



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

October 21, 2002

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: BROWNS FERRY NUCLEAR PLANT - NRC INTEGRATED INSPECTION  
REPORT 50-259/02-03, 50-260/02-03, 50-296/02-03

Dear Mr. Scalice:

On September 21, 2002, the NRC completed an inspection at your Browns Ferry 1, 2, & 3 reactor facilities. The enclosed Integrated inspection report presents the results of that inspection which were discussed on September 24, 2002, with Mr. R. G. Jones and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

On the basis of the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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: (See page 2)

Enclosure: NRC Integrated Inspection Report  
w/Attachment: Supplementary Information

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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

Report No: 50-259/02-03, 50-260/02-03, 50-296/02-03

Licensee: Tennessee Valley Authority (TVA)

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

Location: Corner of Shaw and Nuclear Plant Roads  
Athens, AL 35611

Dates: June 23, 2002 - September 21, 2002

Inspectors: B. Holbrook, Senior Resident Inspector  
J. Starefos, Resident Inspector  
R. Carrion, Project Engineer  
R. Chou, Reactor Inspector (Section 1R07)  
D. Jones, Senior Health Physicist (Section 2, 4OA1.4  
and 4OA1.5)  
R. Hamilton, Health Physicist (Section 2, 4OA1.4  
and 4OA1.5)  
E. Testa, Senior Health Physicist (Section 2, 4OA1.4  
and 4OA1.5)  
K. Davis, Physical Security Inspector (Section 3 and  
4OA1.6)

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000259-02-03, IR 05000260-02-03, IR 05000296-02-03; Tennessee Valley Authority; 06/23/2002 - 9/21//2002, Browns Ferry Nuclear Plant, Units 1, 2 and 3; routine integrated report.

The inspection was conducted by the resident inspectors, a regional based project engineer, a physical security inspector, a reactor inspector, and three health physics inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealing Findings

None

B. Licensee Identified Findings

None

## Report Details

### Summary of Plant Status

Unit 1 has been shut down since March 19, 1985, and has remained in a long-term lay-up condition with the reactor defueled.

Unit 2 automatically scrammed on July 27, when an electrical fault in a main transformer caused a generator load reject. The spare main transformer was later connected, the unit was restarted on July 29 and 100% rated thermal power (RTP) was achieved on August 4. Unit power was reduced to about 85% RTP on September 6, to remove condenser booster pump 2C from service due to a water leak in the pump motor oil cooler. Unit power was further reduced to about 65% RTP to conduct other regularly scheduled testing and to complete fuel suppression testing for suspected fuel leaks. Ten control rods were inserted to minimize fuel impact and unit power was returned to 90% RTP on September 12. Unit power remained at 90% RTP through the remainder of the inspection period. At the end of the inspection period, the licensee was still evaluating the impact of leaking fuel on unit operation.

Unit 3 power was reduced to about 75% RTP on August 5, when the down stream river water approached the temperature limit of 90 degrees. Unit power was returned to 100% RTP the next day. The unit operated at 100% RTP the remainder of the inspection period with the exception of planned maintenance and testing.

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R01 Adverse Weather Protection

##### a. Inspection Scope

The inspectors reviewed Procedure 0-GOI-200-3, Hot Weather Operations, to verify the licensee's readiness for seasonable susceptibilities. The inspectors walked down portions of the Unit 3 residual heat removal system (RHR) and RHR service water (RHRSW) system to verify that they were not affected by adverse weather-related problems. The inspectors compared local and main control room system operating parameters with the requirements specified in Procedures 3-OI-74, Residual Heat Removal System, and 3-OI-23, RHR Service Water System, to verify system performance was within procedure acceptable ranges. The inspectors also reviewed open work orders (WOs), problem evaluation reports (PERs), and operator workarounds to verify that the licensee was identifying and correcting problems associated with adverse weather related problems. In addition, the inspectors reviewed the results of a diver inspection of the underwater portion of the intake traveling screens completed in September 2002 (WO 02-000403) to identify the cause of high differential pressure across the traveling screens.

##### b. Findings

No findings of significance were identified.

## 1R04 Equipment Alignment (Partial and Complete walkdown)

### .1 Partial Walkdown

#### a. Inspection Scope

The inspectors performed a partial walkdown of three safety systems to verify redundant or diverse train operability, as required by the plant Technical Specifications (TS). In some cases, the system was selected because it was considered an unacceptable combination from a Probabilistic Safety Assessment perspective for the equipment to be removed from service while another train or system was out of service. The inspectors' walkdown was to verify that breaker, valve position, and support equipment was in the correct position for support system operation. The walkdown was also to identify any discrepancies that impact the function of the system that could lead to increased risk. Also, the inspectors' walkdown was to verify that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the availability and functional capability of mitigating systems or barriers. Inspectors' observations for equipment and component alignment for the partial walkdowns were compared to the alignment specified in Operating Instructions (OI) 3-OI-71, Reactor Core Isolation Cooling System, and 2-OI-74, Residual Heat Removal System, and Drawing 2-47E811-1, Flow Diagram Residual Heat Removal System.

- Unit 3 reactor core isolation cooling (RCIC) system while the high pressure coolant injection (HPCI) system was inoperable for a steam leak repair per WO 02-004104-000
- Unit 2 RHR system Loop II, while Loop 1 RHR was inoperable and tagged out for maintenance per WO 02-00427-000
- Unit 2 RHR system Loop I pumps, while testing was being performed on Unit 1 RHR cross-tie to Unit 2

### .2 Complete Walkdown

#### a. Inspection Scope

The inspectors conducted a complete walkdown of the accessible portions of the Unit 2 control rod drive system. As part of the walkdown, the inspectors reviewed Section 3.4 of the Unit 2 Updated Final Safety Analysis Report (UFSAR), Procedure 2-OI-85, Control Rod Drive System, Drawings 0-47-E820-1, -E820-2, -E820-6, and -E820-7. The inspectors verified proper component alignment, that components were labeled, and that hangers and supports were correctly installed and functional. In addition, the inspectors observed valve, electrical breaker, and controller position from the main control room to verify that components were in the position specified by licensee procedure. The inspectors also reviewed instrument readings to verify that they were within the procedure-and TS-required ranges. The inspectors reviewed outstanding PERs to verify that system deficiencies were being identified and corrected. The inspectors also reviewed outstanding maintenance WOs, the system health report, the Maintenance Rule report, and the operator workaround list to assess overall system condition to verify that identified deficiencies would not affect system function.

b. Findings

No findings of significance were identified.

1R05 Fire Protectiona. Inspection Scope

The inspectors reviewed Procedures SPP-10.10, Control of Transient Combustibles, and SPP-10.9, Control of Fire Protection Impairments, and conducted a walkdown of the following six fire areas to verify licensee control of transient combustibles and ignition sources, the material condition of fire equipment and fire barriers, operational lineup, and operational condition of selected components. Also, the inspectors review was to verify that fire protection impairments were identified and controlled in accordance with the above procedures. In addition, the inspectors reviewed the Site Fire Hazards Analysis and applicable Pre-fire Plan drawings listed in the attachment to verify that the necessary fire fighting equipment, such as fire extinguishers, hose stations, ladders, and communications equipment, was in place.

