



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

Report Nos. 50-390/81-03 and 50-391/81-03

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

Inspectors:	<u>R. V. Plenyat for</u>	<u>5/14/81</u>
	J. A. McDonald	Date Signed
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Approved by:	<u>D. R. Quick</u>	<u>5/14/81</u>
	D. R. Quick, Section Chief, RRPI Section	Date Signed

SUMMARY

Inspection on February 1, - March 18, 1981

Areas Inspected

This routine announced inspection involved 276 resident inspector-hours on site in the areas of licensee action on previous inspection findings, design change control, independent inspection effort, preoperational test program implementation controls, previous inspection findings, and employee concerns.

Results

Of the seven areas inspected, no violations or deviations were identified in three areas; five violations were found in four areas (failure to provide QA program for safety related freeze protection - paragraph 5.a.; failure to follow procedures for valve modifications - paragraph 5.b.; failure to follow procedures for nonconforming conditions - paragraph 6.a.; failure to establish measures for adjustment of test instrumentation - paragraph 7.a.; failure to document - paragraph 8.a.).

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DETAILS

1. Persons Contacted

Licensee Employees

- *J. E. Wilkins, Project Manager
- *S. J. Boney, Welding Engineering Supervisor
- *T. R. Brown, Hanger Engineering Supervisor
- *T. B. Bucy, Assistant Construction Engineer
- *K. G. Frazier, Mechanical Engineering Unit "A" Supervisor
- *T. Hayes, Instrumentation Engineering Unit Supervisor
- *L. J. Johnson, Mechanical Engineering Unit "B" Supervisor
- *S. Johnson, Assistant Construction Engineer
- *J. P. Knight, Office of Engineering Design & Construction
- *J. E. Treadway, Construction Superintendent
- *R. W. Olson, Construction Engineer
- *A. W. Rogers, Quality Assurance Supervisor
- *S. R. Stout, Engineering Design Licensing Engineer
- *J. A. Thompson, Startup and Test Engineering Supervisor
- *J. Weinbaum, Quality Control and Record Supervisor

Other licensee employees contacted included approximately twenty engineers.

*Attended either or both exit interviews: February 27 and March 18, 1981.

2. Exit Interview

The inspection scope and findings were summarized on February 27 and March 18, 1981, with those persons indicated in Paragraph 1 above. The licensee acknowledged the findings. No commitments for resolution of the unresolved items discussed in the report were made by the licensee. The inspector will make a separate request for such commitments.

3. Licensee Action on Previous Inspection Findings

- a. (Closed) Infraction (50-390/80-23-01, 50-391/80-17-01): Failure to cap safety-related piping and fittings during construction. Several tours revealed that controls were in place to assure cleanliness requirements for safety-related piping and fittings.
- b. (Closed) Violation (50-390/80-35-02, 50-391/80-22-09): Failure to take appropriate QA audit followup action. A review of recent site QA audit reports indicated that the audit team no longer closes audit findings until implementation of corrective action has been completed.
- c. (Closed) Violation (50-390/80-35-03, 50-391/80-22-02): Failure to control preservation of mechanical snubbers. A review of administrative controls, corrective action and the results of two tours

through the construction site indicated that corrective action was adequate to assure snubber preservation.

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 6.b., 6.e., 7.b., 8.c., 8.d., and 8.e.

5. Design Change Control

The inspectors reviewed the conduct and documentation of modifications to Upper Head Injection system hydraulic isolation valves which were intended to preclude seat damage as had occurred during the preoperational test program for identical valves at the Sequoyah facility. Also the reduction in design and quality requirements for electric pipe heating were reviewed. Findings were not acceptable as noted below:

- a. The safety functions of numerous components and portions of systems need protection from the adverse effects of low temperature. For some functions such as those of the Essential Raw Cooling Water (ERCW) pumps, located in the intake pumping station, the licensee has chosen to provide electric pipe heaters (heat tracing) to prevent freezing of water in the piping. The accepted QA program in the FSAR identifies the ERCW pumps as safety-related and covered by the quality assurance program. The inspector could not find a justification for removing freeze protection associated with the safety functions of the ERCW system from the QA program. However, the inspector noted TVA memorandum EEB 780609 909, which stated that the heat trace system has been deleted from the construction QA program since Engineering Design had determined that it did not perform any safety-related function. Since the heat trace system apparently does perform safety functions and since it has been removed from the quality assurance program, this constitutes a violation of the quality assurance program (390/81-03-01, 391/81-03-01).

The inspector observed that efforts by Division of Construction site personnel to construct these features under the QA program were incomplete. No preoperational testing was identified.

