



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30323

Report Nos.: 50-259/84-49, 50-260/84-49, and 50-296/84-49

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

Docket Nos.: 50-259, 50-260 and 50-296 License Nos.: DPR-33, DPR-52,  
and DPR-68

Facility Name: Browns Ferry 1, 2, and 3

Inspection Conducted: November 26-30, 1984

Inspector: C. F. Smith 12/19/84  
Date Signed

Accompanying Personnel: M. F. Runyan, Region II

Approved by: C. M. Upright 12/19/84  
C. M. Upright, Section Chief  
Division of Reactor Safety  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 68 inspector-hours in the areas of licensee action on previous enforcement matters, surveillance calibration, measuring and test equipment, and licensee action on previously identified inspection items.

Results: Of the four areas inspected, no violations or deviations were identified.

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## REPORT DETAILS

### 1. Licensee Employees Contacted

- \*P. Border, DQA/QAB
- \*R. Burns, Supervisor, Instrument Maintenance
- G. Campbell, Industrial Engineer, Planning and Services
- \*T. Cosby, Supervisor, Electrical Maintenance
- L. Couch, Engineering Associate, Quality Engineering
- C. Elledge, Evaluator, Quality Assurance
- \*A. Gordon, Compliance
- W. McPherson, Supervisor, Engineering and Test Unit
- \*D. Mims, Engineering
- \*B. Morris, Compliance
- \*R. Perry, Engineer, Quality Assurance
- J. Stone, Instrument Planning
- \*J. Swindell, Plant Superintendent

Other licensee employees contacted included technicians and office personnel.

#### NRC Resident Inspectors

- \*G. Paulk, Senior Resident Inspector
- \*C. Brooks, Resident Inspector

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on November 30, 1984, with those persons indicated in paragraph 1 above. The licensee was informed of the following findings:

Inspector Followup Item (259,260,296/84-49-01), Inconsistency of ASME Section XI Surveillance Requirements, TS Section 6.10, paragraph 5.a.

Inspector Followup Item (259,260,296/84-49-02), Inconsistency of Reactor Protection System M-G Set Surveillance Requirements, TS Section 4.1.B.1, paragraph 5.b.

Inspector Followup Item (259,260,296/84-49-03), Inconsistency of Reactor Vessel Head Spray Isolation Valves Surveillance Requirements, TS Section 4.7, paragraph 5.c.

## 3. Licensee Action on Previous Enforcement Matters (92702)

(Closed) Severity Level IV Violation (259,260,296/82-10-02), Failure to Follow Audit Procedure.

The licensee response dated June 23, 1982, is considered acceptable by Region II. The inspector reviewed Standard Practice BF 15.17 which was revised March 30, 1982, in response to the violation. The revised procedure requires that responses to OPQA & AS audit findings be presented on Form BF-152, the same form used for responses to NRC violations. Included in the standard five-part response is the estimated completion date.

The inspector concluded that the licensee had determined the full extent of the violation, taken action to correct current conditions, and developed corrective actions needed to preclude recurrence of similar problems. Corrective actions stated in the licensee response have been implemented.

## 4. Unresolved Items

Unresolved items were not identified during this inspection.

## 5. Surveillance Testing and Calibration Control (61725)

- References:
- (a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants
  - (b) Regulatory Guide 1.33, Quality Assurance Program Requirements (Operation), Revision 2
  - (c) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
  - (d) 10 CFR 50.55(a), Codes and Standards
  - (e) Section XI of ASME Boiler and Pressure Vessel Code Rules for Inservice Inspection of Nuclear Power Plant Components
  - (f) Technical Specifications, Sections 3 and 4, Limiting Condition of Operation/Surveillance Requirements

The inspector reviewed the licensee surveillance testing and calibration control program required by references (a) through (f) to verify that it had been established in accordance with regulatory requirements, industry guides and standards, and Technical Specifications. The following criteria were used during this review to determine the overall acceptability of the established program.

