



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

Report Nos. 50-390/81-13 and 50-391/81-13

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

Facility Name: Watts Bar

Docket Nos. 50-390 and 50-391

Licensee Nos. CPPR-91 and CPPR-92

Inspectors: *D R Quick*  
J. A. McDonald

*7/8/81*  
Date Signed

*D R Quick*  
T. L. Heatherly

*7/8/81*  
Date Signed

Approved by: *D R Quick*  
D. R. Quick, Section Chief, Resident and  
Reactor Project Inspection Division

*7/8/81*  
Date Signed

SUMMARY

Inspection on May 21 - June 20, 1981

Areas Inspected

This routine announced inspection involved 153 resident inspector-hours on site in the areas of licensee actions on previous inspection findings, preoperational test program implementation, independent inspection effort, and previous inspection findings.

Results

Of the four areas inspected, no violations or deviations were identified in two areas; two violations were found in two areas (Failure to establish measures for controlling measuring and test equipment - paragraph 5.a.; and failure to assure malfunctions are identified and corrected - paragraph 6.a.).

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*S. Johnson, Assistant Construction Engineer
- \*T. R. Brown, Hangar Engineering Unit Supervisor
- \*J. F. Cox, OEDC Licensing Engineer
- \*H. J. Fischer, Assistant Construction Engineer
- \*L. J. Johnson, Mechanical Engineering Unit "B" Supervisor
- \*J. A. Thompson, Startup Test and Coordinator Unit Supervisor

Other licensee employees contacted included 10 construction craftsmen, and fifteen engineers.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on June 23, 1981 with those persons indicated in Paragraph 1 above. The licensee will make commitments for resolution of open items and unresolved items within two weeks of the exit interview. ...

### 3. Licensee Action on Previous Inspection Findings

a. (Closed) Infraction (390/80-16-01): Failure to follow procedures. The licensee has taken the following steps to correct this infraction.

- (1) Procedures are in place to instruct responsible engineers that materials in a nonconforming status are promptly tagged and segregated from conforming material.
- (2) A review of significant NCR's indicated that the site QA Supervisor is reviewing and is initialing all significant NCR's for proper corrective action.
- (3) Procedures now require that all nonsignificant NCR's be transmitted to OEDC-QA for review and upgrading to a significant status if necessary.

b. (Closed) Unresolved item (390/81-03-08): Upper Head Injection system level switch performance. Westinghouse and TVA have reviewed the concern and concluded that the consideration of actual instrumentation performance vs. assumptions used in test evaluations is appropriate and did not occur. Westinghouse has reevaluated the UHI uncertainty analysis including greater instrument error. Therefore, the concern applicable to the UHI system is resolved until the licensee generically reviews the impact of instrumentation performance on test assumptions this item is unresolved (390/81-13-01).

#### 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. New unresolved items identified during this inspection are discussed in paragraphs 3.b, 6.b. and 6.c.

#### 5. Preoperational Test Program Implementation

The inspector reviewed instrumentation programs used in the preoperational test program. Conferences between the licensee's design group, cognizant of Upper Head Injection instrumentation tolerances and expected instrument performance, were also conducted. Findings were acceptable except as follows:

- a. During a plant tour the 2BB diesel generator was noted to be running for a preoperational test with temperature instrumentation that was not calibrated within its specified frequency. It was also noted that pressure switches installed on the diesel had been initially calibrated, but the Instrumentation Group had not assigned calibration frequencies to the switches.

Instrumentation personnel indicated that the switches should have been assigned an eighteen month calibration frequency; however, the observed switches were outside that frequency. Prerequisite for diesel testing had been initiated by the Instrumentation Group but the initials only indicated initial calibration, not calibration within their required frequency. This failure to properly calibrate instruments for use on a safety-related system constitutes a violation (391/81-13-01).