- Fire Area 2-6, Unit 2 reactor building elevation 639
- Fire Area 4, Unit 1 shutdown board room B
- Fire Area 5, Unit 1 shutdown board room A
- Fire Area 12, Unit 2 shutdown board room F
- Fire Area 22, Unit 3 shutdown board room 3EA and 3EB
- Fire Area 24, Unit 3 4 kV bus tie board room

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (Biennial)a. Inspection Scope

The inspectors selected the following risk-significant heat exchangers and associated components for review and inspection:

- Spent fuel pool cooling (SFP) system heat exchanger 3A and 3B
- Reactor building closed cooling water (RBCCW) system heat exchanger 2A
- RHR system heat exchanger 2D.

The inspectors observed licensee engineers conducting a corrosion inspection, maintenance, and the evaluation of SFP cooling heat exchanger 3A end-bell. In addition, the inspectors observed eddy current examination and data acquisition for the same cooler. The inspectors also walked down and examined the intake structures and channel to verify material condition and operational readiness.



The inspectors reviewed selected documents associated with SFP cooling heat exchangers 3A and 3B, RBCCW heat exchanger 2A, and RHR heat exchanger 2D. The documents reviewed included WOs, maintenance, inspection, cleaning, functional or performance testing, flow testing, a calculation for allowable tube plugging, preliminary and final eddy current examination reports, the inspection and survey report for the intake channel, drawings, measurement of macro-fouling blockage, macro-fouling control treatment, and the qualification and certification of eddy current examiners. The document review was performed to verify that selected heat exchanger testing was adequate; test criteria were appropriate and met; test frequency was appropriate; and test results were acceptable. These reviews were evaluated using the TS, the UFSAR, and Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment. The specific documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

Resident Inspector Quarterly Review of Testing and/or Training Activities

a. Inspection Scope

The inspectors observed two different licensed operator crews performance during two simulator training exercises; OPL173S184, Loss of Control Air, Loss of SJAE, Loss of EECW Pump, Fire at Auxiliary Boiler, HPCI Break, and EOI-3 Emergency Depressurization and OPL-173S246, RPS Low Level, Instrument Failure, Fuel Failure, Main Steam Leak, RCIC Break, HPCI Inverter Failure, CRD Pump Failure, Stuck Open SRV, and Loss of Unit Board "C". The inspectors reviewed Procedures TRN-11.4, Continuing Training For Licensed Personnel, TRN-11.9, Simulator Exercise Guide Development and Revision (Rev), and OPDP-1, Conduct Of Operations, to verify the conduct of training; that the exercises contained high risk operator actions, that the formality of communication, procedure usage, alarm response, control board manipulations, and supervisory oversight were in accordance with the above procedures. The inspectors also reviewed Procedure SPP-3.5, Regulatory Reporting Requirements, to verify the event action level was correctly identified and reported. In addition, the inspectors reviewed previously identified deficiencies to verify they were included in the current training. The inspectors attended the post-exercise critiques and discussed operator performance with the instructors to verify the licensee identified issues were comparable to issues identified by the inspectors.

b. Findings

No findings of significance were identified.

## 1R12 Maintenance Rule (MR) Implementation

### a. Inspection Scope

The inspectors reviewed the three performance problems listed below, for selected structures, systems, and components (SSCs). The inspectors reviewed PERs, operator logs, and licensee cause determination evaluations (CDEs) relative to the problems to assess the effectiveness of the licensee's MR Implementation. The inspectors compared the licensee's performance against Procedure SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting - 10 CFR 50.65, Technical Instruction 0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting - 10 CFR 50.65 and SPP 3.1, Corrective Action Program. The inspectors review was to verify that: (1) MR scoping; (2) characterization of failed SSCs; (3) safety significance classifications; (4) 10 CFR 50.65 (a)(1) or (a)(2) classifications; and (5) the appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1) were in accordance with the above site procedures and 10 CFR 50.65 requirements.

- Valve 2-FCV-032-0062 failure during loss of air test, PER 01-004296, CDE 2001-04-06
- 3B emergency diesel generator failures during surveillance testing
- Unit 2 post-accident sampling system functional failure, PER 02-003492, CDE 2002-03-10

### b. Findings

No findings of significance were identified.

## 1R13 Maintenance Risk Assessments and Emergent Work Evaluation

### a. Inspection Scope

The objectives of this inspection were to verify that risk assessments were being performed when and as required by 10 CFR 50.65(a)(4). The inspectors reviewed Procedures SPP-6.1, Work Order Process Initiation, SPP-7.1, Work Control Process, and 0-TI-367, BFN Dual Unit Maintenance, and compared licensee performance to the procedure requirements. The review was to evaluate the adequacy of the licensee's risk assessments and the implementation of compensatory measures for the five maintenance activities listed below. For the emergent work and equipment issues listed, the inspectors' review was to verify that the licensee had taken the necessary steps to plan and control the emergent work activities to effectively manage and minimize risk. Work items reviewed included the following:

- Unit 3: Repair a steam leak on the HPCI steam inlet drain chamber level switch. HPCI, a single train high pressure injection system, was taken out of service for the repair per WO 02-004104-000 (planned)
- Unit 3: Troubleshoot the electrohydraulic control system to determine why turbine control valve CV-2 was oscillating approximately 20%, per WO 02-007408-000 (emergent)

- Standby gas treatment system (SBGT) train A failed the methyl iodide charcoal test. Replace all SBGT train A charcoal trays per WOs 02-0780500 (emergent)
- Broken conduit for Unit 3 hardened suppression chamber vent inboard isolation valve, WO 02-004541-000 (emergent)
- Extension of SBGT train C work during work week (WW) WW2238 (orange sentinel)

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions and Events

a. Inspection Scope

The inspectors responded to a Unit 2 automatic scram that occurred on July 27, 2002, due to a main generator load reject signal, to assess licensee performance and to verify that procedure and regulatory requirements were met. The inspectors reviewed operator logs, plant computer data, and strip charts to verify that system and operator response were as required by regulatory requirements, procedures, and training. The inspectors reviewed the following procedures to verify that operator actions met procedure and TS requirements.

