830 Power Building
TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

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June 23, 1976

Mr. Norman C. Moseley, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 818
230 Peachtree Street, NW.
Atlanta, Georgia 30303

Dear Mr. Moseley:

This is in response to F. J. Long's June 3, 1976, letter, IE:II:RFS 50-259/76-8, 50-260/76-8, which transmitted for our review an IE Inspection Report (same number). We have reviewed that report and do not consider any part of it to be proprietary.

Very truly yours,

H. G. Parris for

J. E. Gilleland
Assistant Manager of Power

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N. W. SUITE 818
ATLANTA, GEORGIA 30303

JUN 3 1976

In Reply Refer To:
IE:II:RFS
50-259/76-8
50-260/76-8

Tennessee Valley Authority
Attn: Mr. Godwin Williams, Jr.
Manager of Power
830 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Messrs. H. A. Wilber, J. J. Blake, J. E. Ouzts and R. F. Sullivan of this office on April 6-9, 21-23, 27-30, 1976, of activities authorized by NRC Operating License Nos. DPR-33 and DPR-52 for the Browns Ferry Units 1 and 2 facilities, and to the discussion of our findings held with either Messrs. Green or Dewease at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examination of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no items of noncompliance were disclosed.

We have examined actions you have taken with regard to previously reported unresolved items. These are identified in Section IV of the summary of the enclosed report.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you believe to be proprietary, it is necessary that you submit a written application to this office requesting that such information be withheld from public disclosure. If no proprietary information is identified, a written statement to that effect should be submitted. If an application is submitted, it must fully identify the bases for which information is claimed to be proprietary. The application should be prepared so that information sought to be withheld is incorporated in a separate paper and referenced in the application since the application will be placed in the Public Document Room. Your application, or written statement, should be submitted to us within 20 days. If we are not contacted as specified, the enclosed report and this letter may then be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Very truly yours,

F. J. Long, Chief
Reactor Construction and
Engineering Support Branch

Enclosure:
IE Inspection Report No.
50-259/76-8 and 50-260/76-8

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N. W. SUITE 818
ATLANTA, GEORGIA 30303

IE Inspection Report Nos. 50-259/76-8 and 50-260/76-8

Licensee: Tennessee Valley Authority
818 Power Building
Chattanooga, Tennessee 37401

Facility Name: Browns Ferry 1 and 2
Docket Nos.: 50-259 and 50-260
License Nos.: DPR-33, DPR-52

Location: Limestone County, Alabama

Type of License: 3293 Mwt, BWR (GE)

Type of Inspection: Routine, Unannounced

Dates of Inspection: April 6-9, 21-23, 27-30, 1976

Dates of Previous Inspection: March 31 - April 2, 1976

Principal Inspector: R. F. Sullivan, Reactor Inspector (April 27-30, 1976)

Accompanying Inspector: G. R. Klingler, Reactor Inspector
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

Inspectors-in-Charge: H. A. Wilber, Reactor Inspector (April 6-9, 1976)
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

J. J. Blake, Metallurgical Engineer (April 6-8, 1976)
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

J. E. Ouzts, Reactor Inspector (April 21-23, 1976)
Nuclear Support Section
Reactor Operations and Nuclear
Support Branch

Principal Inspector: _____ 6/2/76
R. F. Sullivan, Reactor Inspector — Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

Reviewed By: _____ 6/2/76
W. C. Seidle, Chief — Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

SUMMARY OF FINDINGS

I. Enforcement Items

None

II. Licensee Action on Previously Identified Enforcement Matters

None

III. New Unresolved Items

None

IV. Status of Previously Reported Unresolved Items

260/74-12/1 Valve Wall Thickness Verification

Documentation not available at site so item remains open. (Details IV, paragraph 5)

V. Unusual Occurrences

None

VI. Other Significant Findings

None

VII. Management Interviews

The results of the inspection were discussed in separate meetings at the end of each inspection visit with either Mr. Green or Mr. Dewease and selected members of the staff.

