



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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July 26, 2004

Tennessee Valley Authority
ATTN.: Mr. K. W. Singer
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 05000260/2004003, 05000296/2004003, and 07200052/2004001**

Dear Mr. Singer:

On June 26, 2004, the US Nuclear Regulatory Commission (NRC) completed an inspection at your operating Browns Ferry Unit 2 and 3 reactor facilities. The enclosed integrated quarterly inspection report documents the inspection results, which were discussed on July 15, 2004 with Mr. K. Kruger and other members of your staff. Results from our inspection of your Unit 1 Recovery Project are documented in a separate Unit 1 integrated inspection report.

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. No findings of significance were identified.

In accordance with 10 CFR 2.390 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/

Stephen J. Cahill, Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos. 50-260, 50-296, 72-052
License Nos. DPR-52, DPR-68

Enclosure: NRC Integrated Inspection Report 05000260/2004003, 05000296/2004003, and
07200052/2004001
w/Attachment: Supplemental Information

cc w/encl: (See page 2)

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2

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U.S. NUCLEAR REGULATORY COMMISSION REGION II

Docket Nos: 50-260, 50-296, 72-052

License Nos: DPR-52, DPR-68

Report No: 05000260/2004-003, 05000296/2004-003,
07200052/2004-001

Licensee: Tennessee Valley Authority (TVA)

Facility: Browns Ferry Nuclear Plant, Units 2 & 3

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

Dates: March 28, 2004 - June 26, 2004

Inspectors: B. Holbrook, Senior Resident Inspector
E. Christnot, Resident Inspector
R. Monk, Resident Inspector
J. Lenahan, Senior Reactor Inspector (Section 4OA5.6)
W. Bearden, Senior Resident Inspector (Section 1R07)
J. Kreh, Emergency Preparedness Inspector (Sections
1EP2-5, 4OA1.2)

Approved by: Stephen J. Cahill, Chief
Reactor Project Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000260/2004-003, 05000296/2004-003, 07200052/2004-001; 3/28/2004 - 6/26/2004; Browns Ferry Nuclear Plant, Units 2 and 3 and ISFSI; routine integrated report.

The report covered approximately a three-month period of routine inspection by resident inspectors, a regional emergency preparedness inspector, and a regional engineering inspector. 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

Enclosure

Report Details

Summary of Plant Status

On March 30, 2004, Unit 2 decreased power to approximately 85% Rated Thermal Power (RTP) to repair a leaking valve and a through-wall leak on the Reactor Feedwater Pump 2C minimum flow line. Power was returned to 100% RTP the following day. Power was reduced to about 94% RTP on May 6 to remove extraction steam from the 2A1 and 2A2 high pressure heaters in anticipation of heater level control valve maintenance. Power was returned to 100% RTP shortly thereafter. Following maintenance on the level control valve on May 7, power was reduced to about 95% RTP to restore extraction steam lineup to the heaters.

Unit 3 initiated startup on March 30 following the Cycle 11 refueling outage. The unit achieved 100% RTP on April 2. Unit power decreased to about 82% RTP on April 16, when a bumped relay caused a trip of Reactor Feedwater Pump 3A. Power was returned to 100% RTP later the same day. Power was reduced to about 40% RTP on May 3 to remove variable frequency drive 3B from service to repair a cooling line leak. Power was returned to 100% RTP the following day. Power was reduced to about 50% RTP on June 9 to remove variable frequency drive 3B from service to replace a ruptured cooling line hose. Power was returned to 100% RTP on June 10.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (Hot Weather Preparation and System Walkdowns)

a. Inspection Scope

The inspectors reviewed licensee procedure 0-GOI-200-3, Hot Weather Operations, and reviewed licensee actions to implement the procedure in preparation for hot weather conditions. The inspectors review was to verify that selected valves and components listed in the attachments of the procedure were in the position specified by the procedure. The inspectors reviewed the list of open Problem Evaluation Reports (PERs) to verify that the licensee was identifying and correcting potential problems relating to hot weather operations. The inspectors reviewed immediate and planned corrective actions to verify that they were appropriate. In addition, the inspectors reviewed procedure requirements and walked down selected areas of the plant to verify that systems and components were properly realigned from the freeze protection status as specified by procedure 0-GOI-200-3. The inspectors discussed hot weather conditions with operations personnel to assess plant equipment conditions and personnel sensitivity to upcoming hot weather conditions. The inspectors conducted a walkdown tour of the main control rooms to assess system performance and alarm conditions of systems susceptible to hot weather conditions.