- b. Audit and inspection of the completed modifications to Units 1 and 2 Upper Head Injection isolation valves revealed that the modification was not performed in accordance with FCN's WAT-10529 and SBT-10521 respectively. Observation of the valve discs and wedges in Unit 2 and a review of Anchor/Darling production releases for Unit 1 indicated that the wedges instead of the discs had had weld metal added and milled to an unspecified tolerance. Both discs appeared to have exactly the same work done on them even though the FCN specified further modification to the downstream disc to make up for body seat removal.

A review of documentation associated with FCN's WAT-10529 and WBT-10521, indicated that some documentation was missing, some were inadequately filled out and most were not properly stored. The TVA Inspection and Testing Branch Inspection Report for Unit 1 was transmitted to the site, at the inspector's request, but the Unit 2 report was missing. The TVA inspection report for Unit 1 valves indicated the work accomplished was in agreement with the Anchor/Darling production release narrative; however, that work did not agree with the FCN contractual requirements. Likewise, the responsible engineer did not review the work documentation to ensure it met contractual requirements. Reports of NDE testing required to be accomplished by the vendor on modified parts at the factory were missing for Units 1 and 2 valves.

The Anchor/Darling production release did not specify any thickness tolerances for weld buildup and milling operations on the wedge guides. The acceptance signatures for steps taken to modify the wedges were not signed or dated. The production release did not specify the NDE requirements that were specified in the FCN. A complete set of records on valve modification work accomplished was not collected and controlled by TVA. The required Westinghouse Quality Control Release form for FCN WBT-10521 was not originated at the Anchor/Darling factory prior to shipment of the reworked valves to TVA.

These examples of failure to follow procedure constitutes a violation (390/81-03-02, 391/81-03-02).

In response to this violation, the licensee should address the acceptability of work which was done on the Upper Head Injection isolation valves and also the reason(s) for the following inaccurate statement in TVA memo NEB 81 0227 250: "...Rework of the subject valves was performed in accordance with the applicable Westinghouse FCNB...".

6. Independent Inspection Effort

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

- a. During the performance of lubrication checks by Mechanical Engineering Unit A (MEU A) personnel around December 1980, abnormal contamination of steam driven auxiliary feedwater pump (AFW) oil systems was identified. Sandy textured grit was found in the bearing housings of the Unit 1 and 2 auxiliary feedwater pump turbines and the Unit 2 auxiliary feedwater pump. The MEU A inspection personnel notified the responsible engineer by memo in December 1980 and January 1981.

A Nonconforming Condition Report (NCR) was not initiated as required by Section 5.2 of WBNP-QCP-1.2. This example of failure to follow procedures constitutes a violation (390/81-03-03, 391/81-03-03).

It was noted that work packages to authorize generic investigation and correction of this problem in Division of Construction equipment had

not yet been prepared. Had an NCR been issued, there were no formal provisions requiring the notification of Division of Nuclear Power personnel of the potential for the condition to generically apply to safety-related equipment under their control, including safety injection and centrifugal charging pumps.

- b. Design specifications require that the Residual Heat Removal (RHR) pump suction side and discharge side relief valves be set at 450 psig and 600 psig respectively. Additionally, automatic interlocks on the two valves which isolate the RHR system from the Reactor Coolant system are set for increasing pressure at 750 psig. Until the licensee provides the basis for these setpoints and the associated limits in operating instructions, this item is unresolved (390/81-03-04).
- c. On October 1, 1979, Westinghouse (NSSS vendor) notified TVA of an incident of dropped rodlets from rod cluster control assemblies used in 17x17 fuel at another utility. Westinghouse provided guidance for the detection of dropped control rodlets. The licensee plans to incorporate these guidelines prior to fuel loading in a technical instruction for flux map evaluation. Until the licensee prescribes guidance for detection of dropped control rodlets, this item is open (390/81-03-05).
- d. Once a feature has been tentatively transferred from the Division of Construction (CONST) to the Division of Nuclear Power (NUC PR) all remaining work on the feature is identified on the Outstanding Work Item List (OWIL), maintained by CONST. Currently, the informal use of deficiency reports is used to update the OWIL with problems identified by NRC PR. Until the licensee establishes formal controls over the initiation, transmittal, and evaluation of deficiency reports, this item is open (390/81-03-06).
- e. Construction Specification G-40 specifies the use of Kopr-Shield (brand name) sealant on threaded conduit connections. Permatex #3 Form-A-Gasket is specified by Engineering Design drawings for sealing fire protection system threaded pipe joints. Both sealants are used on threaded joints inside the containment structure. Until the licensee demonstrates the environmental suitability for use of these materials in reactor containment, this item is unresolved (390/81-03-10).

