



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

Report No. 50-390/81-29, 50-391/81-26

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

Facility Name: Watts Bar

Docket No. 50-390, 50-391

License No. CPPR 91, CPPR 92

Inspection at Watts Bar site near Spring City, Tennessee

Inspectors:

*C. M. Upright for*  
G. A. Belisle

*1/5/82*  
Date Signed

*C. M. Upright for*  
P. H. Skinner

*1/5/82*  
Date Signed

Approved by:

*C. M. Upright*  
C. M. Upright, Section Chief  
Technical Engineering Inspection Branch  
Engineering and Technical Inspection Division

*1/5/82*  
Date Signed

#### SUMMARY

Inspection on December 14-18, 1981

#### Areas Inspected

This routine, unannounced inspection involved 65 inspector-hours on site in the areas of preoperational testing quality assurance; QA/QC administration; document control; maintenance; design changes and modifications; surveillance testing and calibration control; records; test and experiments; and test and measurement equipment.

#### Results

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

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

D. Bailey, Assistant Construction Engineer  
J. Beavers, Mechanical Engineer (Maintenance)  
J. Bledsoe, Nuclear Power QA  
R. Brown, Assistant Instrumentation Maintenance Supervisor  
K. Bruce, Electrical Supervisor  
\*C. Christopher, Assistant Construction Engineer  
T. Collins, Mechanical Maintenance Supervisor  
\*T. Cross, WBNP Assistant Supervisor  
\*G. Curtis, Nuclear Power QA  
\*J. Erpenbach, Assistant Engineering Supervisor  
\*H. Fischer, Assistant Construction Engineer  
J. Goodner, ISI Baseline Coordinator  
R. Griffin, Mechanical Unit Supervisor  
\*T. Hayes, Instrumentation Supervisor  
R. Heatherly, Document Control Supervisor  
R. Huskin, Assistant HP Supervisor  
G. Johnson, Mechanical Engineer  
\*S. Johnson, Assistant Construction Engineer  
\*K. Jones, Preoperational Section Supervisor  
\*R. Jones III, Assistant Construction Engineer  
\*J. Knight, Construction Engineering Organization  
J. Maddux, Electrical Engineer  
\*R. Manley, Plant Services Supervisor  
\*D. McCloud, Field QA Staff Chief  
\*J. Morelock, Construction Engineering Organization  
\*R. Olsen, Construction Engineer  
\*R. Parker, QA Branch Chief  
H. Pope, QC Supervisor  
\*A. Rogers, Construction QA Supervisor  
\*B. Smith, Preoperational Section Assistant Supervisor  
L. Smith, QA Engineer  
J. Swallows, QA Engineer  
J. Taylor, Engineering Aide  
\*T. Trail, Construction Engineering Organization  
\*C. Whittemore, Office of Power QA Site Representative  
\*J. Wilkins, Project Manager  
G. Williams, Instrumentation Supervisor  
\*P. Wilson, Construction Engineering Organization

Other licensee employees contacted included technician and office personnel:

NRC Resident Inspector

\*J. McDonald, Senior Resident Inspector

\*T. Heatherly, Resident Inspector

\*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. The licensee acknowledged the inspection findings.

## 3. Licensee Action on Previous Inspection Findings

Not inspected.

## 4. Unresolved Items

Unresolved items were not identified during this inspection.

## 5. Preoperational Testing Quality Assurance (35301)

- References:
- (a) FSAR, Chapter 14.0, Initial Tests and Operations
  - (b) N-OQAM, Part II, Section 4.1, Preoperational Test Program, dated 3/81
  - (c) WB 3.3.1, Watts Bar Nuclear Plant Preoperational Test Program, dated 7/81
  - (d) The Accepted QA Program, (TVA-TR75-1A, Topical Report), Section 17.2.

The inspector commenced a limited review of the preoperational testing quality assurance program. This review was limited to collecting documentation, with which a review could be conducted. This area will be reviewed indepth during a subsequent inspection.