DETAILS I

Prepared by: _____ 6/2/76
R. F. Sullivan, Reactor Inspector Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

Dates of Inspection: April 27-30, 1976

Reviewed by: _____ 6/2/76
W. C. Seidle, Chief Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

1. Persons Contacted

H. J. Green - Plant Superintendent
J. C. Dewease - Assistant Plant Superintendent
R. Hunkapiller - Assistant Operations Supervisor
T. P. Bragg - QA Staff Supervisor
T. B. Lee - QA Auditor, Office of Power
D. O. McCloud - QA Auditor, Office of Power

2. Review and Audit

A review was made of activities related to the licensee's review and audit program which had taken place during the past year. This review included examination of minutes of the Plant Operations Review Committee (PORC) meetings since March 1, 1975, and the Nuclear Safety Review Board meetings since February 1, 1975. Also the reports of audits conducted by the Office of Power Quality Assurance and Audit Staff were examined and discussions were held with various staff members.

The latest revision of the PORC charter was January 17, 1975, which provided for wider distribution of meeting minutes within TVA. There were 269 meetings held during the inspection period, most of which were directly or indirectly related to fire restoration and preparations for plant restart. The requirements on membership, meeting frequency and quorum were met. The committee appeared to function as described in the charter and to carry out responsibilities as required. No problem areas or deficiencies were identified by the inspector.

The latest revision of the NSRB charter was issued April 15, 1976. There have been some changes in position titles, functional assignments and membership since the previous inspection and the current structure conforms to the description in the proposed Technical Specifications which have been submitted to NRC. The Board's duties and responsibilities have remained unchanged and the meeting minutes reflected conformance in these areas. The minutes of 3 regularly scheduled meetings and 28 special meetings confirmed that the requirements on frequency and quorum had been met. Restoration activities were followed closely by the Board as evidenced in the minutes of the special meetings. The minutes further reflected that matters requiring NSRB review did come before the Board. No deficiencies were noted by the inspector.

The Office of Power Quality Assurance and Audit Staff issues an audit schedule for a 12 month period which is updated quarterly. The schedule covers the safety-related activities which are required by the Technical Specifications to be audited such that all activities are covered within a two year period. The TVA program actually audits all activities on at least a yearly cycle.

A total of 15 routine audit reports covering the period from January 1975 through March 1976 were reviewed which revealed that the requirements on the scope of the program and the audit frequencies were being fulfilled. The reports identified areas which needed correcting and the reports were distributed to responsible members of management. A system has been established within the audit staff which tracks the items, makes followup audit checks and closes out the items when resolved. Overdue items are brought to the attention of management by special letter. The inspector did not identify any deficiencies in the on-going audit program.

3. Training

The inspector was informed of TVA's recent decision to provide additional training to the licensed operators at the TVA simulator prior to restart of Units 1 and 2.

The new simulator has been completed and has been in test operation at the vendors plant where the TVA personnel will be sent for their special training. This will be a 3 day course to include training in startups, shutdowns and operational transients.

4. RHR Testing

In a previous inspection (IE Report Nos. 50-259/76-5 and 50-260/76-5) the inspector reported observing a special vibration

measurement of the RHR system erroneously identified with Unit 2. The test was actually on the Unit 1 system. The inspector previously reported only raw data and further review of test results was made this visit. The results indicated some initial spikes, when the first tests were run, in the 30-40 mil range but the spikes were not reproductible in further testing. The maximum amplitude encountered in the balance of the test was 15 mils which was termed acceptable.

DETAILS II Prepared by: Howard A. Wilber 4/16/76
H. A. Wilber, Reactor Inspector Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

Dates of Inspection: April 6-9, 1976

Reviewed by: W. C. Seidle 6/2/76
W. C. Seidle, Chief Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

1. Persons Contacted

Tennessee Valley Authority (TVA)

H. Green - Plant Superintendent
J. Dewease - Assistant Plant Superintendent
J. Groves - Plant Superintendent of Watts Bar on special assignment
R. Metke - Plant Results Section Supervisor
J. Erpenbach - Preoperational Retest Coordinator
R. Griffin - Preoperational Retest Director

2. Preoperational Retest Program for Unit 1

Procedures

The inspector reviewed the modifications made to procedure RG10 "Control Rod Drive Hydraulic System." These revisions incorporate the inspector's findings reported in IE Report 50-259/76-3, Details IV.

