



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

AUG 22 1984

Report Nos.: 50-259/260/296/84-25

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 Dates: July 23-27, 1984

Inspection at Browns Ferry site near Decatur, Alabama

Inspector: *P. G. Stoddart*
P. G. Stoddart

8-8-84
Date Signed

Approved by: *D. M. Montgomery*
D. M. Montgomery, Section Chief
Independent Measurements and Environmental
Protection Section
Division of Radiation Safety and Safeguards

8-8-84
Date Signed

Summary

Inspection on July 23-27, 1984.

Areas Inspected

This routine unannounced inspection involved 32 inspector-hours on site in the areas of radioactive liquid and gaseous effluents.

Results

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

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *G. T. Jones, Power Plant Superintendent
- *J. F. Swindell, Plant Superintendent, Operations and Engineering
- *W. C. Thomison, Results Supervisor
- *J. R. Clark, Chemistry Unit Supervisor
- *M. E. McLain, Consultant Engineering
- *B. C. Morris, Compliance Section Supervisor
- *J. R. Daniel, Assistant Supervisor, Field Quality Engineering
- R. E. Burns, Instrumentation Maintenance Supervisor
- D. Nims, Engineering Group Supervisor
- R. McPherson, Mechanics Test Group Supervisor
- W. G. Tays, Chemical Engineering Associate
- L. Kanipe, Supervisor, Health Physics Labs (Muscle Shoals)

NRC Resident

- *G. L. Paulk
- C. Patterson

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on July 27, 1984, with those persons indicated in paragraph 1 above.

3. Audits and Appraisals (84723, 84724)

The inspector discussed the licensee's audit program relative to radioactive waste management, effluent treatment, radioactive effluent instrumentation, and reactor coolant chemistry with licensee representatives. A comprehensive INPO audit had been conducted in 1983 and a summary action plan undertaken to correct observed deficiencies had been prepared. A portion of this summary action plan covering reactor coolant chemistry was reviewed by the inspector and the actions taken to date were discussed with licensee representatives. No violations or deviations were identified.

4. Changes to Procedures (84723, 84724)

The inspector reviewed changes, revisions, or additions to the plant procedures listed below. All were relevant to activities having to do with plant chemistry, radioactive waste treatment or processing, radiological process or effluent instrumentation, or Technical Specification requirements.

<u>Procedure Number</u>	<u>Date of Issue</u>	<u>Title</u>
SI 4.8.A.1 and 2	2/15/84	Release Procedure-Liquid Effluents
SI 4.8.A.4	2/15/84	Liquid Radwaste Monitor
SI 4.8.A.7	1/12/84	Appendix 1 Dose Calculations-Liquid Effluents
SI 4.8.B.1.a	2/15/84	Airborne Effluent Release Rate by Continuous Air Monitor
SI 4.8.B.1.b	2/15/84	Unmonitored Airborne Effluent Release Rate
SI 4.8.B.1.c	2/15/84	Unmonitored Airborne Effluent from the Auxiliary Boiler Turbine Building Vents
SI 4.8.B.2	2/15/84	Airborne Effluent Analysis
SI 4.8.B.3	7/10/84	Offgas Post-treatment Analysis
SI 4.8.B.4-1	2/15/84	Airborne Effluents Main Stack Monitoring System
SI 4.8.B.4-2	2/15/84	Turbine Building Vent Monitoring Systems
SI 4.2.D.1	2/15/84	Offgas Post-treatment Radiation Monitoring System
SI 4.2.D.2	2/15/84	Offgas Post-treatment Isolation Instrumentation Logic
SI 4.8.B.4-3	2/15/84	Reactor Building Vent Monitoring Systems
SI 4.8.B.4-4	2/15/84	Airborne Effluents-Radwaste Building Exhaust Vent Monitoring Systems
SI 4.8.B.5	2/15/84	Appendix I Dose Calculations-Airborne Effluents
SI 4.8.D	2/15/84	Miscellaneous Radioactive Materials Sources

All of the above procedures addressed their specific areas in sufficient detail to permit plant personnel to perform the tasks or functions covered by the purpose and scope of the procedures. The technical content of the procedures was adequate. Changes or revisions to procedures had been reviewed and approved by appropriate plant staff and management prior to issue.

Graphic trending of values of plant chemistry parameters had been initiated since the last inspection. Such trending permitted rapid observation and detection of departures from the normal and provided a useful tool for both quality control laboratory procedures and control of reactor chemistry at desired levels. No violations or deviations were identified.

5. Gaseous and Liquid Effluents (84723, 84724)

The Semi-Annual Radiological Effluent Release Reports for calendar year 1983 were reviewed; the report for the first six months of 1984 had not been

issued at the time of the inspection. The inspector noted an error in the table of batch releases of liquids for the second half of 1983; the total listed was 3.59 curies and should have been 0.59 curies. The error was discussed with licensee representatives and confirmed. The error had no effect on offsite dose calculations since these were based on individual nuclide values, which were determined to be correct according to plant records.

The licensee's procedures provide for separate reporting of offsite doses and of relevant meteorological data in a report identified as "Radiological Impact on Man." These reports are prepared and forwarded separately by TVA's Radiological Hygiene Branch.

The inspector reviewed selected records, which included liquid and gaseous release permits and determined that the releases met effluent limitations. Effluents for the review period were within the quantity limits of the Technical Specifications and were within the Appendix I design objectives and were therefore considered to be ALARA. No violations or deviations were identified.