The inspectors included in their review of hot weather preparations a walkdown of selected sections of two risk- and safety-significant cooling water systems to verify that system and components were in the condition and status as specified by 0-GOI-200-3 for hot weather operations. In addition, the inspectors reviewed outstanding PERs

Enclosure

associated with the two systems to verify that the identified problems would not have a negative impact on plant operations during hot weather conditions. The two systems walked down included the following:

- Residual Heat Removal Service Water, Units 2 and 3
- Emergency Equipment Cooling Water, Units 2 and 3

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (Partial Walkdown)

.1 Partial System Lineup

a. Inspection Scope

The inspectors performed a partial walkdown of four safety systems listed below to verify redundant or diverse train operability, as required by the plant Technical Specifications (TSs), while the other train of the system was out of service. In some cases, the system was selected because it would have been considered an unacceptable combination from a Probabilistic Safety Assessment (PSA) perspective for the equipment to be inoperable while another train or system was out of service. The inspectors' walkdown was to verify that selected breaker, valve position, and support equipments were in the correct position for support system operation. The walkdown was also done to identify any discrepancies that impacted the function of the system or could lead to increased risk.

The inspectors reviewed procedures and system alignments to identify and resolve equipment problems that could cause initiating events or impact the availability and functional capability of mitigating systems or barriers. The inspectors' observations of equipment and component alignment for the partial walkdowns were compared to the alignment specified in system procedures included in the Attachment.

- Unit 2 Residual Heat Removal system Loop II while Loop I was in a test configuration
- Unit 3 Primary Containment Ventilation and Isolation System during maintenance on 3-FCV-0 84-0020
- Unit 2/3 Standby Gas Treatment System B and C while system A was out of service for maintenance
- Unit 2 High Pressure Cooling Injection System while Reactor Core Isolation Cooling system was in test configuration

b. Findings

No findings of significance were identified.

Enclosure

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed licensee procedures, SPP-10.10, Control of Transient Combustibles, and SPP-10.9, Control of Fire Protection Impairments, and conducted a walkdown of the six fire areas listed below to verify a selected sample of the following: 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 verified that the selected fire protection impairments were identified and controlled in accordance with procedure SPP-10.9. In addition, the inspectors reviewed the Site Fire Hazards Analysis and applicable Pre-fire Plan drawings to verify that the necessary fire fighting equipment, such as fire extinguishers, hose stations, ladders, and communications equipment were in place. The inspectors reviewed a sampling of fire protection-related PERs to verify that the licensee was identifying and correcting fire protection problems. Pre-fire Plan drawings and documents reviewed are included in the Attachment.

- Fire Area 21 U3 Emergency Diesel Generator Building
- Fire Area 22 U3 4-kV Shutdown board room (SDBR) 3EA&3EB
- Fire Area 24 U3 4-kV Tie Board Room
- Fire Zone 2-6 U2 Reactor Building 639' South
- Fire Area 4 U1 4-kV SDBR B
- Fire Area 5 U1 4-kV SDBR A

b. Findings

No findings of significance were identified.

1R07 Biennial Heat Sink Performance

a. Inspection Scope

The inspectors reviewed licensee inspection records, work documents, preventive maintenance procedures, and other documentation to ensure that heat exchanger deficiencies which could mask or degrade performance were identified and corrected. Inspection records for risk-significant heat exchangers were reviewed which included performance for five heat exchangers on the Reactor Building Closed Cooling Water (RBCCW) System, four heat exchangers on the Residual Heat Removal (RHR) system, and 16 diesel generator jacket cooling water heat exchangers. The inspectors also reviewed the general health of the Raw Cooling Water (RCW), Residual Heat Removal Service Water (RHRSW), and Essential Equipment Cooling Water (EECW) systems via review of inspection results; review of chemistry activities; review of RHRSW, EECW, and RCW corrective maintenance histories; review of recent system health reports; and discussions with the system engineers. The inspectors reviewed the licensee's program