- 2-AOI-100-1, Reactor Scram
- 2-AOI-100-1, Reactor Scram, Attachment 1, Scram Report
- 2-EOI-1, RPV Control
- 2-EOI-3, Secondary Containment Control

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following five operability evaluations to verify the technical adequacy and ensure that the licensee had adequately assessed TS operability. The inspectors also reviewed the UFSAR to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed implemented compensatory measures to verify that the compensatory measures worked as stated and the measures were adequately controlled. Where applicable, the inspectors reviewed Procedure SPP-3.1, Corrective Action Program, Appendix D, Guidelines For Degraded/Non-conforming Condition Evaluation and Resolution of Degraded/Non-conforming Conditions, to ensure that the licensee's evaluation met procedure requirements. The inspectors also reviewed a sampling of PERs to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- Functional evaluation for Unit 2 HPCI system following water hammer event and failure to meet surveillance procedure acceptance criteria (PER 02-008800-000)
- Primary containment isolation valve 2-FCV-73-02 slow closing time (PER 02-008760-000)
- Unit 3 primary containment isolation valve 3-MVOP-69-01 flex conduit had been previously repaired with tape (PER 02-004100-000)
- Evaluation of 10 CFR 21 notice from General Electric on Barton 289A differential pressure indicating switches which potentially affected the HPCI system min-flow valve (PER 02-008373-000)
- Use of manual valves to maintain primary containment isolation function while 3-FSV-084-0008C and 3-FSV-084-0008D were inoperable for maintenance

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (OWA)

a. Inspection Scope

The inspectors reviewed the status of OWAs for Units 2 and 3 to determine if the functional capability of the system or operator reliability in responding to an initiating event was affected. Also, the review was to evaluate the effect of the OWA on the operators' ability to implement abnormal or emergency operating procedures during transient or event conditions. The inspectors compared their observations and licensee actions to the requirements of Operations Directive Manual 4.11 and TVAN Standard Department Procedure OPDP-1, Conduct of Operations. Five OWAs reviewed are as follows:

- 1-090-OWA-2002-0110, Eberline CAM console printer will not print out alarms/status, (WO 02-008064-000)
- 2-069-OWA-2002-0118, 2-TS-69-29A (RWCU 2B Tank Room) has annunciator sealed in on 2-PNL-9-3 for high area temperature, (WO 02-010524-000)
- 2-001-OWA-2002-0097, SRV 1-23 acoustic monitor is inoperable, (WO 02-008316-000)
- 3-090-OWA-2002-0109, Eberline CAM console printer will not print out alarms/status, (WO 02-005747-000)
- 3-001-OWA-2002-0057, SRV 1-18 acoustic monitor is inoperable, (WO 02-004163-000)

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)a. Inspection Scope

The inspectors evaluated the following five activities by observing testing and/or reviewing completed documentation to verify that the PMT was adequate to verify system operability and functional capability following completion of associated work. The inspectors reviewed Procedure SPP-6.3, Post-Maintenance Testing, to verify that testing was conducted in accordance with procedure requirements. For some testing, portions of MMDP-1, Maintenance Management System, Rev. 5, and MCI-0-000-DMP002, Maintenance of Secondary Containment Dampers and Actuators, Rev. 16, were referenced.

- Unit 3: PMT of replaced cooling coil for the Loop I core spray (CS) pump room cooler per WO 02-001958-000
- Unit 3: PMT of steam leak repair on HPCI steam inlet drain chamber level switch per WO 02-004104-000
- 0-SR-3.6.4.3.2 (C HTR), Standby Gas Treatment Filter Train C Humidity Control Heater Test per WO 02-004144-000
- 1-FCO-064-0043A reactor zone exhaust duct outboard isolation damper stroke following diaphragm replacement
- 3-FCO-064-0009A refuel zone exhaust duct outboard isolation damper post maintenance test following diaphragm replacement

b. Findings

No findings of significance were identified.

1R22 Surveillance Testinga. Inspection Scope

The inspectors either witnessed portions of surveillance tests or reviewed test data for the six risk significant SSC, listed below, to verify that the tests met TS surveillance requirements, UFSAR commitments, in-service testing (IST), and licensee procedure requirements. The inspectors' review was to confirm that the testing effectively demonstrated that the SSCs were operationally capable of performing their intended safety functions. IST data was compared against the requirements of Procedure 0-TI-362, Inservice Testing of Pumps and Valves. The surveillances either witnessed or reviewed included:

- 0-SR-3.3.8.1.2(A), 4 kV Shutdown Board A Undervoltage and Time Delay Relay Calibration and Functional Test
- 1-SI-4.5.B.11, RHR Unit 1 X-Tie for Unit 2 Operation
- 2-SR-3.1.3.2, Control Rod Exercise Test for Fully Withdrawn Control Rods
- 2-SR-3.5.1.7, HPCI Main and Booster Pump Set Developed Head and Flow Rate Test at Rated Reactor Pressure (IST)

- 3-SR-3.6.1.3.5 (CS II), Core Spray MOV Operability Test
- 0-SR-3.8.1.1(B), Diesel Generator B Monthly Operability Test

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed Modification (DCN) 51013. This modification replaced two banks of nitrogen cylinders to assure an adequate supply of air to the seals of the inner and outer larger equipment air lock doors. The inspectors reviewed Procedures 0-TI-405, Plant Modifications and Design Change Control, and 0-TI-410, Design Change Control, and also the associated 10 CFR 50.59 screening against the system design bases documentation, including the UFSAR (Section 5.3.3.5) to verify that the modification had not affected system operability/availability. The inspectors observed ongoing work activities and reviewed selected completed work activities to verify that the installation was consistent with the modification documents, Design Change Notification (DCN) 51013, and WOs 02-005004-000 and 02-005005-000.

b. Findings

No findings of significance were identified.

**Cornerstone: Emergency Preparedness**

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed licensee activities in the control room simulator and technical support center (TSC) during an emergency training drill conducted on August 14, 2002, to verify implementation of Procedures NP-REP, Radiological Emergency Plan, Browns Ferry Emergency Plan Implementing Procedures, SPP- 3.5, Regulatory Reporting Requirements, and OPDP-1, Conduct of Operations. The inspectors' review was to verify that operator performance, event classifications, and offsite emergency notifications were in accordance with the requirements of the above procedures.

The inspectors also reviewed licensee documents to verify that licensee drill evaluators focused on improvement items identified during previous drills. The inspectors attended the post-drill exercise critique to verify that the licensee's identification of areas for improvement were consistent with the inspectors' observations.

b. Findings

No findings of significance were identified.

## 2. RADIATION SAFETY

### Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

#### 2OS1 Access Control To Radiologically-Significant Areas

##### .1 Access Controls

##### a. Inspection Scope

The licensee's procedures for posting, surveying, and controlling access to airborne radioactivity areas, radiation areas, high radiation areas, locked high radiation areas, and very high radiation areas were reviewed by the inspectors for consistency with applicable TS and 10 CFR 20 requirements. During plant tours, the inspectors evaluated radiological postings and barricades against the current radiological surveys in areas of the reactor, turbine, and plant stack buildings to determine the appropriateness of the established radiological controls. In addition, the inspectors conducted independent radiological surveys and compared the results to dose rates recorded on current survey maps at various locations in plant areas to determine the accuracy of surveys performed pursuant to 10 CFR 20.

The inspectors observed designated locked high radiation doors, reviewed associated weekly surveillance documentation, and evaluated established controls with respect to TS requirements. The inspectors also evaluated implementation of key controls and postings for very high radiation areas and locked high radiation areas. Internal dose assessments were evaluated and assigned doses were independently verified.