The inspector verified that proper licensee reviews and approvals were made on the procedures that had been reviewed in draft form and reported in IE Report 50-259/76-3. These procedures are:

a. RG-6 "Reactor Core Isolation Cooling System"

b. RG-12 "Core Spray"

c. RT5B "HVAC - Reactor Building"

The portions of procedures RT 14B "Drywell Control Air System" and RG 30 "Primary Containment Isolation System" that apply to the testing of the Main Steam Isolation Valves (MSIV) were reviewed against the commitments in the Recovery Plan.

Test Performance

The inspector witnessed the performance of Steps 5.1.5.1 through 5.1.5.19 of RG 13 "High Pressure Coolant Injection." The inspector verified that the test director was following an approved procedure and was performing the required double verification on the interlock defeats. The test personnel consisted of the test director, two auxiliary operators and two electricians. There were no exceptions in the performance of the valve interlocks. The inspector has no questions on the performance of this portion of Preoperational Retest Procedure RG 13.

3. Startup Retest Instructions (SRI) For Units 1 and 2

The inspector reviewed six of the startup retest procedures (SRI) against the commitments made in the Recovery Plan:

SRI No. 5, "Control Rod Drive System"

SRI No. 6, "SRM Performance and Control Rod Sequence"

SRI No. 14, "Reactor Core Isolation Cooling System"

SRI No. 15, "High Pressure Coolant Injection System"

SRI No. 19, "Core Performance"

SRI No. 26, "Relief Valves"

In SRI No. 6, only that portion of the test related to the initial criticality was reviewed. The procedure will be revised to define which rod sequence will be used for initial criticality and to correct the stated Source Range rod block and scram settings.

The inspector identified an omission of a test level in SRI No. 19. The Recovery Plan committed to performing the test at 100% power and flow; however, this test condition was not included in the procedure. The licensee will review this procedure and correct as required.

The inspector has no questions on the remainder of the procedures reviewed (SRI Nos. 5, 14, 15 and 26).

DETAILS III Prepared by: H C Dance /for 5/6/76
J. E. Ouzts, Reactor Inspector Date
Nuclear Support Section
Reactor Operations and Nuclear
Support Branch

Dates of Inspection: April 21-23, 1976

Reviewed by: H C Dance 5/11/76
H. C. Dance, Chief Date
Nuclear Support Section
Reactor Operations and Nuclear
Support Branch

1. Personnel Contacted

H. J. Green - Plant Superintendent
L. F. Blackner - Nuclear Engineer
T. Cox - Assistant Maintenance Supervisor
J. G. Dewease - Assistant Plant Superintendent
E. Edmison - Test Engineer
G. Erpenback - Retest Coordinator
R. Griffin - Electrical Engineer
C. Gyune - Electrical Engineer
L. C. Marshall - Test Engineer (DEC)
R. Mooney - Nuclear Engineer
E. O. Nave - Nuclear Engineer
M. N. Sawyer - Supervisor (DEC)
B. Willis - QA Engineer

2. Preoperational Retest Witnessing

a. Portions of the following tests for Unit 1 were witnessed by observing preparations, reviewing verifications of prerequisites and observing performance of testing:

(1) RG-12, Core Spray

(2) RG-9, Reactor Manual Control System

(3) RG-10, CRD Hydraulics

(4) RG-13, HPCI System

(5) RG-6, RCIC System

b. As a result of this test witnessing, no items remain outstanding.

3. Preoperational Retest Results Review

a. Test results for the following test were reviewed:

(1) RG-22C, Average Power Range Monitoring (Unit No. 2)

(2) RG-22D, Rod Block Monitoring System (Unit No. 2)

(3) RT-15, Offgas System (Unit No. 2)

(4) RT-22C, Area Radiation Monitoring System and Air Particulate Monitoring System (Unit No. 1)

(5) RG-5, RHR System (Unit Nos. 1 and 2)

b. As a result of these reviews, no items remain outstanding.