- A master schedule for surveillance testing and calibration was established which includes: frequency; responsibilities for performance; and testing status.

- The master schedule was updated to reflect Technical Specification or license revisions.
- Responsibilities were assigned to maintain the master schedule up-to-date.
- Requirements were established for conducting surveillance testing in accordance with approved procedures which include appropriate acceptance criteria.
- Responsibilities were assigned for review and evaluation of test data.
- Responsibilities were assigned for assuring that required schedules for surveillance were satisfied.

The inspector also verified that similar controls have been established for calibration of instrumentation not specifically identified in Technical Specifications. The documents listed below were reviewed to verify that these criteria had been incorporated into surveillance testing and calibration control activities.

Topical Report TVA-TR75-1A, Revision 8, Section 17.2.11, Test Control, Section 17.2.12, Control of Measuring and Test Equipment, Section 17.2.16, Adverse Conditions and Corrective Action

N-OQAM, Part II, Section 4.5, Plant Surveillance Test Program, dated 10/12/84

N-OQAM, Part II, Section 5.1, Inservice Inspection of Nuclear Power Plant Components, dated 10/12/84

N-OQAM, Part III, Section 6.1, Selection and Training of Personnel for Nuclear Power Plants, dated 10/12/84

BF 17.9, Surveillance Requirements Program, dated 6/22/84

Master SI Schedule Book (manual based surveillance scheduling program information)

BF SI-1, SI Surveillance Program, dated 10/9/84

The inspector interviewed QA personnel and reviewed several surveillance reports written by the onsite QA group concerning surveillance testing activities. The following surveillance reports were reviewed by the inspector:

T-I-QAS-84-6, dated 1/8/84, Surveillance Testing (Health Physics)

T-I-QAS-84-130, dated 4/13/84, Surveillance Testing (Chemistry)

T-I-QAS-84-136, dated 4/5/84, Surveillance Testing (Electrical Maintenance)

T-I-QAS-84-138, dated 4/8/84, Surveillance Testing (Health Physics)

T-I-QAS-84-146, dated 4/10/84, Surveillance Testing (Operations)

The inspector also reviewed the Correction Action Report Log maintained by the QA group for the tracking of corrections of deficiencies identified during surveillances.

<u>Surveillance No.</u>	<u>Finding</u>
83-97 (4/13/83)	SI data sheet exceeded review limit; Corrective Action Request (CAR) written. Item closed on 5/17/83.
83-98 (4/25/83)	SI data sheets not complete; item closed 5/31/83.
83-65 (3/2/83)	SI data sheets were incorrect; item closed 3/31/83.
83-63 (2/25/83)	Inservice Inspection was run after it was changed; required system leakage test; closed 1/12/84.
83-29 (1/27/83)	Eight percent (8%) of audited Surveillance Instructions (SI) are inadequate QA records; closed 6/28/83.
83-12 (1/10/83)	SI B.3 not performed within specified frequency; closed 6/28/83.
84-62 (9/5/84)	SI steps omitted; switch left outside setpoint limit; open.
83-140 (8/11/83)	SI-2 records (DCU) lack several Shift Technical Advisor (STA) daily sign-offs; closed 12/9/83.

The inspector reviewed licensee documents to determine if a master schedule for surveillance testing and calibration had been prepared. The inspector determined that the Planning and Scheduling Supervisor has been assigned the responsibility for maintaining the master surveillance test schedules and performance logs, in addition to the issuance of surveillance schedules. This group also routes and tracks surveillance test data in the review cycle, and contacts the responsible sections to monitor the daily status of surveillance test performance and review.