Enclosure

for periodic inspections to verify the integrity of the ultimate heat sink and intake channel to Wheeler Reservoir. Selected PERs were reviewed for potential common cause problems and problems which could affect system performance to confirm that the licensee was entering problems into the corrective action program and initiating appropriate corrective actions. In addition, the inspectors observed the as-found conditions during the periodic visual inspections of EDG jacket water coolers 3B1 and 3B2. Documents reviewed are included 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 the performance of two different crews' performance during an as-found scenario on April 19 and May 24. The first session was for an operating crew and the second session was for staff personnel who are licensed. The scenarios included malfunctions related to risk- and safety-significant equipment and components for mitigating systems, electrical power, and reactor pressure control. Operators were required to implement alarm, system operating, abnormal, and emergency operating instructions. The inspectors reviewed licensee procedures TRN-11.4, Continuing Training for Licensed Personnel, TRN-11.9, Simulator Exercise Guide Development and Revision, and OPDP-1, Conduct of Operations, to verify that the conduct of training, the formality of communication, procedure usage, alarm response, and control board manipulations were in accordance with the referenced procedures. The inspectors compared actions contained in the scenarios to operations procedures to verify that they matched. The inspectors also assessed instructor interface and control of the examination process as well as the level of detail and content of the post scenario critiques. The specific scenario observed included the following:

- OPL177.053, RBCCW Pump Trip, Loss of RCIC EGM Power, Partial Loss of Plant Non-Preferred, ATWS, Turbine Trip with Bypass Valve Malfunction, Steam Leak in Drywell, DW Spray Loop II Logic Failure Minor Fuel Failure

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two samples listed below for items such as: (1) appropriate work practices; (2) identifying and addressing common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule; (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for structures, systems, and components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1).

- Diesel Generator (DG) and Support Systems

The DG, DG Starting Air, and DG Fuel Oil systems make up the DG system for maintenance rule considerations. Although the EDGs are currently in 10 CFR 50.65 (a)2 status, the inspectors focused their review on support systems and components that have the potential to make the EDG inoperable. Many of these components are obsolete including the DG governor control system electric governor, the hydraulic actuator, and the motor-operated potentiometer. The inspectors reviewed PER, 00-002176-00, which addressed: (1) that the governor vendor would not support the refurbishment of components when current stock is depleted, and (2) an upgrade of the diesel generator governor control systems. The inspectors also reviewed the licensee's plan to upgrade the obsolete voltage regulators for all DGs. These obsolete components have not resulted in any DG unplanned unavailability time. However, the obsolete equipment resulted in a downgrade from Green to White in the engineering system health report.

The inspectors conducted a PER data base search concerning the DG Starting Air system and determined that much of the equipment had become obsolete and replacement parts were difficult to locate. Design changes were completed that lowered the cutout pressure on the starting air compressors to reduce the failures of the compressor relief valves, compressor head gaskets, and starting air dryers, which improved overall performance of the air system. The inspectors reviewed licensee plans to install a more passive air dryer system for each DG in the near future. The inspectors assessed for any unplanned unavailability hours of the DGs due to the performance of the starting air system or the fuel oil system.

- The Residual Heat Removal Service Water (RHRSW) and the Emergency Equipment Cooling Water (EECW), systems.

The RHRSW and EECW are common systems and provide services to all three

Enclosure

units. The inspectors assessed maintenance rule criteria for the 12 pumps in the systems. The inspectors reviewed for the 24-month unavailability of the D1 pump and plans for it to remain exceeded for another two years due to changing it's motor with the B3 pump when the B3 pump motor failed. During a licensee's walkdown of the RHRSW system piping, through-wall leaks were observed. The licensee replaced several feet of piping in two sub-systems. The inspectors reviewed the licensee actions to improve the inspection requirements of the piping and incorporate more frequent walkdown inspections as part of routine efforts.