4. Preoperational Retest Procedure Review

a. As part of the review of the Reactor Protection System retesting, the following preoperational test documents were reviewed:

(1) RG-21, Reactor Protection System (Unit No. 2)

(2) RG-30, Primary Containment Isolation System (Unit No. 2)

b. As a result of this review, no items remain outstanding.

5. Surveillance Testing Program

a. The following surveillance documents for updating the surveillance program for Unit Nos. 1 and 2 prior to core loading were reviewed:

(1) Unit Nos. 1 and 2 Surveillance Requirements Index

(2) Pre-Startup Functional Test Program Unit No. 1 (Phase II)

(3) Pre-Startup Functional Test Program Unit No. 2 (Phase II)

b. As a result of this review, no questions remain at this time. The implementation of this program as outlined in the above documents will be verified during a subsequent inspection prior to core loading.

6. Inspection of Plant Areas

a. The control rooms, spreading rooms and instrument rooms, and the interior of the control and instrument panels in the control and instrument rooms were inspected. The following operations in progress in these areas were observed:

(1) Inspection of SBM switches in the control room for broken cam followers.

(2) Sealing of cable penetrations in spreading room.

(3) Checking of timing of rod sequencing relays in instrument room.

b. As a result of these inspections and observations, no items remain outstanding.

DETAILS IV

Prepared by: T E Conlon for 4/28/76
J. J. Blake, Metallurgical Engineer Date
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

Dates of Inspection: April 6-8, 1976

Reviewed by: T E Conlon 4/28/76
T. E. Conlon, Acting Section Chief Date
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

All information in these Details applies equally to Browns Ferry Units 1 and 2 except where information is identified with a specific reactor.

1. Persons Contacted

Tennessee Valley Authority

H. J. Green - Plant Superintendent
J. C. Dewease - Assistant Plant Superintendent
T. P. Bragg - QA Supervisor
J. Butler - QC Engineer
C. E. Cantrell - DPP Outage Director
T. Ziegler - Coordinator
G. Jones - Mechanical Engineer

2. Recirculation Loop Bypass Piping (Units 1 and 2)

The licensee has elected to remove the bypass piping on the reactor recirculation loops to preclude problems reported by operating BWR's. This operation required pipe caps to be welded onto the recirculation loops at the removal sites.

At the time of this inspection the piping had been removed from Unit 1 and welding operations were essentially complete. The work in Unit 2 had progressed to the point that three of the four pipe joints attaching the 4-inch bypass lines to the recirculation lines had been cut and the removal sites were being prepared for welding of pipe caps.

The inspector reviewed the work package for this modification which consisted of the following:

a. Work Plan No. 5238.
b. Engineering Change Notice No. L1633.
c. Applicable Welding and NDE procedures as referenced by the work plan.

An inspection was made of the work in progress in the Unit 2 dry well. The inspector observed the preparations for the cutting of the last 4-inch weld joint, inspected the weld preps on the two weldolets which were ready for welding and the repair work in progress on the other weldolet. The repair work was the result of grindouts to remove three linear indications in the base material of the weldolet which had to be weld repaired to meet fit-up requirements of the welding procedure.

Documentation reviewed during this inspection included the following:

a. Material Certifications for the Pipe Caps and the Welding Filler Materials.

b. Welder Qualifications.

c. NDE Personnel Qualifications.

d. Documentation of Welding and NDE Operations.

e. NDE Results and Reports.

There were no items of noncompliance in this area of inspection.

3. Low Pressure Coolant Injection (LPCI) Modification (Units 1 and 2)

This modification required the installation or orifice plates in the RHR piping, which was accomplished by cutting the lines and welding in flanges to support the orifice plate.

At the time of this inspection the modification of the piping had been completed and the documentation packages were being prepared for turnover from the Outage Group to the Operations Group.

