



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

Report Nos. 50-390/82-24 and 50-391/82-21

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 CPFR-92

Inspection at Watts Bar site near Spring City, Tennessee

Inspector

T. L. Heatherly

8/4/82

Date Signed

Approved by:

D. R. Quick  
D. R. Quick, Section Chief, Division of  
Project and Resident Programs

8/4/82

Date Signed

#### SUMMARY

Inspection on June 21 - July 20, 1982

#### Areas Inspected

This routine, announced inspection involved 96 resident inspector-hours on site in the areas of licensee action on previous inspection findings; independent inspection effort; and followup on licensee identified items.

#### Results

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

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*G. Wadewitz, Construction Project Manager
- \*T. Hayes, Nuclear Licensing Unit Supervisor
- \*S. Johnson, Assistant Construction Engineer

Other licensee employees contacted included six construction craftsmen, four engineers.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on July 21, 1982, with those persons indicated in paragraph 1 above.

### 3. Licensee Action on Previous Inspection Findings

- a. (Closed) Violation (390/81-09-02, 391/81-09-01) Failure to non-conform (NCR) defective bolt anchors: The inspector reviewed the licensee's corrective actions and the steps taken to preclude recurrence. As stated in the licensee's response to the violation, a Construction Deficiency Report (CDR) had been submitted documenting the defective bolt anchors. NRC will perform a followup inspection subsequent to submission of the licensee's final CDR report. Procedural steps within the licensee's quality instruction providing justification for invalidating NCRs were reviewed and found to be adequate. This item is closed.
- b. (Closed) Violation (390/81-24-03) Activities not accomplished in accordance with quality procedures for disassembly and reassembly or safety related hangers: This violation is similar to violations 390/82-17-01 (Open) and 390/81-19-02 (Closed). It is expected that the licensee's corrective action for violation 390/82-17-01 will be inclusive to 390/82-24-03. This item is closed.
- c. (Closed) Violation (390/81-07-02, 391/81-07-02) Failure to control Engineering Design (ENDES) procedures on site: The inspector verified that ENDES site representatives (hanger group) were maintaining controlled copies of applicable design procedures. It was also noted that the Quality Control and Records Unit (QCRU) was receiving and distributing controlled copies of ENDES procedures and criteria to applicable construction engineering units. This item is closed.
- d. (Closed) Unresolved item (390/80-36-02, 391/80-28-02) Essential Raw Cooling Water System (ERCW) design error: The licensee conducted

further reviews and reported deficiencies and corrective actions in accordance with 10 CFR 50.55(e) reporting requirements on January 29, 1981. NRC will conduct a followup inspection after submission of the licensee's final CDR. This item is closed.

- e. (Closed) Unresolved item (390/81-14-11) Previous flushing operations associated with the Chemical and Volume Control System (CVCS) charging pumps: The inspector reviewed the contents of an informal memo that described a review of flushing operations conducted on the CVCS prior to issuance of IE Inspection Report 50-390/81-14. The review identified that the previously conducted flush procedures contained prerequisites that ensured adequate bypassing and isolation of the charging pumps. This item is closed.
- f. (Closed) Open item (390/82-18-06) Corrective action initiated for failed limiter valve operators: The inspector verified that the licensee had initiated corrective action for failed valve operator casings. Construction Deficiency Report (CDR) WBRD 50-390/82-19 and 50-391/82-18 dated February 25, 1982 identified the failed casings and stated that TVA and Westinghouse would investigate the failure mechanisms. Corrective actions will be inspected subsequent to receipt of the licensee's final report. This item is closed.
- g. (Closed) Open item (390/81-13-04) Addition of G-43 requirements to construction site procedures: The inspector verified that construction site procedures contained applicable Construction Specification (G-43) requirements for construction testing. These procedural steps required adequately supported systems prior to testing that would prevent potential damage to piping, hangers and equipment due to deadweight loading and thermal dynamic effects. Based upon this verification, this item is closed.
- h. (Closed) Open item (390/80-13-09) Quality Assurance Record Index: Quality Control Instruction (QCI)-1.8 "Quality Assurance Records" was verified revised to require a records index as committed to in FSAR Table 17.1A-1. The inspector conducted an audit of five construction records using the index to verify correctness and retrievability and found that the index was adequate. 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 noncompliance or deviations. A new unresolved item identified during this inspection is discussed in paragraph 5.a.