Based on this review, no violations or deviations were identified.

## 6. QA/QC Administration (35740)

- References:
- (a) N-OQAM (Nuclear-Operations Quality Assurance Manual)
  - (b) QA-SIL-5.1, Survey Programs, Revision 3
  - (c) QA-SIL-1.2, Conduct of Operations, dated 5/80
  - (d) QA-SIL-2.1, QA Records and Document Control, Revision 3
  - (e) QA-SIL-3.2, Corrective Action Reports, dated 6/79
  - (f) QA-SIL-5.2, Instruction, Document, and Data Review, Revision 2
  - (g) QA-SIL-5.5, Nonconforming Trend Analysis, dated 10/80

- (h) QA-SIL-10.1, Preservice Baseline Inspection and Inservice Inspection Program, dated 10/78
- (i) QA-SIL-12.2, Review of CSSC Trouble Reports, dated 3/81
- (j) WB 6.4.1, Quality Assurance Inspection Program, dated 2/80
- (k) WB 6.4.2, Quality Assurance Survey Program, dated 2/81
- (l) WB 1.2, Adverse Conditions and Corrective Actions, dated 6/81
- (m) WB 3.1.13, Open Item Status Followup System, dated 11/81
- (n) WB 6.4.3, The Identification of WBNP Critical Structures, Systems and Components, dated 5/81
- (o) DPM N79A5, Critical Structures, Systems, and Components (CSSC) Review Committee, dated 2/81.

The references were reviewed to verify that they met requirements of the accepted QA Program, NRC Regulatory Guide 1.33, and ANSI N18.7 as endorsed by that program. The inspector reviewed the following aspects of QA/QC administration:

- The licensee's QA Program clearly defines or identifies those structures, systems, components, documents and activities to which the QA Program applies
- Procedures and responsibilities have been established for making changes to documents that define or identify those structures, systems, components, documents and activities to which the QA Program applies
- The licensee has established administrative controls for QA/QC Department Procedures which will assure review and approval prior to implementation; methods and procedures for changes and revisions; and, methods and controls for distribution and recall
- Responsibilities/methods have been established to assure overall review of the effectiveness of the QA Program.

Based on this review, no violation or deviations were identified.

#### 7.0 Document Control (35742)

- References:
- (a) Accepted Quality Assurance Program
  - (b) N-OQAM Part III, Section 1.1, Document Control, dated 11/81
  - (c) WB 3.2.15, Vendor Manual Control, dated 4/81
  - (d) WB 3.2.10, Handling Engineering Drawing Discrepancies, dated 2/80
  - (e) AI 4.3, Drawing Control for Unlicensed Units, Revision 0
  - (f) AI 3.1, Plant Instructions - Control and Use (Draft)

The inspector reviewed references (b) through (f) to verify that they met requirements of reference (a) and ANSI requirements endorsed by that program. The inspector reviewed the following aspects of the document control program:

- A method of control of obsolete drawings and controlled documents
- A method of assure discrepancies found between as-built systems and as-designed systems are identified and resolved
- A method to require that as-built drawings are provided to the plant site in a timely manner
- A method to issue and distribute drawing indices
- A method to assure periodic review of issued drawings and other documents
- Responsibilities are assigned for control of the above listed aspects.

Based on this review, one inspector followup item was identified. ANSI N18.7-1976, Section 5.2.15 required a program for review of applicable procedures following an unusual incident such as an accident, unexpected transient, significant operator error, or equipment malfunction. Neither reference (b) nor (f) contained this required program. In addition, several items that are required by ANSI N18.7 to be included in specific plant instructions (such as Title, Scope, Limitations and Actions) are not required to be included in plant instructions by reference (f). This will be tracked as an inspector followup item (390/81-29-01, 391/81-26-01) pending incorporation of these requirements into WBNP procedures.

