



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

Report Nos. 50-390/81-31 and 50-391/81-28

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

Inspectors:	<u><i>R. V. Blaylock for</i></u>	<u>1/8/82</u>
	J. A. McDonald	Date Signed
	<u><i>R. V. Blaylock for</i></u>	<u>1/8/82</u>
	T. L. Heatherly	Date Signed
Approved by:	<u><i>D. R. Quick</i></u>	<u>1/8/82</u>
	D. R. Quick, Section Chief, Division of Resident and Reactor Project Inspection	Date Signed

SUMMARY

Inspection on November 24 - December 20, 1981

Areas Inspected

This routine, announced inspection involved 226 resident inspector-hours on site in the areas of licensee action on previous inspection findings, overall pre-operational testing quality assurance, management meeting with corporate personnel, independent inspection effort, and a licensee identified item.

Results

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

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. Wilkins, Construction Project Manager
- \*J. Cross, Assistant Plant Superintendent (Health and Safety)
- \*M. Jones, Preoperational Test Section Supervisor
- \*R. Olson, Construction Engineer
- \*R. Parker, QA Branch Chief (Nuclear Power)
- \*A. Rogers, QA Supervisor (Construction)

Other licensee employees contacted included 2 construction craftsmen, 10 engineering supervisors and 15 engineers.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on December 18, 1981, with those persons indicated in paragraph 1 above.

### 3. Licensee Action on Previous Inspection Findings

- a. (Open) Violation (390/81-09-01): Failure to prescribe corrective action for possible contamination in the component cooling water system heat exchangers. The licensee opened the inlet side of the C component cooling water heat exchanger shell to inspect for contamination. Since all three heat exchangers had received unfiltered initial flush water from the inlet header, this was considered a representative inspection. The licensee and the resident inspector examined the shell side below the tube bundle, upstream of the first vertical flow baffle. The inspector removed contaminants from this area which had the following approximate dimensions and descriptions.

- . One 10" long piece of small gauge steel wire hung on a heat exchanger tube,
- . One 2"x2"x3" piece of 1/8" thick asbestos gasket material wedged between the flow baffle and the heat exchanger shell,
- . One 2"x1" piece of 3/8" thick particle board, which was unattached, and
- . Several 3/8" diameter x 1/4" to 1 1/2" long pieces of weld slag, which were lightly held to the shell by corrosion products.

During the course of his inspection, an additional piece of particle board was removed by the licensee and shown to the NRC inspector. The licensee is evaluating these inspection findings for their implications to the operation of the component cooling water system. Other corrective actions taken to prevent recurrence of this violation were not inspected.

- b. (Closed) Unresolved Item (890/80-30-05, 391/80-23-04): Generic applicability to Watts Bar for deficient cable installed at Sequoyah. The inspector determined that the licensee will review the contents of NRC SQN-EEB-8018 and 8019 for applicability to Watts Bar during the scheduled NUREG-0588 review.
- c. (Closed) Open Item (390/80-13-03): Conflicting chemistry requirements for quality of flushing water. Revision 4 to General Construction Specification G-39 and Specification Revision Notice 4 to Project Construction Specification N3M-890 were recently issued to resolve the conflicts existing between these two specifications and Technical Instruction 27. The water quality specifications satisfy the guidelines provided in the applicable standard, ANSI N45.2.1-1973.

#### 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 paragraphs 5.a., 5.b. and 5.c.

#### 5. Overall Preoperational Test Program

The following preoperational test program administrative controls were reviewed: test preparation, review and approval; design changes; interfacing procedure continuity; qualifications and training of personnel performing/supervising testing; document control; and test control. All areas were found to be acceptable with the following exceptions.

- a. FSAR Section 14.2.2.1 states that individual engineers within the preoperational test section are designated as test directors and are responsible for the direction of the conduct of tests. Section 14.2.2.4 describes required qualifications for test directors. By practice, engineers not designated as test directors have performed or have supervised the performance of prerequisite and procedural steps without being directly supervised by test directors. Apparently, varying amounts of communications have occurred between the test director and engineers during test conduct. Test directors have been required to review completed prerequisite and procedural steps and to

sign test acceptance criteria. Until the licensee reviews and describes the qualifications and training of personnel directly supervising test conduct to verify that suitable proficiency was achieved and maintained for carrying out this safety-related activity this item is unresolved (390/81-31-01, 391/81-28-01).