The inspector reviewed the work packages for the piping modification which consisted of the following:

a. Work Plan Nos. 5190 and 5193.

b. Engineering Change Notice No. L1636.
c. Applicable Welding and NDE Procedures as referenced by the work plans.

An inspection was made of the welds between the flanges and the piping for weld appearance and conformance to the TVA welding procedure visual inspection criteria for weld contour, undercut, markings, etc.

Documentation reviewed during this inspection included the following:

a. Material Certifications for the Flanges, Orifice Plates, Flange Bolting Materials and Welding Filler Materials.
b. Welder Qualification.
c. NDE Personnel Qualifications.
d. Documentation of Welding and NDE Operations.
e. NDE Results and Reports.

There were no items of noncompliance in this area of inspection.

4. Snubber Installation (Unit 2)

During the inspection of the bypass piping in the Unit 2 drywell, the inspector took the opportunity to inspect the installation of the mechanical snubbers on the relief valve discharge piping. The installations were inspected for completeness and workmanship in the welding of the support materials and alignment of the snubbers.

There were no items of noncompliance in this area of inspection.

5. Valve Wall Thickness Verification (Unit 2)

The inspector attempted to review the documentation required to close out unresolved item No. 74-12/1 during this inspection. The documentation required is an engineering justification to establish the adequacy of the valve bonnets and cover plates (Unit 2) based on the thickness measurements of the valve bonnets and cover plates in Unit 3. This item had been referenced to the DED office in Knoxville for preparation of the justification and was not available at the site for review. Pending review of the engineering justification by IE:II this item remains open.

h. RT-15, "Offgas System - Unit 2"

i. RT-26, "4160 VAC Shutdown Boards Battery System - Units 1 and 2"

The inspector identified no deficiencies for those retest procedures reviewed.

3. Retest Preoperational Test RG-29D, "Rod Sequence Control System, Unit 1"

The inspector witnessed the "Fuel In Bypass Tests" portion of preoperational retest RG-29D, "Rod Sequence Control System, Unit 1." In witnessing this portion of the test, the inspector verified that the latest revision of the test was being used, the prerequisites had been met, and that the test met the stated acceptance criteria. For that portion of the test witnessed, no deficiencies were identified.

4. Preoperational Retest Procedure Review

The inspector reviewed retest procedure RG-8, "Recirculation System and M-G Sets, Unit 1." The review consisted of verifying that commitment content against commitments stated in the Implementing Scoping Document and the Recovery Plan. The review was also made against Administrative Procedure BFA70, "Preoperational Retest Program." The inspector identified no deficiencies.

DETAILS V

Prepared by: Gerald R. Klingler 5/24/76
G. R. Klingler, Reactor Inspector Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

Dates of Inspection: April 27-30, 1976

Reviewed by: W. C. Seidle 6/2/76
W. C. Seidle, Chief Date
Reactor Projects Section No. 1
Reactor Operations and Nuclear
Support Branch

1. Persons Contacted

H. J. Green - Plant Superintendent
J. G. Dewease - Assistant Plant Superintendent
J. J. Erpenbach - Preoperational Test Coordinator

2. Preoperational Retest Procedure Test Results Units 1 and 2

The inspector reviewed the test results of completed preoperational retest procedures. This review consisted of verifying such items as: (1) all test changes have been identified and approved, (2) all data has been entered, reviewed and approved, (3) all test deficiencies have been identified and satisfactorily resolved, (4) the test met the stated acceptance criteria and (5) the results have been reviewed and accepted by those responsible for test approval. The following retests were reviewed:

a. RG-1, "Feedwater Control System - Unit 1"

b. RG-2, "Reactor Water Cleanup System - Unit 2"

c. RG-9, "Reactor Manual Control System - Unit 2"

d. RG-22C, "Average Power Range Monitoring (APRM) System - Unit 2"

e. RG-22D, "Rod Block Monitoring (RBM) System - Unit 2"

f. RG-24, "Rod Worth Minimizer - Unit 2"

g. RT-16, "Evacuation Signal - Units 1 and 2"