The inspector interviewed licensee personnel within this group to determine the method employed for maintaining the master test schedule and performance log. The inspector was informed that a manual based system is used for the maintenance of the master test schedule and performance log. Licensee personnel further added that preliminary steps have been taken to replace the manual based system with a computer based system. The first results of this effort are the Surveillance Performance Schedules of the various units generated for surveillance to be performed within a fixed time frame. The inspector reviewed the following surveillance performance schedules:

Unit 2 Surveillance Performance Schedule, date issued November 28, 1984, schedule period December 2 - December 29, 1984

Unit 1 Surveillance Performance Schedule, date issued November 21, 1984, schedule period November 25 - December 22, 1984.

Standard Practice BF SI-1 provides the requirements for the plant surveillance test program to comply with technical specifications for Units 1, 2, and 3. Appendix A to BF SI-1 lists the following information:

Technical Specification Surveillance requirement number

Surveillance Test number

Section having responsibility for performance of the surveillance test

Section having cognizant responsibility for SI preparation and review of surveillance test results

Frequencies established in the Technical Specification

Surveillance requirement as defined in Section 4.0 of the Technical Specification

The inspector interviewed licensee personnel having responsibility for performance of surveillance tests, and reviewed the implementing surveillance instructions in order to verify implementation of the surveillance and calibration program. On the basis of the samples chosen, it would appear that a generic problem exists within the surveillance calibration program, in that there were numerous inconsistencies between the requirements of the Technical Specification delineated in SI-1, and the requirements actually written in various tables and Section 4.0 of the Technical Specification. Licensee management attributes these inconsistencies to delays in the approval of Technical Specification change requests submitted to the NRC. Licensee management further added that in the absence of the approvals to the Technical Specification amendments they have requested, surveillance activities are performed consistent with the program delineated in SI-1.

The inspector interviewed licensee personnel concerning the incorporation of Technical Specification changes into the surveillance testing and calibration program. The inspector verified that a program exists that provides positive control of NRC approved Technical Specification changes which ensures that these changes are incorporated in the licensee surveillance and calibration program.

Within this area, three Inspector Followup Items were identified and are discussed in the following paragraphs.

- a. Inconsistency of ASME Section XI Surveillance Requirements, Technical Specification Section 6.10.

Appendix A to SI-1, ASME Section XI Requirements, pages 95 through 97 lists Section 6.10 of the Technical Specification (TS) as the TS surveillance requirement number. The table of contents of Units 1 and 2 TS also shows the following entries:

Section 6.9, Environmental Qualifications  
Section 6.10, Integrity of Systems Outside Containment  
Section 6.11, Iodine Monitoring

The inspector determined that Section 6.9, 6.10, and 6.11 are not contained within the TS. In particular, Section 6.10 which describes the requirements for the implementation of a program to reduce leakage from systems outside containment is not addressed in the TS. Appendix A to SI-1 incorporates these requirements within the surveillance program, and specifies surveillance instructions used in the implementation of the program.

The inspector verified that the licensee is presently implementing an Inservice Inspection Program delineated in N-OQAM Part II, Section 5.1, which is still under review by the NRC for approval. This program is being implemented in accordance with the requirements delineated in Appendix A to SI-1.

The discrepancies between Appendix A to SI-1, the TS Table of Contents, and the text of the TS could not be explained by the licensee. The inspector was presented with an old issue of Unit 3 TS which contained Section 6.10. In addition, the licensee presented the inspector with a letter from the Project Manager, Operating Reactors Branch #2, Division of Licensing, dated 8/27/84, which transmitted Amendment No. 78 to Unit 3 TS. This amendment updated the Table of Contents which does not reference Section 6.10.