The inspectors reviewed recent system header pressure decreases identified in Problem Evaluation Reports (PERs) 04-60884 and 04-62453. The inspectors noted that this was a recurring problem since about 2001 and there were 6 PERs written in year 2003 associated with header pressure decreases. Licensee actions for this condition included placing a fire pump in service to increase system header pressure and previously replacing some system check valves that were not holding pressure as expected. The inspectors reviewed further efforts to completely resolve the problem and perform additional troubleshooting and work planned under WO 03-716013-000. The inspectors reviewed operator actions taken to restore and maintain header pressure to avoid system inoperability or unavailability.

b. Findings

No findings of significance were identified

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

For the six risk and emergent work assessments listed below, the inspectors reviewed licensee actions taken to plan and control the work activities to effectively manage and minimize risk. The inspectors verified that risk assessments were being performed as required by 10 CFR 50.65(a)(4). The inspectors reviewed: licensee procedure SPP-6.1, Work Order Process Initiation; SPP-7.1, Work Control Process; and 0-TI-367, BFN Dual Unit Maintenance, to verify that procedure steps and required actions were met. Also, the inspectors evaluated the adequacy of the licensee's risk assessments and the implementation of compensatory measures. The reviews completed included the following:

- Work week 2421: Unit 2 Standby Liquid Control work, increased risk of Orange and Fast Start Operability tests for Unit 3 C and D Diesel generators, increased risk of Yellow. These increased-risk work activities were identified in the work week schedule and were acceptable per the risk assessment. (Scheduled)
- Work week 2422: The inspectors focused their review on the risk associated

Enclosure

with the removal of 500-kV Bus 2 Sections 1 and 2, PSA risk of Orange. The bus outage was to support installation of a new Power Circuit breaker under Design Change Notice (DCN) 51476. In addition to the inspection activities specified above, the inspectors reviewed raw input data to the risk analysis program to verify that the system and component number codes for each line were correct. The inspectors also reviewed other risk- and safety-significant systems and components that were unavailable for service to verify that they were included in the risk analysis. The inspectors discussed the bus outage with operations personnel to verify their understanding of the ongoing work and potential risk conditions associated with the work activity. The inspectors also reviewed new operating limitations specified in licensee procedure GOI-300-4, Switchyard Manual, that were in effect during the bus work activity. (Scheduled)

- Work week 2423: RHR 2A and 2B were out of service for hot spot flushing activities, increased plant risk of Orange. (Scheduled)
- Removal of 161-kV line from service to perform maintenance on an auto tap changer on Common Station Service Transformer A, increased plant risk of Orange. (Emergent)
- Units 2 and 3: D3 RHRSW pump declared inoperable due to failing a flow test WO 04-003114-00 and PER 04-003083-00. (Emergent)
- Unit 1B CRD pump maintenance (supports Unit 2), increased plant risk of Yellow. (Scheduled)

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 of the evaluation and ensure that the licensee had adequately assessed TS operability. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures to verify that the measures worked as stated and the measures were adequately controlled. Where applicable, the inspectors reviewed licensee 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.

- Missed In-service ASME Section XI inspections for portions of Unit 2 steam line piping identified as alternate leak path pressure boundary

Enclosure

- Review of vendor testing of fuse application and fuse coordination concerns following design change for power cables of common Raw Cooling Water systems for Units 1, 2, and 3
- U2&U3 HPCI non-environmental qualification of steam break isolation instrumentation
- 0-SR-3.8.1.8(I), 480v Load Shed Logic System Functional Test (Division (I)) wrong division event for lifted leads
- Units 2 and 3 operability of Standby Gas Treatment System trains A, B, and C which were operated while there was an excess of 20 lbs. of Volatile Organic Compounds (VOC) in the Unit 1 Torus due to coatings activities

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (OWAs)

a. Inspection Scope

The inspectors reviewed three OWAs for Units 2 and 3 to determine if the functional capability of the affected systems or operator reliability in responding to an initiating event was affected. 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 conducted a detailed review of the selected OWA's to assess the cumulative effect of operator response during transients or events and to verify that procedure requirements were met for increased attention to the need for possible repair. All the OWAs selected were identified at the second highest level priority (2) to expedite corrections and were the highest priority of the licensee's identified OWAs. The inspectors also verified that the OWAs had been reviewed in accordance with site procedures and that work orders had been developed and scheduled for repair. The inspectors compared their observations and licensee actions to the requirements of Operations Directive Manual 4.11, Operator Work Around Program, and TVAN Standard Department Procedure OPDP-1, Conduct of Operations.

