



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

Report Nos.: 50-390/83-01 and 50-391/83-01

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

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection at Watts Bar site near Spring City, Tennessee

Inspectors:	<u>John W. York</u>	<u>2/9/83</u>
	J. W. York	Date Signed
	<u>W C Liu</u>	<u>2/9/83</u>
	W. C. Liu	Date Signed
Approved by:	<u>J. J. Blake</u>	<u>2/10/83</u>
	J. J. Blake, Section Chief	Date Signed
	Engineering Programs Branch	
	Division of Engineering and Operational Programs	

SUMMARY

Inspection on January 18-21, 1983

Areas Inspected

This routine, unannounced inspection involved forty-five inspector-hours on site in the areas of Seismic Analysis for as-built safety-related piping systems (IE Bulletin 79-14) and licensee action on previous identified inspection items.

Results

Of the two areas inspected, no violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. Wadewitz, Plant Manager
- *R. Olson, Construction Engineer
- *A. Johnson, Assistant Construction Engineer
- *E. Burke, Assistant Construction Engineer
- *J. Thompson, IEB 79-14 Task Force Supervisor
- T. Hayes, Nuclear Licensing Supervisor
- *W. Copeland, Lead Engineer
- *A. Rogers, QA Unit Supervisor
- *B. Smith, Nuclear Licensing Unit
- *P. Wilson, Nuclear Licensing Unit

Other licensee employees contacted included inspection engineers, QC inspectors, technicians, and office personnel.

NRC Resident Inspector

- *W. Swan
- T. Heatherly

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 21, 1983, with those persons indicated in Paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings with no dissenting comments.

(Open) Unresolved Item, 390/83-01-01, Clarification of Walkdown Inspection Criteria, Paragraph 5.c.

3. Licensee Action on Previous Inspection Items

(Closed) Violation, 390/82-33-01, Failure to follow procedure for disassembly of hangers/supports. TVA's letters of response dated October 26, 1982 and December 8, 1982, have been reviewed and determined to be acceptable by Region II. The inspectors held discussions with QC hanger/support inspectors and examined the corrective actions as stated in the letter of response. The inspectors concluded that Watts Bar had determined the full extent of the subject noncompliance, performed the necessary survey and follow-up actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective action identified in the letter of response have been implemented.

During this inspection, the inspectors reviewed the correspondence by the licensee to the various personnel responsible for implementing the corrective action. Also, the inspectors walked down three sections of safety-related systems and noted that no hangers had been disassembled without the proper documentation.

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. New unresolved items identified during this inspection are discussed in Paragraph 5.c.

5. (Open) IE Bulletin 79-14, Seismic Analysis For As-Built Safety-Related Piping Systems (25529) (Unit 1)

Watts Bar started Phase I of the IE Bulletin 79-14 walkdown program in November 1982. Phase I consists of a walkdown inspection of all of the safety-related piping referenced in IE Bulletin 79-14. Phase II of the program for this bulletin involves a sampling reinspection of the Phase I part of the program. Phase II of the program will be performed by a group of inspectors from outside the TVA organization and is tentatively scheduled for August 1983.

A separate group has been formed at Watts Bar to perform the IEB 79-14 inspection. Each inspection segment (inspection package) is inspected by both a mechanical inspection team and a hanger/restraint inspection team. Currently there are four inspection teams for each of the two types of inspections. Each team consists of an engineer and a QC inspector. At the time of the inspection, this group had walked down 25 inspection packages out of approximately 300.

