



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

Report Nos. 50-390/80-35 and 50-391/80-22

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

Facility Name: Watts Bar 1 and 2

Docket Nos. 50-390 and 50-391

License Nos. CPPR-91 and CPPR-92

Inspection at Watts Bar Nuclear Plant

Inspectors: E. Ford for  
 J. A. McDonald

Feb 13 1981  
 Date Signed

E. Ford for  
 T. L. Heatherly

Feb 13 1981  
 Date Signed

Approved by: P. A. Taylor for  
 H. C. Dance, Section Chief, RONS Branch

2-13-81  
 Date Signed

SUMMARY

Inspection on November 1-30, 1980

Areas Inspected

This routine inspection involved 96 resident inspector-hours onsite in the areas of Construction Quality Assurance, Preoperational Test Program Implementation, Preventive Maintenance, and interfaces between Engineering Design and Construction.

Results

Of the four areas inspected, no violation or deviations were identified in one area; five violations were found in three areas (failure to follow procedures-paragraph 4.a; failure to report a QA Breakdown - paragraph 5; improper audit followup-paragraph 4.b; failure to follow procedures-paragraph 4.c; failure to prescribe activities with instructions-paragraphs 6.a and 6.b).

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. E. Wilkins, Project Manager
- \*R. L. Bruce, Electrical Maintenance Supervisor, Nuclear Power
- \*E. R. Ennis, Assistant Plant Manager, Nuclear Power
- \*T. W. Hayes, Instrument Engineering Unit Supervisor
- \*S. Johnson, Assistant Construction Engineer
- \*J. M. Lamb, Mechanical Engineering Unit A Supervisor
- \*R. L. Lewis, Assistant Plant Superintendent, Nuclear Power
- \*S. R. Martin, Hanger Engineer
- \*R. W. Olson, Construction Engineer
- \*J. H. Perdue, Electrical Engineering Unit Supervisor
- \*A. W. Rogers, QA Unit Supervisor
- \*J. G. Shields, Assistant Construction Engineer
- \*J. A. Thompson, Startup Test and Coordination Supervisor
- \*J. E. Treadway, Construction Superintendent
- \*J. Weinbaum, Quality Control and Record Unit Supervisor
- \*B. Willis, QA Supervisor, Nuclear Power

Other licensee employees contacted included 6 construction craftsmen.

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on December 5, 1980 with those persons indicated in Paragraph 1 above. The licensee acknowledged the findings and stated that commitment dates for resolution of the open and unresolved items would be provided two weeks after the exit interview.

### 3. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. One new unresolved item identified during this inspection is discussed in paragraph 7.a.

### 4. Construction QA Program

The inspector conducted a review of the site QA Unit procedures, previous audits and the follow up action taken by the audited units. Findings were acceptable except as follows:

- a. Review of site QA audits revealed that significant quality assurance deficiencies existed in two areas. While the scope and generic aspects of these deficiencies were recognized by site personnel, immediate steps were not taken by management or QA personnel to stop the activities. Requirements for work stoppage were contained in QASP 7.4 and QCI 1.32. The deficiencies were:

- (1) Audit WB-M-80-07, deficiency No. 1, revealed that safety-related belt drive motors (less than 7 horse power) were not receiving preventive maintenance. Several of these motors were running in an "Initial operational release" status and continued to run after the audit finding was made known to plant management. One motor (1-MTR-30-196 A), used for air handling unit #22, had not been greased. The filters for the unit were exposed to a heavy construction area and were clogged with dirt and debris.
- (2) Audit WB-G-80-02, deficiency No. 1, stated that portions of most HVAC systems including emergency gas treatment were safety-related and therefore under the Quality Assurance program; however, no procedures were provided to document field fabrication, and installation of the duct assemblies. This was classified as a significant audit and sent to TVA's Nuclear Licensing Section (NLS).