The inspectors reviewed selected radiation work permit (RWP) guidance used for work in radiologically-significant areas associated with non-outage work to evaluate incorporation of appropriate access controls and electronic dosimeters setpoints for the expected work area radiological conditions. The inspectors evaluated Unit 1 Recovery RWPs and work activities in progress. Through worker interviews, radiologically-controlled area tours, and selected job site reviews, the inspectors evaluated radiation worker and radiation protection staff training/skill level, adherence to access control procedures and RWP requirements, and understanding of RWP requirements and dosimetry setpoints.

Licensee procedures and activities related to access controls were evaluated for consistency with 10 CFR 19.12; 10 CFR 20, Subparts B, C, F, G, H, and J; and TS Section 5.4 - Procedures, and Section 5.7 - High Radiation Areas. Licensee access control related procedures, reports, and records reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the audit and self-assessments, listed in the attachment, for posting, contamination control, surveying, and controlling access to radiologically-significant areas. The audit and self-assessments were evaluated against periodic program review requirements specified in 10 CFR 20. The inspectors reviewed radiation protection records and interviewed workers and management to determine if any PERs or events involved dose rates greater than 25 R/hr at 30 centimeters or greater than 500 R/hr at 1 meter. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues against the practices described in Procedure SPP-3.1, Corrective Action Program.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

.1 Radiation Monitoring Instrumentation

a. Inspection Scope

The inspectors reviewed the material condition of all accessible area radiation monitors (ARMs) and continuous air monitors (CAMs) in the Unit 3 reactor building. Local readouts for the installed area radiation monitors were compared to measurements made with NRC survey instruments. The inspectors also reviewed calibration records from the Unit 3 reactor building CAMs and ARMs for adequacy. Selected handheld survey instruments, listed in the report attachment, were examined for material condition, and status of functional and calibration checks, battery condition, calibration due date, function check dates, and high voltage or zero adjust. The inspectors also reviewed the most recent calibration documentation for the instruments. Licensee personnel were interviewed to determine proficiency in instrumentation selection criteria and knowledge of actions required for instruments that fail source or calibration checks. Current calibration, function check, and nuclide library data for the Canberra Fastscan whole body counter also were reviewed.

Licensee procedures and activities related to radiation monitoring instrumentation were evaluated for consistency with TS and 10 CFR 20.1501(b). The licensee's instrumentation-related procedures, reports and records reviewed during the inspection are listed in the Attachment.



b. Findings

No findings of significance were identified.

.2 Self-Contained Breathing Apparatus (SCBA) Maintenance and User Testing

a. Inspection Scope

The inspectors reviewed implementation of the licensee's program for maintenance and use of SCBA. The inspectors visually examined five SCBAs for physical condition, and operability in selected storage locations. The inspectors interviewed two persons responsible for the direct maintenance and repair of SCBA devices and reviewed the maintenance procedure and its implementation for inspection and repair of the units. The inspectors reviewed training provided to SCBA users and evaluated training and qualification status for 15 SCBA users.

Licensee procedures and activities related to SCBA were evaluated for consistency with TS requirements and 10 CFR 20.1703. The licensee's SCBA related procedures, reports and records reviewed during the inspection are listed in the attachment.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors evaluated in detail the audits, self-assessments, and PERs related to radiation monitoring instrumentation listed in the attachment. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues against the practices described in Procedure SPP-3.1, Corrective Action Program.

b. Findings

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

.1 Radioactive Effluent Treatment and Monitoring Systems

a. Inspection Scope

The inspectors reviewed the licensee's most recent Radioactive Effluent Release Report which delineated the quantities of radionuclides released in liquid and gaseous effluents during calendar year (CY) 2002 and the resultant radiation doses to the public. The report content was reviewed to determine whether it included the information and data required to demonstrate conformance with 10 CFR 20 and Appendix 1 of 10 CFR 50.

The inspectors also reviewed the recent changes to the Offsite Dose Calculation Manual (ODCM).

The inspectors toured the plant and assessed major radioactive effluent process and monitoring equipment against descriptions in the UFSAR and the ODCM. During the tours, the inspectors observed twenty-three effluent monitoring instruments to evaluate their material condition and to determine whether they were in service as specified by the ODCM. Compensatory sampling and analyses for three randomly selected monitors, which were out-of-service at various times during the previous twelve months, were also assessed.

Records for four recent gaseous effluent releases were reviewed and evaluated. The inspectors reviewed the records for the most recent calibrations of four effluent monitoring instruments and one gamma spectroscopic analysis instrument. Results of inter-laboratory comparisons made during CY 2001 and the first two quarters of CY 2002 were reviewed and evaluated for samples typical of plant effluents.

Licensee procedures and activities related to plant effluents were evaluated for consistency with the TS; the ODCM; UFSAR Chapter 9.0, Radioactive Waste Control Systems; 10 CFR 20.1302; 10CFR 50.36(a); Appendix I of 10 CFR 50; Regulatory Guide (RG) 1.109, Calculation of Annual Doses to Man From Routine Releases for Reactor Effluents for the Purpose of Evaluation Compliance With 10 CFR Part 50, Appendix I; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment; and NUREG-0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants. Licensee plant effluent related procedures, reports, and records reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors evaluated in detail the audit and PERs related to radioactive effluent monitoring listed in the attachment. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues against the practices described in Procedure SPP-3.1, Corrective Action Program.

b. Findings

No findings of significance were identified.

## 2PS3 Radiological Environmental Monitoring Program (REMP)

### .1 REMP Implementation

#### a. Inspection Scope

The inspection of the environmental monitoring program consisted of direct physical observation, documentation review, and interviews with licensee personnel. During the inspection, changes to the ODCM and UFSAR were discussed. In addition, data documented in the Annual Environmental Operating Report for CY 2001 were reviewed in detail for conformance with the ODCM.

The inspectors observed the routine collection of five weekly airborne particulate and iodine samples and the collection of selected annual soil samples. Sample collection was evaluated for adherence to licensee sampling procedures and ODCM sampling location requirements. The inspectors observed the material condition and assessed the operability of one river water composite sampler (TRM 293.5), five air samplers, and five co-located rainfall composite sampling devices. Environmental thermoluminescent dosimeter (TLD) equipment in the immediate vicinity of the air sampling stations were also evaluated for material condition and appropriate location as specified in the ODCM. Air flow calibration records were reviewed for conformance to the calibration frequencies specified in the ODCM. Using NRC global positioning system equipment, the licensee's REMP monitoring locations were assessed against ODCM specified site descriptors.

The inspectors reviewed the activities at the Western Area Radiological Laboratory where the licensee's environmental samples are analyzed. During this review the operation of the laboratory was assessed to determine the adequacy of practices, procedures, and analytic capabilities.

Licensee procedures and activities related to the REMP were evaluated for consistency with TS and ODCM details. Licensee REMP related procedures, reports, and records reviewed during the inspection are listed in the Attachment.

#### b. Findings

No findings of significance were identified.