#### 8. Maintenance (35743)

References: N-OQAM and multiple subtier documents

The inspector reviewed the listed reference to verify that they met requirements of ANSI N18.7 as endorsed by the accepted QA Program. The inspector reviewed the following aspects of the maintenance program:

- Written procedures have been established for initiating requests for maintenance
- Criteria and responsibilities for review and approval of maintenance requests have been established
- Criteria and responsibilities that form the basis for designating the activity as safety/non-safety related have been established
- Criteria and responsibilities have been designated for performing work inspection of maintenance activities

- Responsibilities have been established for the identification of appropriate inspection hold points related to maintenance activities
- Methods and responsibilities have been designated for performing functional testing of structures, systems or components following maintenance work and/or prior to their being returned to service
- Administrative controls for maintenance activities require that records be prepared, assembled and reviewed for transfer to records storage
- A program has been established for reviewing completed corrective maintenance records to assess the adequacy of the preventive maintenance program, to identify repetitive failure of parts and components, and to identify design deficiencies
- Work control procedures require special authorization for activities involving welding, open flame, or other ignition sources and take cognizance of nearby flammable material, cable trays, or critical process equipment
- Methods and responsibilities for equipment control have been clearly defined
- A written preventive maintenance program for safety-related structures, system and components has been established
- Administrative controls for special processes have been established
- Procedures have been developed for cleaning safety related components and systems
- Procedures for maintaining the cleanliness of previously cleaned systems have been established
- Cleanliness classifications of plant systems have been established
- Administrative controls and responsibilities for general housekeeping have been established which include control of housekeeping during work activities.

Based on this review, two inspector followup items were identified and are discussed in the following paragraphs:

a. Maintenance Program Activities

Plant personnel are currently developing procedures for their specific disciplines (mechanical, electrical and instrumentation) as systems are being turned over from construction to power operations. To date, approximately 15% of plant systems have been turned over to power

operations and approximately 50-75% of discipline procedures are completed. Until all systems are turned over to power operations and the upkeep of these systems is procedurally delineated, this is identified as an inspector followup item (390/81-29-02, 391/81-26-02).

b. ANSI N18.7-1976 Clarification

Headquarters personnel are currently developing a program (required by ANSI 18.7-1976 Section 5.2.7.1) for evaluating repetitive equipment failures. The licensee currently is instituting a system of historical maintenance for plant equipment that will provide information for analysis of repetitive failures but machinery history alone will not meet the requirements of ANSI 18.7-1976. Until the licensee develops and implements a program for evaluating repetitive failures (trend analysis), this is identified as an inspector followup item (390/81-29-03, 391/81-26-03).

9. Design Changes and Modification (35744)

- References:
- (a) N-OQAM, Part II, Section 3.1, Plant Modifications: Before Issuance of the Operating License, revised 1/80
  - (b) N-OQAM, Part II, Section 3.2, Plant Modifications After Licensing, revised 7/80
  - (c) N-OQAM, Part II, Section 3.2A, Core Component Design Change After Licensing, revised 10/80
  - (d) AI-8.4, Plant Modification Requests, Revision 10
  - (e) AI-8B, Control of Modification and Construction Completion Work on Transferred Systems Before Unit Licensing, Revision 4
  - (f) AI-8D, Core Component Design Change After Licensing, Revision 0
  - (g) AI-7, Control of Temporary Conditions, Revision 5
  - (h) WBNP-QCI-1.9, Disposition of Engineering Change Notices, Revision 1
  - (i) WBNP-QCI-1.13, Preparation and Documentation of Field Change Requests, Revision 3
  - (j) WBNP-QCI-1.19, Handling and Disposition of Field Change Notices and Field Deficiency Reports, Revision 0
  - (k) ID-QAP-2.4, Future Modifications, Revision 1

- (l) ID-QAP-2.5, Major Modifications, Revision 0
- (m) ID-QAP-3.1, OEDC Site Investigation for Design Purposes, Revision 1
- (n) ID-QAP-3.2, Processing of Construction Change Notices (CCN's), Revision 0.