#### 6. Independent Inspection Effort

As a result of routine interface during facility tours with licensee personnel, the inspectors made the following findings:

- a. Interviews with Construction and Nuclear Power personnel indicated that excessive pipe vibration and water hammer had occurred in the Safety Injection and Residual Heat Removal systems from June 9 through 14, 1981, while filling, venting and flushing operations were in progress. Similar operations, on the same systems, done by the preoperational test section in December, 1979, had revealed no vibration or water hammer occurrences. The only corrective action known to have taken place during the June 9-14 time period, was to stop the pump and perform informal valve lineups. One valve which was thought to be fully open was found only cracked open. Formal identification of the malfunctions, adequate investigation to determine cause and safety implications, and establishment of corrective action to prevent recurrence did not occur and were not required by procedure. This failure to take appropriate corrective actions and the lack of procedural controls in this area constitutes a violation (390/81-13-02).

- b. Construction Specification G-43, Section 2.11, requires that adequate dead weight supports (temporary or final) be installed on piping for construction testing and non vibration preoperational testing. This specification apparently does not consider the dynamic effects on the system that can be generated while conducting these tests. Until the licensee evaluates the adequacy of G-43 procedures that allow installation of deadweight supports during testing without consideration to dynamic effects that could occur on the system this item is unresolved (390/81-13-03).
- c. Construction Specification G-43, Section 2.11, requires that adequate deadweight supports (temporary or final) be installed on piping for construction testing. Site flushing procedures do not address this prerequisite. Until the licensee incorporates the G-43 requirements into construction procedures this item is open (390/81-13-04).
- d. Interfacing site procedures require that the System Operating Instructions (SOI) be used during construction flushing operations on systems that are in an Initial Release for Operation (IOR) status. The use of these SOI's may have caused safety-related system malfunctions during flushing operations. Until the licensee performs a coordinated review of SOI's and the construction flush procedures to insure that they are adequate for safe operation of safety-related systems and the necessary procedural revisions are made this item is open (390/81-13-05).
- e. The inspector identified from HVAC damper qualification documentation that one damper was apparently not suited for its intended environment. It was then determined that this damper and others had been removed from the system by Engineering Change Notice (ECN) 2478. After further discussion, the Nuclear Safety Section of the Nuclear Engineering Branch has initiated an investigation of this ECN including: structural integrity of the dampers, design and procurement specifications, corrective actions, safety significance, and reporting to NRC. Until the licensee completes this generic review of HVAC dampers this item is unresolved (390/81-13-06).

## 7. Previous Inspection Findings

- a. (Closed) Open item (390/80-16-07): Procedure Modification for drawing control center drawing accountability of issued controlled drawings.
- b. (Closed) Open item (390/80-16-06): Review of SCCDL Revisions. Procedures now delegate the responsibility for reviewing all nuclear power generated SCCDL's and revisions.
- c. (Closed) Open item (390/81-09-06): Door seal acceptance criteria. Engineering Design has provided the construction site with acceptance criteria. This acceptance criteria has been incorporated into site Quality Control Procedures.

- d. (Closed) Open item (390/80-30-03): Requirements for transfer and retention times for DOC records. Interfacing procedures between the construction site and power production are now correct and consistent with respect to DOC document transfer and retention.
- e. (Closed) Licensee identified item (390/79-30-06, 391/79-25-06): MOV control circuit failures. Engineering Change Notice 1841 added surge suppression network modules to all solid state Cyrdon relays.
- f. (Closed) Licensee identified item (390/80-27-04, 391/80-21-04): Safety-related piping and locations. A review of the licensee's final report, dated August 19, 1980, indicated that piping will be reinstalled in the locations and configuration specified on approved drawings or left "as is" with the nonconforming condition approved, ensuring there is no safety or seismic problem with the new configuration or location. Piping systems transferred by construction to power production previous to implementation of procedures to inspection piping location and configuration will be backfilled.
- g. (Closed) Open item (390/80-26-02, 391/80-20-01): Upper Head Injection system isolation valve stroke times. The interrupt time for injection has been shown to be a function of differential pressure and to be repeatable and acceptable. Therefore this item is resolved.
- h. (Closed) Open item (390/80-26-03, 391/80-20-02): Upper Head Injection system instrumentation for isolation valve stroke times. The setting of the limit switches has been certified to be in the range of 97 to 98 percent of stem travel. This is a consistent error of low significance therefore this item is resolved.