- b. FSAR section 14.2.2.4 requires that individuals who direct or supervise the conduct of individual preoperational tests possess a bachelor's degree in engineering, or physical science, or the equivalent and one year of applicable nuclear power plant experience. Applicable nuclear power plant experience shall include preparation and/or conduct of system tests similar in nature to those preoperational tests to be assigned to the individual. The Operational Quality Assurance Manual (OQAM), Section 12.2, requires that personnel performing preoperational testing be trained on those systems being tested and on administrative controls as they relate to the preoperational test program. Until the licensee reviews their training program to verify that these training requirements have been met prior to preparing and/or conducting testing this item is Unresolved (390/81-31-02, 391/81-28-02).
- c. Part II, Section 4, Step 4.0 of the OQAM states that each preoperational test instruction shall be written in sufficient detail to ensure the test demonstrates that the system and components perform in accordance with the requirements contained in applicable design documents including the FSAR, Section 3.2, which states that detailed test instructions for each preoperational test shall be prepared by a nuclear power test director, and he shall use the FSAR as a basis.

Two sets of FSAR's maintained within the preoperational test group were found to be outdated (Amendments 42, 43, 44 and 45 were missing). Changes made in amendment 44 appear to have had significant impact on the test description section and on the test program implementation section. The licensee has initiated a review to ensure FSAR commitments have been translated to preoperational test scoping documents and to preoperational test instructions. Until the licensee completes a review of these four amendments and ascertains the impact on test program implementation and test descriptions this item is open (390/81-31-03, 391/81-28-03).

#### 6. Preoperational Testing Quality Assurance

The licensee's administrative control for initiating and scheduling maintenance on identified equipment deficiencies was reviewed. Twelve Trouble Reports (TR) that pertained to safety-related equipment were reviewed to ensure that corrective action had been effected by applicable groups in accordance with WBNP Standard Practice 7.1.2. Procedural steps defined by the licensee required that supervisors review, set priorities,

identify work instructions, ensure availability of needed parts and labor, and schedule post maintenance testing, if required. Actual completion of work and the controls utilized to close TR's was not reviewed as part of this inspection.

No violations or deviations were identified.

7. Management Meeting

The inspectors participated in a management meeting of regional staff and licensee supervision on December 15, 1981. The licensee presented conclusions with respect to the adequacy of the quality assurance program within the office of Engineering Design and Construction. The licensee discussed plans for further internal review by the Nuclear Safety Review Staff, as well as plans to start correcting several root causes, which TVA had concluded to be prevalent contributing factors in most deficiencies.

8. Independent Inspection Effort

During this period the inspectors furthered the inspection of the containment divider barrier, visited the licensee's design organization, and reviewed docketed licensing submittals. The acceptable findings are discussed below.

- a. The inspector continued the review of testing of the containment divider barrier components. Initial review of this area is discussed in paragraph 6.c. of IE Report 50-390/81-26, 50-391/81-24. Flow diagram 47 W866-1, "Heating and Ventilating Air Flow," identifies three types of penetrations to the containment divider barrier. These are for the containment air return fans, the hydrogen collection headers and the emergency gas treatment system. Only the hydrogen collection headers were reviewed at this time. The notes on the flow diagram indicated the design pressure of this ductwork to be 6 in-wg, whereas these lines are connected to compartments which must withstand accident pressures in the range of 24 psid to 50 psid. The inspector found that the physical drawing routed this ductwork through concrete divider barrier walls. Therefore, this design appears to provide no significant potential for bypassing the divider barrier. The inspector confirmed the plant installation to be in conformance with the physical drawing by in-plant inspection of the train A ductwork.
- b. Both resident inspectors visited the Division of Engineering Design offices in Knoxville, Tennessee on December 4. The licensee presented a description of the organizational relationships employed in the design of the NSSS and balance of plant. A brief tour of the offices was made including the computer graphics area and the mock ups, both of which are concepts for improving design and design control of plants subsequent to Watts Bar.

- c. The licensee is currently submitting information to the Office of Nuclear Reactor Regulation (NRR) to support the licensing review of Unit 1. This information includes responses to NRR questions, FSAR amendments, and information related to Safety Evaluation Report open items. The inspectors selected a representative sample of licensee technical descriptions and commitments to verify accuracy and implementation. Apparent deficiencies in accuracy and implementation were noted. The specific matters have been discussed informally with NRR and will be transmitted to that office.

No violations or deviations were identified.

#### 9. Licensee Identified Item

On December 17, 1981 the Construction Quality Assurance Unit identified to the Construction Engineer that significant deficiencies apparently existed in radiation exposure control associated with radiographic examination of welding. The licensee initiated an investigation into the matter and initiated steps to determine if any overexposures had occurred. NRC notified the State of Tennessee, which is an agreement State.

The Tennessee Division of Radiological Health dispatched an inspector, who arrived on site December 18. Preliminary results of this investigation indicated a procedural violation had occurred, but there were no over-exposures. ✓

Based upon the assumption that an investigation would be conducted by the State, the matter was not further pursued by NRC and no violations or deviations were identified.