The inspector reviewed the listed references to verify that they met requirements of the accepted QA Program, NRC Regulatory Guide 1.64 and ANSI N45.2.11 as endorsed by that program. The inspector verified the following aspects of the design change program:

- Procedures have been established to control design changes which include a method for initiating a design change, a design change form with provisions for documenting completion of required reviews, evaluations, and approvals prior to implementing the change and a method for assuring that a proposed change does not involve an unreviewed safety question as described in 10 CFR 50.59 or a change in the technical specifications
- Controls for design documents have been established which include controlling changes to approved design documents, controlling obsolete design change documents such as superceded drawings or modification procedures including release and distribution of approved design change documents
- Controls have been established to assure that design changes and modifications will be incorporated into plant procedures, operator training programs and plant drawings to reflect implemented design changes
- Controls have been developed that define channels of communication between design organizations
- Controls require that design documentation and records which provide evidence that the design and review process was performed be collected and transmitted to records storage
- Controls require that implementation of approved design changes be in accordance with approved procedures
- Controls require that post modification acceptance testing be performed per approved test procedures and the results evaluated
- Responsibility has been assigned for identifying post modification testing requirements and acceptance criteria
- Responsibility and method have been assigned for reporting design changes to the NRC in accordance with 10 CFR 50.59.



Based on this review, no violations or deviations were identified.

10. Surveillance Testing and Calibration Control (35745)

- References:
- (a) N-OQAM, Part II, Section 4.5, Plant Surveillance Test Program, dated 8/81
  - (b) N-OQAM, Part II, Section 5.1, Inservice Inspection - Nuclear Power Plant Components, dated 2/81
  - (c) SI-1, Surveillance Program, Revision 0
  - (d) N-OQAM, Part III, Section 3.2, Control of Installed Technical Specification Compliance Instrumentation, dated 11/80
  - (e) TI-49, Compliance Instrumentation, Revision 3
  - (f) TI-50A, ASME Section XI, Preservice Inspection Program, Unit 1, Revision 4
  - (g) TI-50B, ASME Section XI, Preservice Inspection Program, Unit 2, Revision 0
  - (h) DPM N76A17, Interdivisional Support For Technical Specification Surveillance, dated 9/81
  - (i) WB 3.1.9, Surveillance Test Program, dated 4/81.

The inspector reviewed the references to verify that they met requirements of ANSI N18.7 as endorsed by the accepted QA Program. The inspector verified the following aspects of the surveillance testing and calibration control program:

- A master schedule for surveillance testing/calibration/in-service inspections required by Technical Specifications or 10 CFR 50.55a have been established which includes frequency for each test/calibration/inspection, plant group responsible for performing each test/calibration/inspection, and surveillance test status
- Responsibility has been assigned in writing to maintain the master surveillance test/calibration/inspection schedules up-to-date
- Requirements have been established for conducting surveillance tests, calibrations, and inspections in accordance with approved procedures which include acceptance criteria

- Methods and responsibilities have been defined for review and evaluations of surveillance test/calibration data including procedures for reporting deficiencies, failures or malfunctions identified during the tests/calibrations or inspections with required verification that Technical Specification LCO requirements were satisfied
- Responsibility has been assigned for assuring that required schedules for all tests, calibrations and inspections are satisfied
- Calibration requirements have been established for components associated with safety related systems or functions but which are not specified in the Technical Specifications as requiring calibration.