### .2 Meteorological Monitoring Program

#### a. Inspection Scope

The inspectors observed the physical condition of the meteorological monitoring instrumentation and supporting equipment. The inspectors compared system-generated data to the data provided by the plant computer to various locations including the control room. The data were also compared with the inspectors' qualitative observations of wind direction and speed. The inspectors assessed system reliability and data recovery. Meteorological tower siting was evaluated for near field obstructions, ground cover, proximity to the plant, and distance from terrain that could affect the representativeness

of the measurements. The inspectors reviewed the calibration data for selected meteorological tower sensors used during the previous year.

Licensee procedures and activities related to meteorological monitoring were evaluated for consistency with the TS; the ODCM; UFSAR Section 2.3; and ANS/ANSI 3.11-2000, Determining Meteorological Information at Nuclear Facilities. Licensee meteorological monitoring related procedures, reports and records reviewed during the inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

.3 Unrestricted Release of Materials from the Radiologically Controlled Area (RCA)

a. Inspection Scope

Radiation protection program activities associated with the unconditional release of materials from the RCA were reviewed and evaluated. The inspectors directly observed surveys of potentially contaminated materials released from the RCA using the small article monitor (SAM)-11 equipment and the release of personnel using the Personnel contamination monitors (PCM-1). To evaluate the appropriateness and accuracy of release survey instrumentation, radionuclides identified within recent waste stream analyses were compared against current calibration and performance check source radionuclide types. Current calibration and performance check data were reviewed and discussed. In addition, licensee guidance to evaluate survey requirements for hard-to-detect radionuclides was reviewed and discussed. The licensee's practices for monitoring for unconditional release of materials from the RCA were evaluated against 10 CFR 20 and applicable licensee procedures.

b. Findings

No findings of significance were identified.

.4 Problem Identification and Resolution

a. Inspection Scope

For the period July 1, 2001 to July 1, 2002, the inspectors reviewed in detail licensee PERs for environmental monitoring and radioactive material which are listed in of the Attachment. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues against the practices described in Procedure SPP-3.1, Corrective Action Program.

b. Findings

No findings of significance were identified.

### 3. SAFEGUARDS

#### Cornerstone: Physical Protection

##### 3PP1 Access Authorization (Behavior Observation Program)

###### a. Inspection Scope

During the period of September 9 through September 13, 2002, the inspectors reviewed the licensee's behavioral observation program to evaluate the effectiveness and proper implementation of the behavioral observation portion of the personnel screening and Fitness-for-Duty (FFD) program. Five representatives of licensee management and a representative who was assigned escort duties were interviewed to determine their understanding of the behavior observation program. The inspectors evaluated the effectiveness of each individual's training, including the ability to recognize aberrant behavioral traits, indications of narcotic and alcohol use, and knowledge of work call-out reporting procedures.

The inspectors reviewed the licensee's Semi-Annual FFD Report for the period July through December 2001, and a sample of the licensee's PER and safeguards event reports (SERs) for the period March 2001 through September 2002, to evaluate the licensee's corrective actions, and to determine the licensee's threshold for recommending for-cause testing for events related to human performance. In addition, the inspectors interviewed the access authorization specialist and reviewed the licensee's procedures and controls used by supervisors to determine whether employees were continuously observed in accordance with the established continual behavior observation program.

The licensee's activities were evaluated against requirements in the Browns Ferry Nuclear Plant Physical Security Plan, associated plant procedures, and 10 CFR Part 26, FFD Program. Specific licensee documents reviewed are described in the Attachment.

###### b. Findings

No findings of significance were identified.

##### 3PP2 Access Control

###### a. Inspection Scope

The inspectors reviewed the licensee's access control procedures and associated equipment designed to detect and prevent the introduction of contraband into the protected area (PA). Licensee performance was also evaluated. The inspectors evaluated via direct observation the adequacy of the licensee's equipment testing procedures performed by a licensee representative on in-use access control equipment and on in-service standby equipment at the east and west gate personnel access portals. The inspectors evaluated the equipment testing procedure to determine if testing was performance-based and challenged the presently installed and configured

site equipment. Through observation of licensee performance testing, the inspectors assessed the adequacy of the card readers and biometric hand readers located at the east and west gate personnel access portals to prevent unauthorized entry into the PA and to preclude multiple entries without logging out of the PA. In addition, the licensee's process for restoring search equipment to service following repair and post-maintenance testing was evaluated. The inspectors also observed and assessed in-processing searches of personnel and packages at the same locations, and search of vehicles at the PA sally port. Security officers performing the function as search officers and final access control officers were interviewed to determine their knowledge associated with their duties.

The licensee's Key and Lock Program and associated procedures for limiting and controlling vital area keys were examined, including key inventories for the second and third quarters of 2002. A random audit of security daily shift reports for the current year was conducted to verify each shift's accountability for vital area keys. The inspectors verified operations' accountability for emergency security operations keys maintained in the control room to gain access to vital equipment during an emergency. The inspectors also discussed with the access authorization staff, the safeguards in place to protect against unauthorized access to the site security computers from outside the PA.

The licensee's procedures and processes for granting unescorted access to vital area equipment were evaluated to verify that access was granted to only personnel identified as having a need for such access. Specifically, site access authorization personnel were interviewed to determine their knowledge associated with supervisors' actions when maintaining the employee monthly protected and vital area access list. The inspectors also reviewed observations identified by the licensee in the 2001 Annual Plant Security Assessment Report, and assessed a sample of corrective actions identified in licensee's PERs and SERs for 2001 and 2002 to determine if observations related to access control and human performance were being appropriately dispositioned.

In addition, the inspectors assessed the licensee's program for granting unescorted access authorization. Fifteen access authorization records, covering the period of September 2001 to present for contract and non-contract employees, were evaluated at the TVA corporate office to determine the completeness of the licensee's actions in determining the eligibility of persons for unescorted access to the site. Ten of these records involved temporary unescorted access authorization.

The licensee's activities were evaluated against requirements contained in the Browns Ferry Physical Security Plan, Standard Programs and Processes (SPP) Procedure SPP-1.3, 10 CFR 73.55, Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage, and 10 CFR 73.56, Personnel Access Authorization Requirements for Nuclear Power Plants. Specific licensee documents evaluated are described in the Attachment.

b. Findings

No findings of significance were identified.

### 3PP3 Response to Contingency Events

The Office of Homeland Security (OHS) developed a Homeland Security Advisory System (HSAS) to disseminate information regarding the risk of terrorist attacks. The HSAS implements five color-coded threat conditions with a description of corresponding actions at each level. NRC Regulatory Information Summary (RIS) 2002-12a, dated August 19, 2002, "NRC Threat Advisory and Protective Measures System," discusses the HSAS and provides additional information on protective measures to licensees.

#### a. Inspection Scope

On September 10, 2002, the NRC issued a safeguards advisory to reactor licensees to implement the protective measures described in RIS 2002-12a in response to the Federal government declaration of threat level "orange." Subsequently, on September 24, 2002, the OHS downgraded the national security threat condition to "yellow" and a corresponding reduction in the risk of a terrorist threat.

The inspector interviewed licensee personnel and security staff, observed the conduct of security operations, and assessed licensee implementation of the threat level "orange" protective measures. Inspection results were communicated to the region and headquarters security staff for further evaluation.

