

March 16, 2000

Tennessee Valley Authority  
ATTN: Mr. J. A. Scalice  
Chief Nuclear Officer and  
Executive Vice President  
6A Lookout Place  
1101 Market Street  
Chattanooga, TN 37402-2801

SUBJECT: NRC INTEGRATED INSPECTION REPORT NO. 50-259/2000-01,  
50-260/2000-01, AND 50-296/2000-01

Dear Mr. Scalice:

This refers to the inspection conducted on January 9, through February 19, 2000, at the Browns Ferry Nuclear facility. The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities at the Browns Ferry Nuclear facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and appropriate radiation controls and security measures.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room. Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Paul E. Fredrickson, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

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

Enclosure: NRC Inspection Report

TVA

2

cc w/encl:  
Karl W. Singer, Senior Vice President  
Nuclear Operations  
Tennessee Valley Authority  
Electronic Mail Distribution

RSA Tower - Administration  
Suite 1552  
P. O. Box 303017  
Montgomery, AL 36130-3017

Jack A. Bailey, Vice President  
Engineering and Technical Services  
Tennessee Valley Authority  
Electronic Mail Distribution

John T. Herron  
Site Vice President  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

General Counsel  
Tennessee Valley Authority  
Electronic Mail Distribution

N. C. Kazanas, General Manager  
Nuclear Assurance  
Tennessee Valley Authority  
Electronic Mail Distribution

Robert G. Jones, Plant Manager  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

Mark J. Burzynski, Manager  
Nuclear Licensing  
Tennessee Valley Authority  
Electronic Mail Distribution

Timothy E. Abney, Manager  
Licensing and Industry Affairs  
Browns Ferry Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

State Health Officer  
Alabama Dept. of Public Health

Distribution w/encl:  
 W. Long, NRR  
 H. N. Berkow, NRR  
 PUBLIC

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRP			
SIGNATURE							
NAME	RCarrion alt	WSmith	JStarefos	EDiPaolo			
DATE	2/ /2000	2/ /2000	2/ /2000	2/ /2000	2/ /2000	2/ /2000	2/ /2000
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

DOCUMENT NAME: C:\IR2000-01.wpd

U.S. NUCLEAR REGULATORY COMMISSION

Enclosure

REGION II

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

Report Nos: 50-259/2000-01, 50-260/2000-01, 50-296/2000-01

Licensee: Tennessee Valley Authority (TVA)

Facility: Browns Ferry Nuclear Plant, Units 1, 2, & 3

Location: Corner of Shaw and Browns Ferry Roads  
Athens, AL 35611

Dates: January 9, through February 19, 2000

Inspectors: W. Smith, Senior Resident Inspector  
J. Starefos, Resident Inspector  
E. DiPaolo, Resident Inspector

Approved by: P. E. Fredrickson, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Enclosure

## EXECUTIVE SUMMARY

Browns Ferry Nuclear Plant, Units 1, 2, and 3  
NRC Inspection Report 50-259/2000-01, 50-260/2000-01, 50-296/2000-01

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection.

### Operations

- Plant operators displayed professionalism and conservative decision-making. Communications were generally consistent between operating crews (Section O1.1).

### Maintenance

- Maintenance activities during the inspection period were conducted in a professional manner. The prejob briefing for the post-maintenance test of diesel generator 3B following the two-year inspection was thorough (Section M1.1).
- Plant surveillance activities were conducted in an acceptable manner. Regulatory requirements were met, and testing was properly controlled (Section M1.2).

## Report Details

### Summary of Plant Status

Unit 1 remained in a long-term lay-up condition with the reactor defueled.

Unit 2 operated at or near full power with the exception of scheduled brief reductions in power to adjust control rods and perform routine testing.

Unit 3 operated at or near full power with the exception of scheduled brief reductions in power to adjust control rods and perform routine testing. In addition, on February 4, 2000, power decreased to 38% when reactor recirculation pump 3B tripped due to a failed silicon control rectifier in the motor-generator circuitry. After repairs, full power operation was resumed on February 5. Also, on February 17, power was decreased to 90% to support insertion of two control rods for additional suppression of a leaking fuel assembly.

## I. Operations

### **O1 Conduct of Operations**

#### O1.1 General Comments (71707)

During the inspection period, the resident inspectors observed that plant operators displayed professionalism and conservative decision-making. Communications were generally consistent between operating crews and were effective. The turnover meetings observed were comprehensive and informative. Operator responses to the inspectors' questions demonstrated understanding of plant design and knowledge of equipment status. The inspectors observed portions of a reactivity manipulation on Unit 3 when rods were inserted to suppress fuel leaks and noted that it was satisfactorily controlled. Additional details on the leaking fuel assembly are documented in NRC Inspection Report 50-259,260,296/99-06, Section E2.1.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### M1.1 Maintenance Observations

##### a. Inspection Scope (62707, 71750)

The inspectors observed portions of the following maintenance activities:

Work Order 99-006045-000, Replace Reactor Protection System Channel 2B1 Circuit Protection Contactor.

Surveillance Instruction 2-SI-4.9.A.1.d (1/2 D), Unit 1/2 D Diesel Generator Two-Year Inspection Outage.

Surveillance Instruction 3-SI-4.9.A.1.d (3B), Unit 3 B Diesel Generator Two-Year Inspection Outage.

b. Observations and Findings

Work activities observed during the inspection period were conducted in a professional manner. Work documents were located at the job site and were properly referenced. Operations and engineering support of the maintenance, where applicable, was good.

