical requirements of the inspection process and are aware of the lighting necessary to evaluate the contrasting colors utilized.

The inspector determined the licensee is meeting all ASME Code and procedure requirements for lighting requirements when performing liquid penetrant examinations. This item is closed.

- c. (Closed) IFI 390/85-52-04; 391/85-43-04, "Lead Symbol B on Welder Qualification Radiographs." This IFI identified a concern regarding the adequacy of radiographic film made without placing a lead letter "B" on the back side of the cassette to detect back scatter. The film in question was for welder performance qualifications radiographed in the Unit 2 valve room. The licensee concurred that back scatter was possible and established the following to resolve the issue.
- The radiographic station was moved from the valve room to the Fire Lab Building.
  - Test assemblies were radiographed using lead letter "B" on both the front and back side of the film holder. No back scatter was noted.
  - All recertification welder test coupons were radiographed in the Fire Lab Building.

Based on the licensee's corrective actions, this item is closed.

- d. (Closed) IFI 390/85-21-06, "Control Dilution of Volume Control Tank (VCT) During Approach To Criticality." A review of Draft Startup (SU) Procedure SU-3.2 had revealed that dilution of boron concentration would be performed by adding dilution water to the top of the VCT in the Chemical and Chemical and Volume Control System (CVCS) to achieve initial criticality. Because of the large size of the VCT, the concern arose that the boron concentration in the VCT would initially become more dilute than in the Reactor Coolant System (RCS) and this could lead to a reactivity overshoot when the dilution stopped and the systems (CVCS and RCS) achieved a uniform concentration. To combat this situation, the licensee has revised start-up Procedure, SU-3.2, Rev. 7, to add water dilution at the discharge of the VCT and to close and electrically disable the valve of the

dilution line entering at the top of the VCT during the initial dilution process. Based on this action by the licensee, this item is closed.

4. Unresolved Items

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

One Unresolved Item regarding missing HVAC support calculations was identified during the inspection (paragraph 8).

5. 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 Watts Bar Nuclear Plant (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.

6. 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.

7. 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 of mechanical snubbers. Visual examinations were also conducted to check for damage of base support plates, fasteners, locknuts, brackets, and clamps associated with these installed pipe supports.

Within this area, no violations or deviations were identified.

#### 8. Safety-Related HVAC Systems (50100)

- a. On April 27, 1987, the inspector randomly selected two completed and Quality Control accepted HVAC supports for inspection to ascertain compliance with licensee drawings. The inspection consisted of direct inspection of the installed supports. Weld inspections were not included since welds are being evaluated by the licensee under a separate program. The supports selected are located in the control building, are identified as common to Units 1 and 2, and are numbered 0031-DW930-044-1092, 0031-DW930-044-1093. Both supports are seismic category I and shown on typical drawing 47A055-205 "Mechanical HVAC Category I Support Typ. Support 205." The supports were inspected and accepted by a QC inspector on March 22, 1981, with no nonconforming conditions identified. Both supports are attached to a concrete block wall using through bolts.

The inspection revealed the following deficiencies:

- The drawing indicates the duct is fastened to the support on 6 inch centers on three sides using 3/16 inch blind rivets. On both supports two rivets were missing on the front view. The remaining installed rivets exceeded the 6 inch dimension by approximately 3 inches.
- The drawing shows a 24 inch maximum dimension from the block wall to the outer support beam. The actual dimension measured on both supports is greater than 39 inches.
- On support 1093, a 2 inch tube steel support was welded to the top of a WT6 X 15.5 beam. This beam is the member which attaches to the baseplate at the wall. The 2 inch tube steel is supporting electrical conduit. This condition is not shown on the drawing.

A record search performed by the licensee failed to identify any Nonconformance reports, support variance sheets or calculations which evaluated the above-described conditions.

On May 8, 1987, at the request of the inspector, the licensee reinspected the two referenced supports. The reinspection was performed using WBN-QCP 4.23-8, Rev. 9, "Support Final Inspection"

and identified the same problems. Conditions Adverse to Quality Reports (CAQR's) (numbers not assigned) were issued on May 8, 1987, for both supports.

Failure to identify, evaluate, and disposition the nonconforming conditions in accordance with drawing requirements described above is identified as Violation 390, 391/87-07-01.