Based on this review, two inspector followup items were identified and are discussed in the following paragraphs.

a. Inservice Inspection (ISI) Program Development

The licensee submitted an ISI program for IWV and IWP requirements to NRC for approval in November 1981. The licensee is currently developing procedures to meet these ISI requirements. To date, these procedures are approximately 90% completed. The licensee is also currently developing a master procedure that describes the ISI program (TI 31.4, Section XI Summary). This procedure is tentatively scheduled to be completed in January 1982. Until TI 31.4 is issued and procedures are fully developed to implement the ISI program (IWV and IWP portions), this is identified as an inspector followup item (390/81-29-04, 391/81-26-04).

b. Surveillance Program Development

The Technical Specifications (T/S) are in the process of review for final submittal. Since the T/S are not finalized, some surveillance requirement procedures are pending. To date, approximately 95% of the surveillance requirement procedures have been written and approved. Until all surveillance requirements required by T/S are incorporated into procedures, this is identified as an inspector followup item (390/81-29-05, 391/81-26-05).

11. Records (35748)

- References:
- (a) The Accepted QA Program, Section 17.2.17
  - (b) ANSI N45.2.9 - 1974, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants
  - (c) N-OQAM, Part III, Section 4.1, Quality Assurance Records, dated 10/81

(d) WB 3.2.1, Quality Assurance Records, dated 1/81

(e) AI 4.1, Quality Assurance Records, (Draft)

References (c) - (e) were reviewed with respect to requirements committed to in references (a) and (b). The inspection verified that administrative controls have been established for maintenance, storage and retention of required records generated during the operating phase and for turnover and control of records generated during the preoperational and construction phase.

Based on this review, one inspector followup was identified. Reference (e) is in the process of being revised to include the recent changes specified by reference (c). Until reference (e) is approved, issued and subsequently reviewed during a future inspection, this will be identified as an inspector followup item (390/81-29-06, 391/81-26-06).

## 12. Test and Experiments (35749)

References: (a) N-OQAM, Part II, Section 4.6, Special Test, dated 3/81

(b) WB 3.1.17, Special Tests, Experiments or Activities, dated 7/81

(c) AI 2.3, Special Tests, Experiments or Activities (Draft)

The referenced documents were reviewed with respect to the licensee's accepted QA Program and 10 CFR 50.59. The inspector verified that a formal method was provided to propose, approve and conduct tests or experiments involving safety-related components, systems or structures differing from those operations described in the FSAR. Approved procedures were provided for each test or experiment and responsibilities were assigned to assure preparation and review of a written safety evaluation pursuant to 10 CFR 50.59.

Based on this review, no violations or deviations were identified.

## 13. Test and Measuring Equipment (35750)

References: (a) N-OQAM, Part III, Section 3.1, Control of Measuring and Test Equipment, dated 7/81

(b) TI-10, Calibration Program for Measuring and Test Equipment, Revision 15

(c) RCI-11, Calibration of Health Physics Instruments, Revision 5

(d) ISL 3.1, Calibration of Test Instruments, Revision 2

- (e) RSL C7, Calibration Schedule for Chemical Section M&TE Equipment, Revision 11
- (f) ENSL-M3, Calibration of Test Equipment, Revision 5
- (g) MSL 10, Mechanical Maintenance Section Calibration Program for Measuring and Test Equipment, Revision 18
- (h) ESL 4.1, Calibration Program for Measuring and Test Equipment, Revision 3

The inspector reviewed the listed references to verify they met requirements of the accepted QA Program and NRC Regulatory Guides 1.30 and 1.33 as committed to by that program. The inspector verified the following aspects of the test and measuring equipment program:

- Criteria and responsibility for assignment of the calibration/adjustment frequency have been established
- An equipment inventory list has been prepared which identifies equipment used on safety-related structures, systems or components and calibration frequency of each piece of equipment
- Requirements exist for marking the latest calibration date on each piece of equipment
- A system has been provided for assuring that equipment is calibrated before the date required
- Requirements have been established which prohibit use of equipment which has not been calibrated within the prescribed frequency
- Calibration controls have been established which require evaluation of the cause of an out-of-calibration and the acceptability of items calibrated since the last successful equipment calibration
- New equipment will be added to the inventory list and calibrated prior to being placed in service.

Based on this review, no violations or deviations were identified.