7. Preoperational Test Program Implementation Controls

The inspector reviewed the results of the partially completed test of the Upper Head Injection System (W-10.8). This test and the results evaluation interfaced with data taken during testing at similar facilities designed by the NSSS vendor. Findings were acceptable except as follows:

- a. Calibration of test instrumentation for the preoperational test program is addressed in section 4.02 of the Office of Power Quality Assurance Manual, section 2 of Preoperational Test Section Instruction Letter No. 6, and in the entirety of TI-6, Calibration Program for Measuring and

Test Equipment. These documents do not provide any requirements for the proper adjustments to calibrated instrumentation or the data provided by the instrumentation which compensate for the elevation at which the instrument is installed. Such compensations were neither specified by procedure nor properly controlled during the performance of the Upper Head Injection System Test at Watts Bar Unit 1. This testing relied upon data taken from Sequoyah Unit 1 which was similarly deficient. This failure to establish proper measures for test equipment constitutes a violation (390/81-03-07).

- b. The inspector's review of portions of the data from high pressure blowdowns of the Upper Head Injection (UHI) systems at similar Westinghouse facilities (Sequoyah and McGuire) identified inconsistent operation of the water accumulator level switches which are used to terminate Upper Head Injection. Rough calculations indicated that these four switches may routinely be actuated over a span of four or more inches. The Westinghouse uncertainty evaluation for the UHI system allows for a setpoint tolerance of one quarter inch and an instrument accuracy of one quarter inch. Therefore, the observed level switch actuations should have occurred within a span of about one half inch. Until the licensee reviews the Westinghouse uncertainty evaluation for Upper Head Injection System testing to address the apparent conflict between the evaluation's assumed level instrument accuracy and observations of their performance during high pressure blowdowns this item is unresolved (390/81-03-08).

8. Fire Prevention/Protection

The inspector initiated a review of the licensee's programs to satisfy the Watts Bar Fire Protection Submittal as well as the implementation of these programs. Findings identified thus far are:

- a. WBNP-QCI 1.39 requires that documentation of fire door inspection be accomplished in accordance with WBNP-QCP-2.18. Discussions held with Civil Engineering Section supervisory personnel indicated that they were unaware of inspection documentation requirements. The supervisor and his assistant indicated that inspections had been done and several doors had been replaced because of a lack of proper certification but no documentation of inspection had occurred.

This failure to follow documentation procedures constitutes a violation (390/81-03-09).

- b. FSAR section 9.5.1.2.1 states that in other areas where water would create a hazard due to the nature of the equipment or type of fire (e.g. electrical or oil) a low pressure carbon dioxide fire protection system is provided. Water systems have been installed in several electrical board rooms, battery board rooms and near the ERCW electric board panels. Until the licensee corrects this apparent conflict between the FSAR and the actual "as-built" fire protection system this item is unresolved (390/81-03-11).

- c. Engineering Design drawing 47BM492-4 Rev. 0, Fire Protection Bill of Material, specifies the use 650° F rated water spray nozzles. Nozzles installed in the reactor containment in various areas (e.g. reactor coolant pump spray rings) are rated at 500°F. Until the licensee identifies the cause(s) of this discrepancy this item is unresolved (390/81-03-12).
- d. Engineering Design drawings for the Unit 1 and 2 electrical spread room indicate that fire protection piping is sized in accordance with NFPA-13 criteria for ordinary hazards. Center-to-center nozzle spacing is installed in accordance with the criteria for extraordinary hazards. Also the main fire header appears to contain more nozzles per foot of pipe than is acceptable for 6 inch diameter pipe. Until the licensee provides the results of a review of these apparent discrepancies this item is unresolved (390/81-03-13, 391/81-03-04).
- e. Tables 1.2 and 1.4 of the Watts Bar Fire Protection Submittal, dated September 1980, require that conduits with interdivisional interactions of twenty feet or less have a one inch thick B&W Kaowool blanket (brand name). Cognizant electrical engineering unit personnel were unfamiliar with the requirement and there appeared to be no site program to accomplish this task. Until the licensee provides information describing the method of implementation of this commitment this item is unresolved (390/81-03-04).

9. Previous Inspection Findings

- a. (Closed) Open item (390/80-35-05, 391/80-22-04): Procedure modification for closing significant and reportable audit findings. Procedural changes have been made and training given to insure that audit findings and NCRs that are deemed significant and/or reportable remain open and tracked by the site QA audit team until completion of corrective action.

10. Employee Concerns

The inspector continued investigation of several employee concerns; however, no investigations were completed during the period of this report.