The following procedures used in the walkdown inspections were partially reviewed by the inspectors:

- EN DES Special Engineering Procedure 82-13, Program for NRC-OIE Bulletin 79-14, Phase I Inspections At Watts Bar Nuclear Plant, Unit 1, Rev. 1
- WBNP-QCP-4.56, IE-79-14 Walkdown, Rev. 1
- WBNP-QCI-4.56, IE-79-14 Accountability, Rev. 1
- Construction Specification No. N3C-912, Support And Installation of Piping Systems In Category I Structures, Rev. 1

The inspectors observed a walkdown inspection by the 79-14 group using three inspection packages. One inspection involved a section that had not been previously walked down by this group and two inspections involved a section that had been previously walked down. The following inspection results were noted:

- a. Inspection Package No. 1 R62-0600200-08-15 in the Chemical and Volume Control System had not been previously inspected by the IEB 79-14 Walkdown team. During the inspection, the team QC inspectors identified that actual clearance between the valve at node point 24 and the crane wall was 1 inch. The same location shown in the isometric drawing indicated that a minimum of 2 inch clearance was required due to thermal movement and seismic excitation. The inspectors further noted that Valve 1-ISV-62A-305A and Valve 1-CKV-62A-588-S had been recorded with incorrect serial numbers on valve installation cards. The licensee indicated that these identified discrepancies will be forwarded to EN DES for resolution.
- b. Inspection Package No. 1R74-47W432-203 in the Residual Heat Removal (RHR) piping system had been previously inspected by the IEB 79-14 Walkdown Team. Results from the inspection performed by the team QC inspectors indicated that two gate valves each with weights of over 2000 pounds were not installed in accordance with the corresponding isometric drawing. The axis of the as-installed valves has a deviation of 45 degrees rotated from the original vertical position as shown in the isometric drawing. It was further noted that two relief valves, one at node point H91 and one at node point J50A, had not been installed in accordance with the requirement of the isometric drawing. At the time of this inspection neither documentations nor schedules were available for installation of these two valves. In addition the team inspectors had identified 18 places of potential interference due to minimum clearance requirements for the subject piping system. Resolutions for the above licensee identified discrepancies and necessary corrective actions will be determined and implemented by the licensee in accordance with procedures WBNP-QCI-4.56 and WBNP-QCP-4.56.
- c. Inspection package No. 1R70-0600200-04-02 in the Component Cooling System had been previously inspected by the walkdown team. During the reinspection there appeared to be three areas that needed clarification for inspection purposes.

One area involved Hanger Nos. 1-70-40 and 1-70-41. Hanger No. 40 restricted piping movement in the "y" direction and had a snubber plus clamp attached to the 6" diameter Component Cooling piping. Hanger No. 41 was a rigid I-beam and restricted piping movement in the negative "y" direction. The thermal plus the seismic movement denoted on the individual "A" size drawings for the hanger indicated a potential movement (3½") of Hanger No. 40 towards the rigid Hanger No. 41

that would exceed the measured spacing between the hangers (1½"). However, the isometric drawing gave a thermal plus seismic value (0.69") that would not present a clearance problem. The predominate acceptance document should be indicated for the inspection teams.

A second area that needed clarification or resolution involved the inspection of vent and drain lines. These lines are indicated by dashed lines on the isometric drawings. The NRC inspectors noted that neither the mechanical nor the hanger inspection teams examined these lines and supports except to determine if they posed an interference problem for the piping. The licensee stated that a specification was currently being changed to require that the inspection teams examine the configuration of these lines.

The third area involved piping clearance inspections by the mechanical inspectors. Directly above Hanger No. 1-70-45, which is a rigid I-beam restraining the piping in the negative "y" direction, was a similar I-beam restraint (Hanger No. 1-70-018) for the piping run above that being inspected. During the initial 79-14 walking down, the mechanical inspection team was unable to determine that the I-beam above was part of a hanger supporting the piping system above because the I-beam was within 9/16" of the pipe and could have been a more common u-shaped hanger that restrains a pipe in both the positive and negative "y" direction. Had the mechanical inspector known the configuration of Hanger No. 1-70-45, a pipe clearance discrepancy should have been written. This inspection area needs to be clarified for the mechanical inspectors.

Until these three inspection areas are clarified and resolved, this will be Unresolved Item, 390/83-01-01, Clarification of walkdown Inspection Criteria.