#### b. Findings

No findings of significance were identified.

### 3PP4 Security Plan Changes

#### a. Inspection Scope

During the period covered by this inspection report, the inspectors evaluated nine modifications (Revision Nos. 1, 2, 3, 4, 5, 6, 7, 8, and 9) to the Browns Ferry Physical Security/Contingency Plan. The nine revisions were submitted under the provisions of 10 CFR 50.54(p) and were evaluated against the previously approved physical security plan.

#### b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator (PI) Verification

Cornerstone: Initiating Events

###### .1 Unit 2 and Unit 3 Unplanned Scrams per 7000 Critical Hours

###### a. Inspection Scope

The inspectors reviewed Procedure SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, for Compiling and Reporting PI's to the NRC. The inspectors reviewed raw PI data for unplanned scrams collected from monthly operating reports and licensee event reports (LERs) from April 2001 through June 2002, and compared graphical representations, retrieved from the website, from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. The inspectors reviewed Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Rev 1 and 2, to verify that industry reporting guidelines were applied.

###### b. Findings

No findings of significance were identified.

Cornerstone: Mitigating Systems

###### .2 Unit 2 and Unit 3 Safety System Functional Failures

###### a. Inspection Scope

The inspectors reviewed the licensee's procedures and methods for compiling and reporting PIs. The inspectors reviewed raw PI data collected for the Unit 2 and Unit 3 PI below from July 2001 to March 31, 2002, and compared graphical representations from the most recent PI report to the raw data to verify the data was correctly included in the report. The inspectors reviewed Procedure SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting -10 CFR 50.65; category A and B PERs, LERs, cause determination evaluations and their associated PERs, and licensee records, to verify the PI data was appropriately captured for inclusion into the PI report, and that the PI was calculated correctly. The inspectors compared their observations with Procedure SPP-66 and NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 1 and 2, to verify licensee procedure requirements and industry reporting guidelines were applied.

###### b. Findings

No findings of significance were identified.



Cornerstone: Barrier Integrity

.3 Unit 2 and Unit 3 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors reviewed Procedure SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, Rev. 0, for compiling and reporting PIs to the NRC. The inspectors reviewed selected raw PI data for reactor coolant system (RCS) leakage collected from Procedure 2/3-SR-2, Instrument Checks and Observations, Rev. 30, Attachment 2, Tables 1.3 and 2.3, and data sheets from April 2001 through June 2002, and compared graphical representations, retrieved from the website, from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. The inspectors also reviewed selected data from Procedure 3-SR-3.4.4.1, Manual Calculation of Unidentified, Identified, and Total Leakage, Rev. 4 and PER 02-005122-000. The inspectors reviewed NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 1 and 2, to verify that industry reporting guidelines were applied.

b. Findings

No findings of significance were identified.

Cornerstone: Occupational Radiation Safety

.4 Occupational Exposure Control Effectiveness

a. Inspection Scope

For the period January 1 through June 25, 2002, the inspectors reviewed logs and radcon field operations PERs, and interviewed cognizant personnel to access the accuracy of the data submitted by the licensee for the Occupational Exposure Control Effectiveness PI. Licensee documentation associated with events documented for internal and external personnel exposure events, access control to radiologically-significant areas, and unplanned exposures were also evaluated against criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2.

b. Findings

No findings of significance were identified.

## Cornerstone: Public Radiation Safety

.5 Radiological Effluent Technical Specifications/Offsite Dose Calculation Manuala. Inspection Scope

For the period January 1 through June 25, 2002, the inspectors interviewed cognizant radiation protection and chemistry personnel and evaluated the accuracy of the data submitted by the licensee for the Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual PI. The evaluation included reviews of procedures, effluent release permits, coolant source term, plant history with regard to failed fuel, and 10 CFR Part 61 analyses. The licensee's records and program data were evaluated against criteria specified in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2.

b. Findings

No findings of significance were identified.

Cornerstone: Physical Protection

.6 PA Equipment Performance Index, Personnel Screening Program Performance and FFD/Personnel Reliability Program Performancea. Inspection Scope

The inspectors evaluated the licensee's PI data associated with the intrusion detection system and closed circuit television to determine if the licensee provided accurate reporting for compensatory time relative to equipment degradation for the PA Equipment performance Index PI. The evaluation included a sample review of tracking and trending reports, security logs, and security event reports for the year of 2001 through the second quarter of 2002. A review of a sample list of the licensee's event reports and security logs for the same period was also conducted to determine the accuracy of PI data associated with the Personnel Screening Program Performance and FFD/Personnel Reliability Program PIs. The licensee's actions were reviewed against Procedure SPP-3.4, Performance Indicators for NRC Reactor Oversight Process, and NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 2.

b. Findings

No findings of significance were identified.

#### 4OA3 Event Follow-up

##### .1 Unit 2 Automatic Scram Due to Main Generator Load Reject

###### a. Inspection Scope

The inspectors responded to a Unit 2 automatic scram that occurred on July 27, 2002, due to a main generator load reject signal, to evaluate the event, plant status, and licensee mitigating actions. The inspectors reviewed plant and system response to verify that the response was as described in licensee documents. The review was also to verify the availability of mitigating equipment that was not required to respond. The inspectors reviewed Procedure SPP-3.5, Regulatory Reporting Requirements, to verify that 10 CFR 50.73 reporting requirements (event notification 39100 was issued for this event) were met. Personnel performance is discussed in Section 1R.14 of the report.

###### b. Findings

No findings of significance were identified.

##### .2 (Closed) LER 50-260/2002-001-00, Rod Block Monitoring (RBM) Calibration Error Results in Operation Prohibited by Technical Specifications

This LER reported the licensee's failure to meet the requirements of a TS limiting condition for operation (LCO) due to the inoperability of both channels of the rod block monitoring instrumentation. Both channels of the RBM system were calibrated using current plant operating conditions for the operating limit minimum critical power ratio (OLMCPR) instead of the OLMCPR specified in the Core Operating Limits Report (COLR). The limits specified in the COLR is a more conservative value for any operating condition. The TS LCO was exceeded for approximately four days before the RBM system was corrected. This issue constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of NRC's Enforcement Policy. The RBM system remained available and would have functioned to inhibit rod withdrawal to protect the reactor core from the consequences of a postulated control rod withdrawal error at a value of 1.30 instead of 1.25. The event was entered into the licensee's corrective action program as PER 02-005761-000.

#### 4OA6 Meetings, Including Exits

The inspectors presented the inspection results to Mr. R. G. Jones and other members of licensee management on September 24, 2002. Proprietary materials reviewed during the inspection were returned to the licensee.