The inspectors sampled portions of diesel generators Unit 1/2 D and Unit 3 B two-year inspection outages and the related preventive and corrective maintenance. Although the inspections were completed well within the outage time of 14 days allowed by the Technical Specifications, the licensee sought to improve performance of the periodic maintenance in order to minimize system unavailability. The prejob briefing for the post-maintenance test of diesel generator 3B per surveillance instruction 3-SI-4.9.A.1.d(3B), Diesel Generator 3B 2 Year Inspection, Revision 24, was comprehensive. Recent industry events and the need for proper communications and control of the evolution were emphasized.

c. Conclusions

Maintenance activities observed during the inspection period were conducted in a professional manner. The prejob briefing for the post-maintenance test of diesel generator 3B following the two-year inspection was thorough.

M1.2 General Surveillance Observations (61726, 71750)

The inspectors observed all or portions of the following surveillance requirements (SRs) during this inspection period:

3-SR-3.3.2.1.1, Rod Block Monitor Functional Test, Revision 000

3-SR-3.3.2.1.4(A), Rod Block Monitor Calibration and Functional Test - RBM-A, Revision 003A

2-SR-3.5.1.6(CS1), Core Spray Loop 1 Flow, Revision 0007

3-SR-3.3.5.1.5(LPCI 1), Residual Heat Removal System, Division 1 Low Pressure Coolant Injection Mode Logic Time Delay Relay Calibration, Revision 1

0-SR-3.8.1.1(D), Diesel Generator D Monthly Operability Test, Revision 5

3-SR-3.8.1.1(3C), Diesel Generator 3C Monthly Operability Test, Revision 8

3-SR-3.3.5.1.6(BII), Functional Testing of RHR Loop II Pump and Minimum Flow Valve Logic, Revision 4

3-SR-2, Instrument Checks and Observations, Revision 22, [Portion involving determination of Unit 3 drywell floor drain leakage ("Unidentified leakage") and equipment drain leakage (Identified leakage)]

Plant surveillance activities were conducted in an acceptable manner. Regulatory requirements were met. Testing was properly controlled. Minor issues were brought to the licensee's attention.

#### **M4 Maintenance Staff Knowledge and Performance**

##### **M4.1 Measuring and Test Equipment Out-of-Tolerances Evaluations Not Performed**

###### **a. Inspection Scope (62707, 37551)**

The inspectors reviewed the licensee's actions to address a self-assessment finding that measuring and test equipment (M&TE) out-of-tolerance (OOT) investigations had not been completed and/or dispositioned as required.

###### **b. Observations and Findings**

The licensee identified that procedurally required actions had not been taken for numerous pieces of M&TE when OOT reports were generated following testing by TVA Central Labs. The licensee's M&TE program required each OOT report to be investigated for impact on the equipment for which the M&TE was used. The licensee identified the problem during a self-assessment in June 1999. This issue was placed in the corrective action program on June 24, 1999, under Problem Evaluation Report (PER) 99-007248-000, before the extent of the issue was recognized. Subsequently, the licensee determined that there were 511 inadequate and/or missing OOT investigations. By October 14, 1999, the 511 OOT reports were investigated and dispositioned. No inoperable equipment was identified. Each out-of-tolerance investigation (OOTI) report consisted of between 1 and 165 uses of the equipment to investigate and disposition. The licensee performed a Nuclear Assurance assessment which resulted in further corrective actions, which were documented in PER 99-011928-000.

The inspector reviewed a sample of the completed OOTI dispositions, and questioned a disposition of one OOTI involving non-safety related equipment. The OOTI report was dispositioned as acceptable, even though the effect of the OOT M&TE resulted in marginally unacceptable data. This determination was made without engineering justification, and the inspector questioned whether this methodology could have been applied to OOTIs involving safety-related equipment. The licensee acknowledged the question and initiated PERs 00-000733-000 and 00-001439-000. Further evaluation and review of the M&TE issue is required to resolve the above question. Pending further licensee evaluation of this issue and subsequent NRC review, this item is identified as unresolved item (URI) 50-260,296/00-01-01, M&TE Out-of-Tolerance Investigations Not Performed.

c. Conclusions

As of the end of this inspection period, the licensee was addressing the M&TE problems identified; however, an unresolved item was identified pending further evaluation and review of the issues involved.

**V. Management Meetings**

**X1 Exit Meeting Summary**

The resident inspectors presented inspection findings and results to licensee management on February 23, 2000. The licensee acknowledged the findings presented. The licensee did not identify any of the materials reviewed during this inspection as proprietary.

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

T. Abney, Licensing Manager  
 A. Bhatnagar, Site Support Manager  
 R. Coleman, Radiological Control Manager  
 J. Corey, Radiation Protection and Chemistry Manager  
 J. Grafton, Site Quality Assurance Manager  
 J. Herron, Site Vice President  
 R. Jones, Plant Manager  
 R. LeCroy, Site Security Manager  
 R. Rogers, Maintenance Superintendent  
 G. Little, Operations Manager  
 R. Moll, System Engineering Manager  
 W. Nurnberger, Chemistry Superintendent  
 D. Olive, Operations Superintendent  
 D. Sanchez, Training Manager  
 J. Schlessel, Maintenance Manager  
 J. Shaw, Design Engineering Manager  
 R. Wiggall, Site Engineering Manager

**INSPECTION PROCEDURES USED**

IP 37551	Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observations
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92902	Follow-up-Maintenance

**ITEMS OPENED AND CLOSED**

**Opened**

50-260,296/00-01-01	URI	M&TE Out-of-Tolerance Investigations Not Performed (Section M4.1).
---------------------	-----	--