Until Units 1 and 2 TS Table of Contents have been updated to delete the reference to Section 6.10, and until the licensee revises Appendix A to SI-1 to delete the reference to Section 6.10 of the TS concerning surveillance requirements, this is identified as Inspector Followup Item 259,260,296/84-49-01.

b. Inconsistency of Reactor Protection System M-G Set Surveillance Requirements, TS Section 4.1.B.1

Reference Documents:

Letter from Chief, Operating Reactors Branch #3, Division of Licensing to Mr. N. B. Hughes, Manager of Power, TVA, dated 8/7/73

Engineering Change Notice No. P0422 Cover Sheet, System: Reactor Protection System 120V AC Power, dated 2/20/84

Letter from Chief, Operating Reactor Branch #2, Division of Licensing to Mr. Hugh G. Parris, Manager of Power, dated 10/31/84, Subject: Reactor Protection System (RPS) Power Monitoring System Design Modification

Drawing No. 45W641-5, Wiring Diagrams, Instrument and Control Power System Schematic Diagram, SH. 5, Revision 1

The inspector interviewed licensee personnel in the Electrical Department to verify implementation of surveillances required by the TS Section 4.1.B.1 for Units 1 and 3. Appendix A to SI-1, page 11 lists as a TS surveillance requirement, the implementation of Surveillance Instruction (SI) 4.11.B.-16, Reactor Protection System M-G set, Channel Functional Test. The inspector reviewed SI 4.1.B-16 to verify that it incorporates the requirements of the Technical Specification. The inspector determined that a design modification to the Reactor Protection System for Units 1 and 3 was implemented via Engineering Change Notice (ECN) #P0422. In addition, the inspector discovered discrepancies between the TS and Appendix A to SI-1 in that SI 4.1.B-16 references Unit 3 TS Section 4.1.B.1, while no such section exists. Neither does Table 4.1.A, Reactor Protection System Instrument Functional Tests Minimum Functional Test Frequencies for Safety Instruments and Control Circuits address this requirement.

Unit 1 TS is consistent in that it is in agreement with Appendix A to SI-1. The inspector verified that the required surveillances are being performed in accordance with licensee surveillance calibration program delineated in SI-1. Licensee management explained the discrepancies between Section 4.0 of Unit 3 TS and Appendix A to SI-1 as being the result of a delay in the approval of the TS to incorporate the changes made to the Reactor Protection System Power Supply Monitoring System for Units 1 and 3. Licensee management further added that discussions are continuing with the NRC for resolution of the issue of the basis of setpoint values which were implemented by ECN P0422. The inspector determined that the acceptance criteria delineated in SI 4.1.B-16 relative to setpoint values are as follows:

59 Relay (overvoltage) operate at  $\leq 126.5$ -V ac  
 27 Relay (undervoltage) operate at  $\geq 111$ -V ac  
 81 Relay (underfrequency) operate at  $\geq 57$  Hz



The evaluation for an unreviewed safety question as required by 10 CFR 50.59 was discussed with licensee management concerning the implementation of ECN P0422. Licensee management stated that the protection provided to the Reactor Protection System Power Supply System is more conservative now, than that which existed prior to the implementation of the ECN, regardless of the question of the basis for the setpoint values.

Until the licensee has obtained NRC approval for the modification to the Reactor Protection System Power Supply Monitoring System, and Unit 3 TS have been revised to show this approval and the surveillance requirements, this is identified as Inspector Followup Item 259,260,296/84-49-02.

c. Inconsistency of Reactor Vessel Head Spray Isolation Valves Surveillance Requirement, TS Section 4.7

The inspector interviewed licensee management concerning the implementation of ASME Section XI Subsection IWP and IWV Inservice Testing Program. The inspector determined that inconsistencies existed in the TS surveillance requirements of Units 1 and 3, in that Section 4.7 requires surveillances to be performed on the Reactor Vessel Head Spray Isolation Valves, while no such system arrangement exist in the plant. These valves were removed as a result of a design modification implementation, and was subsequently removed from the surveillance program. Licensee management attributes these inconsistencies to a delay in the approval by NRC of the TS change request submitted by TVA for the removal of these valves from the TS.

The inspector did not review the ECN associated with the removal of the Reactor Vessel Head Spray Isolation Valves. He was informed, however; that the required safety reviews for evaluation of an unreviewed safety question were performed pursuant to 10 CFR 50.59.