#### 5. Independent Inspection Effort

The inspector conducted several plant tours, met with licensee personnel to discuss generic safety issues and monitored the licensee's investigative

process for recently identified material deficiencies. Findings were as follows:

- a. During an unrelated inspection conducted during June, 1982, the inspector was informed that a potential deficiency existed on one Spent Fuel Cooling and Purification System (SFCPS) pump (C-S pump). The deficiency was identified to the inspector as misalignment between the motor and pump flanges. When notified by the inspector, the licensee initiated an investigation to determine why administrative controls were not placed on the pump when the suspected deficiency was identified; actual adverse effects of misalignment and generic applicability; future testing that would have identified misalignment; and the cause of misalignment. Until the licensee completes its investigation of the SFCPS pumps misalignment this item is unresolved. (390/82-24-01, 391/82-21-01).

- b. The inspector transmitted information received from other nuclear facilities to the licensee. The information concerned material deficiencies that were potentially generic to Watts Bar. The three deficiencies included:

- (1) Designed diesel generator control circuitry that disabled the diesel on simultaneous loss of offsite power and shift of control to the auxiliary control room.

The licensee concluded that the diesel's emergency start feature was "hard wired" into the control circuit and independent of the auxiliary control room switch contacts and, therefore, not a safety concern.

- (2) Yoke failures on twenty-four inch actuators used in safety-related service water systems.

The licensee's mechanical groups concluded that none of the referenced twenty-four inch valves were used at Watts Bar.

- (3) Eighteen inch and smaller fire dampers failed to close when fusible links separated.

The licensee concluded that most of its fire dampers were procured from another manufacturer and that the quality assurance program required dampers cycling several times to verify proper closure. The licensee is continuing to review other potential generic issues.

- c. The licensee contacted the inspector concerning two identified deficiencies. The inspector visually inspected both deficiencies and monitored corrective action.

- (1) On June 29, 1982, at approximately 10:20 a.m., breaker 1714, 6.9 KV Unit Board 1B, normal feeder to the 6.9 KV Shutdown Board 1A, 51 N relay tripped. The licensee initiated immediate

troubleshooting procedures to determine the cause of the trip. At approximately 2:00 p.m., after meggering procedures had been conducted, a B phase cable (one of three within in the center set of three groups; was noted to be damaged. The cable location was the turbine building, elevation 729, column No. C3G. Damage had occurred when a nail protruding from a scaffold walkboard had penetrated the B phase cable cover. The licensee is conducting an investigation and plans to replace the six cables (A, B, C phase in two groups) within the tray. All electrical equipment functioned properly after the trip and no injuries to personnel occurred.

- (2) During modification work on the 1B2 diesel engine turbocharger the licensee discovered that No. 1 idler gear bearing had been damaged. Blueing of the metal (indicating excessive heat) was noted and bearing metal had accumulated in one area of the inner circumference. The licensee determined that the bearing had, at least on one occasion, failed to receive an adequate oil supply. Since the idler gear's operation affects turbocharger operation and the diesel firing sequence, bearing failure during operation would have rendered the engine inoperable. The licensee immediately non-conformed the failed bearing and plans to inspect all idler gear bearings during subsequent modification work. At present four bearings have been inspected and the deficiency does not appear to be generic.

- d. The inspector conducted several plant tours to assess overall construction activities; verify compliance with work plan and work package procedures; and interview licensee field personnel. Major construction activities included application of cement mortar lining to the Essential Raw Cooling Water (ELRCW) system headers, change out of small diameter ERCW piping from carbon steel to stainless steel and overall hanger rework. Several craftsman were interviewed concerning the technical aspects of their work and work plan/work package program implementation. Within the areas inspected no violations or deviations were identified and craft knowledge was adequate.

#### 6. Followup on Licensee Identified Items

(Closed) LII (CDR 390/81-95, 391/81-89) Documentation of investigation of use of equipment found out of calibration: The inspector reviewed recently revised construction site quality procedures for utilizing and calibrating instrumentation, tools and test equipment. The procedures were adequate. This item is closed.