6. Radioactive Gaseous Wastes and Effluent Treatment Systems (84724)

The inspector verified from selected records of gaseous releases made from October 1, 1983, through July 15, 1984, that the records required by Technical Specification 6.6A.9 were maintained in terms of frequency and content.

Technical Specification Sections 3/4.7.B, 3/4.7.E, and 3/4.7.F list the testing and surveillance requirements for the Standby Gas Treatment System (SGTS), Control Room Emergency Ventilation, and Primary Containment Purge Ventilation air treatment systems. The inspector examined records of charcoal absorber sample efficiency tests, of HEPA filter and charcoal absorber-in-place leak tests, and of operability tests. The results of tests and frequencies of tests and analyses satisfied the Technical Specification requirements.

Technical Specification 3/4.8.B specifies the sampling and monitoring requirements for radioactive material in gaseous effluents. The inspector reviewed selected gaseous waste release permits for 1984. Sampling and monitoring of radioactive material in gaseous effluents were performed in accordance with plant procedures and the applicable Technical Specifications.

In addition to the engineered safety feature systems specified in the Technical Specifications, for which DOP testing is provided, some 16 other HEPA filter systems were periodically tested for leakage with DOP; a list of these systems appears on page 1 of BF TI-16 (June 2, 1982). Most of the above were single filter units providing local treatment prior to release of gaseous effluents. No violations or deviations were identified.

7. Radioactive Liquid Wastes and Effluent Treatment Systems (84723)

Technical Specification Section 3/4.8.A and Table 4.8.A specify requirements for release rates, sampling and analysis of liquid radwaste, limits of radioactivity contained in outdoor tanks, and analysis for specific radio-nuclides. The inspector examined selected radioactive liquid effluent release records for the period January 1, 1984, to July 15, 1984. Based on review of these records and on discussions with licensee representatives, the inspector determined that the licensee was in compliance with Technical Specification 3/4.8.A requirements.

In discussions with licensee representatives the inspector noted that the licensee planned to remove the radwaste evaporator from the liquid radwaste system. It was stated that the evaporator had not been operated since plant preoperational testing and that the type 304 stainless steel from which the evaporator was constructed had been shown to be incompatible with the chemicals to be found in the liquid waste stream. No violations or deviations were identified.

8. Instrumentation (84723, 84724)

Technical Specification 3/4.8.B requires that all radioactive gaseous effluent monitors be calibrated at least quarterly by means of a known radioactive source, that each monitor have an instrument channel test at least monthly and a sensor check at least daily.

Technical Specification 3/4.8.B requires that the liquid effluent radiation monitor be calibrated at least quarterly by means of a known radioactive source, that the monitor have an instrument channel test at least monthly, and a sensor check at least daily. The inspector reviewed selected records and procedures for the calibration and testing of liquid and gaseous effluent monitors and verified that the requirements of the Technical Specifications were being met.

Radioactive sources used for calibration were either prepared from NBS-traceable materials or were cross-calibrated to NBS-traceable sources. Effluent monitor calibrations were periodically verified by calibration against analyses of grab samples, with the analytical equipment also being calibrated to NBS-traceable sources.

The inspector reviewed selected calibration records of instrumentation for DOP-testing of HEPA filter systems and for flow measurement. While the Technical Specifications are silent with respect to calibration of these instruments, in each case, calibration had been performed within the preceding 12 month period. No violations or deviations were identified.

9. Reactor Coolant Water Chemistry (84723)

Technical Specifications 3/4.6.B.1 through 3/4.6.B.4 specify the maximum coolant concentrations for chloride in reactor coolant, pH, and conductivity prior to startup and during certain steaming rates. Technical Specification

3/4.6.B.6 specifies limits on dose-equivalent I-131 whenever the reactor is critical. The inspector reviewed selected plant chemistry records for the period of March 1, 1984 through July 25, 1984, and verified that the required tests had been performed at the specified frequencies and that the results were within the specified limits.

The inspector discussed an on-going, long-term chemistry improvement program with licensee representatives. While the program was not scheduled to be completed prior to the end of calendar year 1984, many changes and improvements had been either initiated or completed. Changes included restructuring of the Chemical Unit management, temporary assignment of an additional manager, employment of an engineering consultant, additional training of personnel, establishment of a new QA/QC program and changes to the staffing structure of the counting room. Other changes under consideration were: revision and consolidation of procedures; computerized data trending was to be studied; and additional chemistry parameters, such as total organic carbon analysis, were to be reviewed for possible inclusion in the chemistry analysis program. No violations or deviations were identified.

10. Post-Accident Sampling System (Independent Inspection 92706)

The inspector reviewed the progress being made to upgrade the interim post-accident sampling system. The inspector visited the location of the Unit 1 sampling station and observed that the sample lines had been lowered to floor level to permit installation of lead-brick shielding, that the hood valving bodies had been moved to the rear of the hood and reach rods had been installed to reduce hand exposure to operators, and that portable shielding was located near the sampling station for rapid access. It was stated by a licensee representative that the gas sampling arrangement had been revised and that gas sampling would utilize a septum through which a hypodermic syringe would be inserted to draw a small volume sample. Consideration had also been given to shielding of samples during collection and during transport to the analytical facility. No violations or deviations were identified.