- b. During the inspection, a dimension of 1/2 inch between the baseplate and the connecting support member was noted on the drawing (47A055-205). No tolerances were given on this drawing. Note 16 on Drawing 47A055-1 specifies the following: "Field has the option to locate the centroid of a leg or brace closer to the center of its connecting plate on all duct hanger designs in which these two points do not coincide." The inspector interpreted this note to mean the field could move the support member closer to the center of the base plate and more evenly load the four existing thru bolts but not allow movement away from the center. Measurements of the installed supports revealed a dimension of 1/8 inch (versus drawing requirement of 1/2 inch) from the outer edge of the base plate to the support member. The licensee advised the inspector that Note 52 on Drawing 47A050-1Q1, "Mechanical Hanger Drawing General Notes," allows movement in the outer direction and, therefore, the condition as-installed is acceptable. The note specifies "Unless otherwise noted, all base plate attachments may have an allowable radial tolerance of 9/16 inch off the specified location point. Prior to January 1, 1985, a tolerance of 1/2 inch off horizontal and vertical centerlines may be used as a member tolerance."

This support is attached to a concrete block wall which was the subject of Inspection and Enforcement (IE) Bulletin 80-11, "Masonry Wall Design." In the response to this Bulletin, dated January 22, 1982, the licensee advised the NRC that TVA is evaluating all the reinforced masonry walls for applicable design loading conditions and if any of the masonry walls are found to be structurally inadequate for the loads, they will be restrained.

Based on the assumption the licensee had performed calculations to assess the acceptability of supports attached to concrete block walls, which should include these supports, the inspector requested a copy of the calculations for the subject supports for review to determine if the 1/2 inch movement allowed by Note 52 on Drawing 47A050-1Q1 was considered.

On May 12, 1987, the licensee advised that the subject calculations were missing and not available for review. This item is identified as URI 390, 391/87-07-02, "Missing Calculations," pending licensee's retrieval of the missing calculations and further review by the inspector.

9. TVA Employee Concerns Special Program (TI 2512/15)

The inspector reviewed the status of the Employee Concerns Special Program (ECSP) established by TVA's Manager of Nuclear Power. The object of the ECSP was to evaluate and report to the Office of Nuclear Power (ONP) the employee concerns filed before February 1, 1986. Concerns filed after that date are handled by the ongoing ONP Employee Concerns Program (ECP).

The ECSP addressed approximately 5,000 employee concerns. Each of the concerns was a formal, written description of a circumstance or circumstances that an employee considered unsafe, unjust, inefficient, or inappropriate. The mission of the Employee Concerns Special Program was to thoroughly investigate all issues presented in the concerns and to report the results of those investigations in a form accessible to ONP employees, the NRC, and the general public. The results of these investigations are communicated by ECSP reports as subcategory, category, and final reports. The subcategory reports (113 total required for Watts Bar) will summarize the evaluation of employee concerns by combining several employee concerns by similarity. The subcategories themselves are then summarized in a series of eight category reports. Each category report reviews the major findings and collective significance of the subcategory reports in one of the following areas:

- management and personnel relations
- industrial safety
- construction
- material control
- operations
- quality assurance/quality control
- welding
- engineering

A separate report on employee concerns dealing with specific contentions of intimidation, harassment, and wrongdoing will be released by the TVA Office of the Inspector General.

Just as the subcategory reports integrate the information collected at the element level, the category reports integrate the information assembled in all the subcategory reports within the category, addressing particularly the underlying causes of those problems that run across more than one subcategory.

A final report will integrate and assess the information collected by all of the lower level reports done for the ECSP, including the Inspector General's report.

The licensee advised on May 5, 1987, the following status regarding the ECSP.

- Two hundred seventy one employees are presently working on this program.
- Investigations are complete on all employee concerns.
- No final reports have been issued.
- Sixty-nine of the 113 subcategory reports are in draft form.
- Fifty-nine of the draft reports have progressed thru the internal ECSP review and have been sent to the appropriate line management for corrective action. Thirty-one have been returned from line management with proposed corrective actions. The Senior Review Panel (SRP) has approved 31 reports with corrective actions included. Ten subcategory reports are ready for NRC review.

Within this area, no violations or deviations were identified.