NLS concluded that the audit finding applied to the Emergency Gas Treatment alone and concluded that the construction of safety-related system without the benefit of a QA program did not constitute a QA program breakdown. In the inspector's view these conclusions are erroneous. Site personnel recognized that non-ASME piping in these systems was also lacking adequate QA programmatic control. Site personnel immediately took action to draft procedures; however, these procedures were not issued for approximately 6 months and work on these systems was not stopped.

This failure to stop work activities which conflicted with program requirements constitutes a violation (390/80-35-01 and 391/80-22-01).

- b. Review of QA audits revealed that two audit deficiencies were closed prior to the corrective action being implemented or completed as required. Corrective action specified for audit deficiency WB-G-80-11 No. 1 was to write a Design Information Request (DIR) or to coordinate with Engineering Design (ENDES) to upgrade the circuits of the 48 volts battery chargers to satisfy physical separation requirements. The DIR was written but cancelled. However, a memo requesting information was sent to ENDES. The ENDES reply, dated July 24, 1980, stated the actual plant design was correct and that the FSAR was being revised to clarify requirements. The audit finding was closed July 3, 1980 approximately three weeks prior to the ENDES resolution. As of December 5, 1980, the FSAR had not been clarified.

The corrective action for audit WB-M-79-10 deficiency No. 2 required that maintenance records be reviewed and updated. One example cited was O-PKG-70-131. QASP 7.1 Section 10 requires completion of corrective action prior to closure of audit findings. This audit finding was closed August 7, 1980, yet the maintenance record for O-PKG-70-131 was not updated, nor overdue maintenance performed until September 24, 1980. Additionally, when the finding was closed, the TVA auditor had noted that the review of maintenance records was incomplete.

These failures to take appropriate audit followup action constitute a violation (390/80-35-02, 391/80-22-09).

- c. On November 19, 1980, an inspector tour of the area adjacent to reactor building No. 2 revealed that specified Level "C" storage requirements for Pacific Scientific shock arrestors was not being followed. Ten shock arrestors were exposed to the weather and not properly packaged in accordance with Technical Manual requirements. No documentation existed to indicate their status. The site QA Audit Unit had identified this same type problem and had closed the deficiency two months prior to this inspection. Subsequent conversations with craft, site QA audit personnel, and Hanger Engineering Unit personnel indicated that informal oral procedures had existed for arrestor protection from the time of warehouse requisition to installation. No formal procedures existed and the informal steps taken to control their storage were not always effective.

This failure to implement procedures to control storage of shock arrestors constitutes a violation (390/80-35-03, 391/80-22-02).

- d. 10 CFR 50 Appendix B Criterion II and FSAR Section 17.1A.2.2 required that quality assurance procedures be written prior to performing activities affecting quality. During the past year, the site QA unit noted several deficiencies that required audited units to generate QCP's and QCIs as part of the corrective action. All of these procedures were generated after the activity was in progress. Until the licensee assesses the need to generate additional procedures to address activities affecting quality this item is open (390/80-35-04, 391/80-22-03).
- e. It has been a practice (even though formal procedures do not exist) for the site QA group to close deficiencies, recommended by them to be significant, when the deficiency was evaluated to be reportable to NRC. Audit deficiencies for which recommended corrective action was to issue a Nonconforming Condition Report (NCR) have also been closed when the NCR was initiated. QASP 7.1, Audits, Section 10.2 states that the auditor verifies that the corrective action indicated on the Deficiency Sheet has been implemented or completed before "closing" the deficiency. Until the licensee modifies the procedures or the actions of the QA audit group in followup of deficiencies that result in significant NCRs or reportability to the NRC, this item is open (390/80-35-05, 391/80-22-04).

- f. Site QA audit finding WB-I-80-02 revealed that two instrumentation panels deviated from N3E-885 specifications and that a site procedure had not been written to implement the N3E-885 requirements. Proposed corrective action was to nonconform all instrumentation lines that deviated and to write a procedure (QCP). The NCR has not been written as of December 5, 1980. QCP-3.13 had been written and test 53 of that procedure is designed to backfit the inspection of all instrumentation lines. Until the licensee implements the requirements of N3M-885 and QCP-3.13 to all specified instrumentation lines this item is open (390/80-35-06, 391/80-22-05).