**SUPPLEMENTARY INFORMATION**  
**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

T. Abney, Nuclear Site Licensing & Industry Affairs Manager  
A. Bhatnagar, Site Vice President  
L. Clardy, Site Nuclear Assurance Manager  
J. Corey, Radiation Protection and Chemistry Manager  
R. Jones, Nuclear Plant Manager  
G. Little, Nuclear Plant Operations Manager  
T. Niessen, Jr., Engineering & Site Support Manager  
J. Ogle, Site Security  
R. Rogers, Maintenance & Modifications Manager  
M. Scaggs, Assistant Nuclear Plant Manager  
R. Wiggall, Site Engineering Manager

**LIST OF ITEMS OPENED AND CLOSED**

Closed

50-260/2002-001-00	LER	Rod Block Monitoring (RBM) Calibration Error Results in Operation Prohibited by Technical Specifications (Section 40A3.2)
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**PARTIAL LIST OF DOCUMENTS REVIEWED**

Section 40A1

SPP-3.4, Performance Indicator for NRC Reactor Oversight Process

Section 1R05

Fire Hazards Analysis, Volume 1 and 2  
Fire Hazards Analysis, Table 9.3.11.E, Fire Rated Doors  
Fire Hazards Analysis, Table 9.3.11.F, Fire Rated Dampers  
Fire Hazards Analysis, Table 9.3.11.G, Emergency Lighting  
Fire Pre-plans, RX1-593, RX1-621, RX2-639, DG3-565, DG3-583, RX3-593,  
Procedure, 3-SI-4.11.A.1.(1) and (2), (for detector location)

Section 1R07

Procedures

CI-0-078-HEX001, Rev. 4, Fuel Pool Cooling (FPC) Heat Exchanger Maintenance  
0-TI-63, Rev. 17, Residual Heat Removal Surface Water Flow Blockage Monitoring

## N-ET-6, Rev. 5, Eddy Current Examination of Tubing in Balance of Plant Components

### Documents

Work Orders 02-003427-000 for Fuel Pool Cooling Heat Exchanger A  
 Eddy Current inspection results for Spent Fuel Pool Cooler 3A, dated July 9, 2002  
 Eddy Current Examination Reports for Spent Fuel Pool Heat Exchangers 3A and 3B, dated August, 1998; Reactor Building Closed Cooling Water Heat Exchanger 2A, dated January 2002; and Residual Heat Removal Heat Exchanger 2D, dated March/April, 2001  
 Macro-fouling Control Treatment at Browns Ferry Nuclear Station - June 1999 by Calgon Corporation  
 Raw Water Fouling and Corrosion Control Reports: Work Orders 00-08711-000 Before and After Cleaning for Residual Heat Removal Heat Exchanger 2A; Work Order 00-008714-000 Before and After Cleaning for RHR Heat Exchanger 2B; Work Order 00-008712-000 After Cleaning for RHR Heat Exchanger 2C; and Work Order 00-08713-000 Before and After Cleaning for RHR Heat Exchanger 2D  
 Work Orders 02-000825-000, 00-001367-000, and 01-003769-000 for Problem Evaluation Reports (PERs)  
 Performance History for RHR Room Coolers  
 Qualification and Certification Summary Records for Eddy Current Examiners  
 Inspection Report of Ponds, Dikes, and Channels - August 1999 (BF000003) (FJT273) dated October 12, 1999  
 Preventive Maintenance Work Orders 01-008848-000 and 01-002275-000 for RHR Heat Exchanger 2A  
 Drawing Nos. 0-37W205-4 and 5, Rev. 5, Pumping Station and Water Treatment - Piping and Equipment  
 Drawing No. 0-31N410-2, Rev. 0, Concrete Gate Structure No. 3 Outline  
 Work Order 00-006565-000, Perform 2-TI-322 for RHR 2D Functional Test  
 Engineering Evaluation of Residual Heat Removal (RHR) Heat Exchanger 2D Performance Test, Dated May 14, 2001  
 Calculation MD-Q0023-890095, Rev.1, RHR Heat Exchanger Reduced Flow Torus Cooling Analysis - Peak Cooling Temperature of 177 F

### Section 2OS1

#### Procedures

RCI-1.1, Field Operations Program Implementation  
 RCI- 2.1, External Dosimetry Program Implementation  
 RCI- 9.1, Radiation Work Permit Preparation and Administration  
 RCI-17, Control of High Radiation Areas and Very High Radiation Areas  
 SPP-5.1, Radiological Controls

#### Radiation Work Permits (RWPs)

02111122, D/W Drywell Cleanout & Prep Work (High-Rad/Various Dressouts)  
 02111162, D/W Engineer Walkdowns (High-Rad/Various Dressouts)  
 02111162, D/W Pipe Demolition and Associated Work

022220012, Maintenance on the Main Steam System  
 022220063, Maintenance on Heater Drains and Vent Systems  
 022220033, Maintenance on the FeedWater System  
 022220023, Maintenance on the Condensate System

#### Problem Evaluation Reports

01-09058, Three Locked High Radiation Area doors found not to operate correctly. Redundant hasp locks prevented regulatory concerns.  
 01-11033, Low level Module shield blocks found not to be posted as procedurally required during a self-assessment.  
 02-00018, During reassembly of Unit 1 reactor after ISI activities, Radcon Technicians failed to post the Unit 1 RFF area as an Airborne Radioactivity Area per air sample results.  
 02-1725, Two Unit 1 DSEP walk down engineers received dose rate alarms on top of Unit 1 torus when RWCU resin transfer line dose rates increased up to 700 mrem/hr.02-3728, Two insulators entered RX-3 steam tunnel to install insulation without notifying Radcon; they did not have proper dressout and were contaminated upon exiting.  
 02-5093, Chem Nuclear started filling the brine liner and neglected to inform Radcon until the area had already become a high radiation area.

#### Audits and Self-Assessments

Audit Report No. SSA0102, dated July 27, 2001, Plant Support Functional Area Audit  
 Assessment No. BFN-RP-01-03, dated July 23-27, 2001, Radworker Practices  
 Assessment No. BFN-RP-01-004, dated September 24, 2001, Personnel Dosimetry  
 Assessment No. BFN-RP-02-001, dated October 15-19, 2001, High Radiation Area Control  
 Assessment No. BFN-RP-02-002, dated January 14-25, 2002, Radioactive Contamination Control

#### Section 2OS3

#### Reports, Procedures, Instructions, Lesson Plans and Manuals

Browns Ferry Nuclear Plant FSAR, Section 7 (Plant Area Monitors)  
 Browns Ferry Nuclear Plant Operations Weekly Schedule, Week of July 22, 2002  
 Lesson Plan: HPT063.002, Self-Contained Breathing Apparatus (SCBA) Training  
 Component Calibration Instruction (CCI): CCI-0-RE-00-117, Eberline Rm-14 Portable Radiation Ratemeters, Rev. 3A  
 CCI-0-RE-00-238, Eberline Instrument Corporation PCM-2 Personnel Contamination Monitor, Rev. 1  
 CCI-0-RM-90-150, Eberline Air Particulate Cam Source Calibration with Control Room Communications Interface, Rev. 14  
 CCI-0-RE-00-237, Eberline Instrument Corporation PCM-1B Personnel Contamination Monitor, Rev. 15  
 CCI-0-RM-90-146, Area Radiation Monitors Calibration, Rev. 20  
 CCI-0-RM-90-160, Eberline Air Particulate Cam Source Calibration Without Control Room Communications Interface, Rev. 6  
 Radiation Protection Instrument Program Implementing Procedure INST-IP-20, Rev. 20  
 Bicon-NE -Small Article Monitor (SAM-11) Calibration, Response Check and Operating Procedure, Rev. 51

Special Instrument Instruction (SII), SII-0-XX-00-271, AMS-3 Beta Air Monitor Calibration, Rev. 3

SII-0-XX-00-300, PM-7 Portal Monitor, Rev. 2

Emergency Preparedness Field Support (EPFS), EPFS-4, Environmental Data Station Meteorological Sensor Exchange, Rev. 11

EPFS-6, Calibration of Environmental Data Station Data Logger and Sonic Channels, Rev. 3

#### Problem Evaluation Reports

01-009994, Main Steam High Radiation alarm annunciated after setpoints were adjusted slightly lower than actual value.