6. Licensee Identified Items (LIIs) (50.55(e)) (92700) - Units 1 and 2
 - a. (Closed) LII, 390/80-12-02 and 391/80-09-02, Grouted Anchor Bolts on Main Steam Line Supports. The final report for this item was submitted to Region II on April 10, 1980, and was followed by a supplemental information Report No. 4 submitted on May 19, 1982. The anchor bolts used for the subject supports were designed by EDS Nuclear, Incorporated, San Francisco. The designer failed to take into account the shear load on the anchors, thus causing the anchors to be under-designed. As a result the licensee redesigned the subject grouted anchor bolts with 1 3/8" bolts fabricated from A193 steel and A194 nuts to replace the original design of 1½" bolts fabricated from A36 steel. The inspectors reviewed the final report and the supporting documentation to verify that the corrective actions identified in the report are adequate and complete.

- b. (Closed) LII, 390/CDR 81-58 and 391/CDR 81-54, Improper Anchor Installation.

The final report was submitted to Region II on August 30, 1982. This item involved qualification tests on 3/8 inch anchors installed in in-place concrete. The anchors developed only 75 percent of the required ultimate tensile capacity. Therefore the potential for use of defective anchor bolts existed. Two independent sets of data resulting from the tests on in-place anchors were available. The first set was for the random proof load tests required by the licensee's Construction Specification G-32. The second set was for an independent program performed at the facility site for resolution of IE Bulletin 79-02. Even without reducing the failure rates to account for the fact that the proof load is 40 percent greater than the maximum design load, the proportion of defective anchors is less than the 5 percent limit recommended in IE Bulletin 79-02. The analysis of the proof load failure rates and the IEB 79-02 inspection results indicate that the in-place anchors are acceptable. To prevent further questions on acceptability of anchors, the licensee commits that future installation will be restricted to the approved Phillips anchors. In addition, all new types of wedge bolt anchors will be fully qualified before use at the facility site. The inspectors had no further questions on this item.

- c. (Closed) LII, 390, 391/CDR 80-09, Improper Materials Used in Auxiliary Board Room Air Conditioning System (TVA-NCR2597R). The final report was submitted to Region II on December 29, 1981. This item involved the use of type "M" copper tubing instead of the specified type "K" copper tubing. In the final report the licensee made the following statements: Calculations based on ANSI B31.5 section 504.1.2 chapter II, shows that only ASTM B-88 type "M" tubing in the "annealed" condition will not meet the internal pressure requirements of ANSI B31.5 for this system. However, ASTM B-88 type "M" hard drawn tubing does meet the pressure requirements. A survey of major manufacturers and distributors of copper tubing revealed that ASTM B-88 type "M" copper tubing is only available in the hard temper except for special orders. Furthermore, if type "M" annealed tubing is ordered, there is a considerable surcharge and a large quantity must be special ordered. Therefore, because no type "M" annealed tubing was special ordered, it is concluded that no type "M" annealed tubing was used in the construction of the HVAC system. The tubing now installed meets all requirements of ANSI B31.5. Other tubing identified on this system, ASTM B-88 type "L" and "K" and ASTM B-280, meet the pressure requirements in either "annealed" or "hard drawn" temper.

The inspectors discussed with the site engineer the method used for identifying the copper tubing in the four systems. All but 4.2 percent of the length of the tubing could be identified. Of the 4.2 percent

only 2.3 percent of the tubing was used in a section where if type "M" in the annealed condition had been used the design allowables would have been exceeded. Two memorandums by the foreman in charge of cutting and brazing the copper tubing on all four of the units stated that to the best of their knowledge all of the short sections (the unidentified sections) that were installed were cut from the same material as the longer pieces (the identified sections). The inspectors reviewed the calculations and discussed some of the results with EN DES (D. Sokol). The inspectors have no further questions and this matter is considered closed.