#### 5. Preoperational Test Program Implementation

The inspector monitored preparation for and initiation of preoperational testing of diesel generators and their starting air systems under TVA-14B and TVA-14E. Findings were acceptable except for the following:

Nonconforming Condition Report W-20-P identified 83 cables improperly terminated (loose) in the Diesel Generator 1AA Engine Control Panel. The Division of Nuclear Power site management determined that the majority of the circuits affected by these connections could have resulted in: failure of the diesel generator to fulfill its safety function; failure to annunciate conditions precluding diesel starting; and failure to annunciate abnormal diesel running conditions. Site management made the determination that this was not a significant deficiency; therefore, it was not promptly reported to the Commission. These potential failures of the diesel generator are significant and reportable in the inspector's opinion. This failure to satisfy the 24 hour reporting requirements of 10 CFR 50.55(e) constitutes a violation (390/80-35-07).

#### 6. Preventive Maintenance

The inspector reviewed the mechanical and electrical preventive maintenance program for equipment turned over to the Division of Nuclear Power. Findings were acceptable except as follows:

- a. The current mechanical preventive maintenance program did not include valve preventive maintenance. A considerable number of safety related systems, including the residual heat removal system, contain valves which should have been under a preventive maintenance program per the Office of Power Quality Assurance Manual Section 2.1. At the time of this finding the inspector noted no specific commitment to promptly correct this inadequacy. This failure to develop and implement an appropriate mechanical and electrical (see paragraph b) preventive maintenance schedule constitutes a violation (390/80-35-08).
- b. The current electrical preventive maintenance program did not include several safety related systems, including the Residual Heat Removal system, which contain components which should have been under a preventive maintenance program per the Office of Power Quality Assurance Manual Section 2.1. At the time of this finding the inspector noted ongoing work to correct the deficiency; however, no management controls

were in place to assure prompt correction. This failure to develop and implement an appropriate electrical and mechanical (See paragraph a) preventive maintenance schedule constitutes a violation (50-390/80-35-09).

## 7. Interfaces Between Engineering Design and Construction

The inspector reviewed various ENDES design documents and applicable site implementing procedures. Findings were acceptable except as follows:

- a. Several piping systems that are designated ANS safety class 2B, seismic category I, have a TVA piping class of M. One specific example is the chill water piping that supplies the control rooms. The inspector observed that insulation had been removed from a section of chill water piping on Level 737 adjacent to the chiller unit. The line, and especially one valve in the line, was extremely corroded externally. Until the licensee assesses the design and material used in these systems this item is unresolved (390/80-35-10, 391/80-22-06).
- b. Several evaluations by the pipe rupture team have been made on site to assess the safety of installed instrumentation lines and conduit. The reports of these evaluations have noted several discrepancies; however, the status of repairing these discrepancies was not formally identified as of December 5, 1980. Until the licensee identifies the status of these repairs and completes the work involved this item is open (390/80-35-11, 391/80-22-07).
- c. WB-DC-40-36.1 required HVAC systems which perform safety related functions or had seismic requirements must have quality assurance involved in the design, procurement; inspection and testing of the system as required by Appendix B of 10 CFR 50... and specific guidelines would be provided (later). Watts Bar personnel have written procedures for non-ASME piping and ductwork to address activities affecting quality, but ENDES has not given the aforementioned specific guidelines. Until the licensee evaluates the quality assurance requirements and implements those requirements, this item is open (390/80-35-12, 391/80-22-08).
- d. Construction Specification G-37 Section 2.3 gives incorrect guidance for setting the distance of the low pressure tap of the pressure drop device on the test rig used in testing duct work. Until the licensee corrects this guidance this item is open (390/80-35-13).