01-012410, Entered unplanned entry into LCO due to alarm on 2-RA-90131B being sealed in and cannot be cleared.

02-000163, RM-90-252 (Radwaste Building Exhaust CAM) failed its source check per 0-SI-2.1.2.

02-000235, Erratic output from one of the stack radiation monitor (0-RM-90-147,-148) sample flow sensors (0-PS-90-150A HI/LO,-150 HI) resulted in intermittent alarms of the stack sample flow abnormal annunciator 0-FA-90-150.

#### Audits and Self-Assessments

Self-Assessment Report: BFN-RP-00-0004, To evaluate the adequacy of radiation monitoring Instruments and equipment, July 1-31, 2000

Self-Assessment Report: BFN-RP-00-0006, To determine that radioactive material at the Browns Ferry Nuclear plant is properly stored, monitored, posted, labeled and controlled in accordance with the requirements of plant procedures, August 7-30, 2000 Instrumentation

#### Instrumentation

Bicron RSO-50, Serial Number (SN) AZ01J

Bicron RSO-5, SN A185G

Eberline RO-7, SN 60Z with probes SN L014, M01Z, and H301

Bicron Survey or 50, SN A8256 with Everline HP360 probe

Bicron Survey or M, SN A531K with an alpha probe

#### Section 2PS1

#### Reports, Procedures, Instructions, Lesson Plans and Manuals

Annual Radioactive Effluent Release Report - January through December 2001

Offsite Dose Calculation Manual, Rev. 14

Browns Ferry Nuclear Plant Final Safety Analysis Report, Section 9, Radioactive Waste Control System

Surveillance Instruction (SI): 0-SI-4.8.B.2-8, Airborne Effluent Analysis - Stack Noble Gas, Rev.8

SI 3-SI-4.2.D-2A, RHR Service Water Radiation Monitor (3-RM-090-0133D) Calibration and Functional Test, Rev. 10

SI 0-SI-4.2.K.1, Airborne Effluents - Main Stack Monitoring System Calibration, Rev. 27

SI 2-SI-4.2.K.2.a, Reactor Building Vent Exhaust Radiation Monitor Source Calibration and Functional Test 2-RM-90-250, Rev. 13

SI 2-SI-4.2K.2.d, Reactor Building Vent Exhaust Sample Flow Calibration and Functional Test 2-RM-90-250, Rev. 11A

Chemical Instruction: CI-303.15, Efficiency Calibration Gamma-Ray Spectrometry System, Rev. 10

Compensatory sampling records for monitors 3-RM-90-250 on March 16-19, 2002, 3-RM-90-134D on September 7-10, 2001, and 2-RM-90-134 on December 5-6, 2001

Gaseous Radioactive Release Permits: 20556.058.009.G, 20564.037.033.G, 20565.036.033G, and 20566.035.033.G

#### Problem Evaluation Reports

02-001360, The Wide Range Gaseous Effluent Radiation Monitoring System (WRGERMS) suffers from several design and obsolescence issues that require resolution.

02-004506, During the performance of Surveillance 3-SI-4.2.D-3, Raw Cooling Water Radiation Monitor (3-RM-90-132D) Calibration and Functional Test, the as found check source Ba-133 and Am-241 indications were out of the allowable minimum values.

02-004977, A potential adverse trend has been identified on the operational performance of 1,2,3-RM-90-132D causing multiple entries into unplanned ODCM LCOs.

02-005031, Chemistry personnel noted that 2-RM-90-251 readings were negative at times and requested that SE-ICE investigate whether a problem(s) was present.

02-006551, The set points in 0-TI-372 Rad Monitors, Rev. 8 for Containment High Range Rad Monitors 3-RE-90-272A and 3-RE-90-273A are in error.

#### Audits and Self-Assessments

Audit Report No. SSA0102, dated July 27, 2001, Plant Support Functional Area Audit

#### Section 2PS3

#### Reports, Procedures, Instructions, Lesson Plans and Manuals

Browns Ferry Nuclear Plant Final Safety Analysis Report, Section 2, Environmental/  
Meteorological

Browns Ferry Nuclear Plant Offsite Dose Calculation Manual

Calibration Sheet: EPFS-6, Sonic wind direction Calibration Sheets; 6/21/01, 12/4/01, 5/23/02

Air Temperature Sensor Exchange Forms; 8/9/01, 12/6/01, 5/30/02

Eppley Cell Sensor Exchange Forms; 5/10/01, 3/14/02

Meteorological Sensor Exchange Form, (Details sensor change out by type and SN); 5/30/02

Air Temperature System Calibration Sheets; 6/21/01, 12/4/01, 2/5/02, 5/23/02

Calibration Data Sheets: Radiological Environmental Monitoring Air Sampler Gas Meter,  
Station LM-1, 2/21/02, LM-4A, 2/21/02, LM-4B, 2/21/02

#### Problem Evaluation Reports

01-000175, The air filter and charcoal filter samples scheduled for collection on 7/9/01 from BFN REMP location LM-2 did not have adequate total volume to allow processing of the samples.



- 01-000176, The automatic water sampler at the BFN REMP location TRM 286.5 did not contain the required volume for the sample scheduled for collection on 7/9/01.
- 01-000233, The BFN REMP air particulate and charcoal filter samples from location PM-1 were not collected for the weekly sampling period ending 8/20/01 due to a failure of the air sampling equipment.
- 01-000234, The BFN REMP air particulate and charcoal filter samples from locations LM-3 and LM-7 were not collected for the weekly sampling period ending 8/20/01.
- 02-000002, The REMP air filter and charcoal cartridge samples from BFN location RM-1 were not available for collection on 12/31/01 due to problems with the sampling equipment.
- 02-000086, The BFN REMP air filter and charcoal cartridge samples from location PM-3 could not be collected as scheduled on 3/18/02.
- 02-002132, A worker alarmed a portal monitor at the east portal upon attempting to exit.
- 02-006028, Browns Ferry review of INPO SER 3-02, "Workers Exit Plant Site With Detectable External Radiative Contamination."
- 02-007090, Two AUOs were contaminated while filling and venting the 3B RWCU pump.