Until the licensee has obtained NRC approval for removal of the Reactor Vessel Head Spray Isolation Valves (FCV-74, 77, and 78), and Units 1 and 3 TS have been revised to show this approval and deletion of surveillance requirements, this is identified as Inspector Followup Item 259,260,296/84-49-03.

6. Test and Measurement Equipment Program (61724)

- References:
- (a) 10 CFR 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants, Criteria II and XII
  - (b) Regulatory Guide 1.33, 1978, Quality Assurance Program Requirements (Operation)

- (c) ANSI N18.7-1976, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants
- (d) Regulatory Guide 1.30, Quality Assurance Requirements for the Installation, Inspection, and Testing of Instrumentation and Electric Equipment
- (e) ANSI N45.2.4-1972, IEEE Standard Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations

The inspector reviewed the licensee test and measurement equipment program required by references (a) through (e) to verify that it had been established in accordance with regulatory requirements, commitments in the application, and industry guides and standards. The following criteria were used during this review to determine the overall acceptability of the established program.

- An equipment inventory list or equivalent was prepared which identifies the following:
  - o All test and measurement equipment which will be used for any reason on safety-related structures, system, or components
  - o The calibration adjustment frequency for each piece of equipment
  - o The calibration standard (national standard(s)) if applicable for each piece of equipment
  - o A calibration procedure to be used for each piece of equipment
- Formal requirements exist for marking the latest inspection/calibration date on each piece of equipment or otherwise identifying the status of calibration.
- A system was provided for assuring that each piece of equipment is calibrated and adjusted on or before the date required.
- A written requirement was established that prohibits the use of test and measuring equipment which has not been inspected and calibrated within the prescribed frequency, and describes controls to prevent inadvertent use of such equipment.
- Out of calibration controls were established which require the following:
  - o When a piece of equipment is found to be out-of-calibration the acceptability of items previously tested or measured will be evaluated and documented.

- ° Evaluation of cause of out-of-calibration.
- A formal system was established to assure that new test and measurement equipment will be added to the inventory list and calibrated prior to being placed in service.

The following documents were reviewed to verify that previously listed criteria had been incorporated into the licensee test and measurement equipment program.

Topical Report TVA-TR75-1A, Revision 8, Section 17.2.12, Control of Measuring And Test Equipment, Section 17.2.16, Adverse Conditions and Corrective Actions

N-OQAM Part II, Section 2.4, Control of Installed Process Instrumentation

BF 17.5, Control of Measuring and Test Equipment

Licensee administrative controls for measuring and test equipment were reviewed by the inspector. Standard Practice BF 17.5 delineates the programmatic controls applicable to the plant calibration program for non-permanently installed process instrumentation and/or controls. This document assigns responsibility to the responsible section supervisor who acts as the site interface with offsite or contractor personnel, to ensure that measuring and test equipment used in the plant is controlled in accordance with the program requirements.

The inspector determined that N-OQAM Part II, Section 2.4 is the controlling procedure for the calibration of installed process and/or compliance instrumentation. These instruments are used to verify compliance with plant technical specifications for process parameters, or to monitor critical structures, systems, or component (CSSC). The programmatic controls ensure that these instruments will conform to prescribed technical requirements, in addition to providing valid data.

The inspector determined that calibration activities are conducted offsite at Central Laboratories Services. In addition, some calibration activities are conducted on site.

Within this area, no violations or deviations were identified.

#### 7. Licensee Action on Previously Identified Inspection Items (92701)

(Closed) Inspector Followup Item 259,260,296/82-10-05, Vault Records Retrievability. The inspector noted that all work plans located in the lifetime records storage facility have been indexed to the records program on the PRIME (computer base) in order to provide adequate retrievability. The inspector reviewed a portion of a PRIME printout which listed items by document number and provided the physical location of each.