- Units 2 and 3: 2-070-OWA-2004-0013, with the spare Units 2 and 3 Reactor Building Closed Cooling Water (RBCCW) system heat exchanger in operation and with the temperature control valve in manual, the valve will need to be adjusted continuously due to changing plant conditions. Priority 2, WO 03-021903-000 and WO 04-714980-000
- Unit 2: 2-069-OWA-2003-0131, with the Reactor Water Cleanup (RWCU) system valves 2-FCV-069-0044 and 2-FCV-069-0045 leaking through the demineralizer vessel, must be vented during back wash and pre-coat. Priority 2, WO 03-022268-000 and WO 03-022273-000
- Unit 3: 3-084-OWA-2004-0040, with the automatic setpoint thumb wheel

Enclosure

adjuster stuck, valve 3-FIC-84-19 must be operated in manual if adjustments need to be made when venting the drywell. Priority 2, WO 04-715615-000

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed licensee procedures 0-TI-405, Plant Modifications and Design Change Control, and SPP-9.3, Plant Modifications and Engineering Change Control, and observed part of the licensee's activities to implement a design change, that affected all units, while the units were online. The inspectors reviewed the associated 10 CFR 50.59 screening against the system design bases documentation to verify that the modifications had not affected system operability/availability. The inspectors reviewed selected ongoing and completed work activities and walked down portions of the systems to verify that installation was consistent with the design control documents. The inspectors completed a design, implementation, and testing review of the DCN to ensure that procedure and regulatory requirements were met. DCN 61494A, Provide Repair Methodology for Containment Damper Actuator Shaft, was reviewed.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)

a. Inspection Scope

The inspectors evaluated the following six activities by observing testing and/or reviewing completed documentation to verify that the PMT was adequate to ensure system operability and functional capability following completion of associated work. The inspectors reviewed licensee 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, were referenced.

- Unit 2: PMT on RHRSW Pump D2 following IST failure and impeller adjustment per 2-SI-4.5.C.1 (3)
- Unit 3: PMT on D/G 3A following reinstallation of the temperature control valve per 3-SR-3.8.1.1(3A) Unit 2: PMT on HPCI/RCIC Test Return Valve 2-FCV-073-0036 per WO 04-714794
- Common: PMT on Standby Gas Treatment A following system outage per 0-SR-3.6.4.3.2 (A VFTP)

Enclosure

- Unit 2: PMT on RHR Pump Seal Hx 2A per 0-TI-106 General Leak Rage Test
- Unit 2: PMT on RHRSW Pump C1 per 2-SI-4.5.C.1 (3-COMP)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors observed licensee activities for the completion of the Unit 3 cycle 11 refueling outage. The inspectors attended the Plant Operations Review Committee (PORC) for the unit restart to assess licensee actions to review and discuss activities completed during the outage and unit readiness for restart. The inspectors specifically focused on outstanding items that were identified as degraded and non-conforming conditions in accordance with Generic Letter 91-18. The inspectors compared their observations to licensee procedures listed in the Attachment. The inspectors reviewed and observed the following activities:

Preparations and Unit Startup

- Unit startup checklist
- Alignment of secondary systems to support startup
- Pre-job briefing for unit startup
- Reactivity management briefing
- Reactivity monitoring and control
- Control rod withdrawal for criticality
- Unit power increase with control rods and recirculation system flow
- Core thermal limit verification

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either witnessed portions of surveillance tests or reviewed test data for the six risk-significant SSCs listed to verify that the tests met TS surveillance requirements, UFSAR commitments, and 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 licensee procedures 0-TI-362, Inservice Testing of Pumps and Valves, and 0-TI-230, Vibration

Monitoring and Diagnostics. The inspectors also reviewed procedure ODM 3-3, Pre-Evolution, Mid-, and End-of-Shift Briefings, to verify that procedure requirements were met for the surveillance activities. The surveillances witnessed or reviewed included the following:

- 0-SR-3.8.1.8(I), 480-V Load Shed Logic System Functional Test (Division (I))
- 2-SR-3.5.1.7, HPCI Main and Booster Pump Set Developed Head and Flow Rate Test at Rated Rx Pressure *
- 2-SI-4.5.C.1 (3-Comp), RHRSW Comprehensive Pump and Header Test
- 3-SR-3.5.1.7 (COMP), High Pressure Coolant Injection Comprehensive Pump Test
- 3-SR-3.5.3.3 (COMP), Reactor Core Isolation Cooling Comprehensive Pump Test
- 3-SR-2, Unit 3 Instrument Checks and Observations, subsections for Unidentified, Identified, and Total Reactor Coolant System (RCS) Leakage for TS Surveillance (SR) 3.4.4.1, and 2-SR-3.4.5.3, Drywell Floor Drain Sump Flow Integrator Calibration, for TS SR 3.4.4.1

*This procedure included inservice testing requirements

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed licensee procedures 0-TI-405, Plant Modifications and Design Change Control; 0-TI-410, Design Change Control; SPP-9.5, Temporary Alterations; and the two temporary modifications listed below to ensure that procedure and regulatory requirements were met. The inspectors reviewed the associated 10 CFR 50.59 screening against the system design bases documentation to verify that the modifications had not affected system operability/availability. The inspectors conducted a document review or, where possible, walked down selected portions of the work activities to verify that installation was consistent with the modification documents

and Temporary Alteration Control Form (TACF). Additional documents reviewed are listed in the Attachment. The TACFs reviewed included the following:

- TACF 0-04-004-023, Revise Note 7B on Drawing 1-47E858-1 to allow the closure of two sluice gates on the same RHRSW supply line during two-unit operation.
- TACF 3-03-001-092, Unit 3 Operating Power Range Monitor Trip Function Bypass Reinstate - One Division

b. Findings

No findings of significance were identified

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing

a. Inspection Scope

The inspectors ascertained the licensee's commitments with respect to the testing and maintenance of the alert and notification system (ANS), which comprised 100 sirens in the ten-mile-radius emergency planning zone. The testing program, delineated in Sections 8.5 and A.4.1 of the licensee's Radiological Emergency Plan (REP), included biweekly silent tests, monthly full-volume tests, and annual growl tests (the latter in conjunction with preventive maintenance). ANS changes during the past two years, post-maintenance testing methodology, and siren test records (with an emphasis on identification of any repetitive individual siren failures) were reviewed and discussed with cognizant management and maintenance personnel. The inspectors evaluated a sample of corrective actions to determine their effectiveness in addressing ANS problems. The review of this program area encompassed the period April 2002 through May 2004. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation

a. Inspection Scope

The inspectors reviewed the maintenance and testing of the licensee's capability to staff emergency response facilities (ERFs) in accordance with the personnel and timeliness requirements specified in Sections 3.0 and A.2 of the REP. The licensee's Automated Paging System (APS) and manual backup system for call-out of ERO personnel were evaluated to determine whether they would support staff augmentation in accordance with the ERF activation criteria. Records were reviewed for the last two off-hour ERO augmentation drills involving notification of personnel via the APS, actual travel to the plant, and activation of ERFs, conducted on November 14, 2002 (drill initiated at 6:36 p.m.) and December 9, 2003 (6:25 p.m.). The lesson plan for training licensed operators regarding use of the APS was assessed for adequacy. The inspectors also reviewed and discussed changes to the augmentation system and process during the past two years. Follow-up activities for a sample of problems identified through ERO augmentation testing were evaluated to determine whether appropriate corrective actions were implemented. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level (EAL) and Emergency Plan Changes

a. Inspection Scope

The inspectors reviewed a selected sample of changes made to the REP since the last inspection in this program area (conducted in June 2003) against the requirements of 10 CFR 50.54(q) to determine whether any of the changes decreased REP effectiveness. The licensee had implemented REP Revisions 70-73, including modifications to the EALs in Revisions 71 and 72. The inspectors conducted a detailed review of all EAL changes, and reviewed documentation of the licensee's 10 CFR 50.54(q) screening evaluations for the referenced revisions. Licensee plans, records, and other documents reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

a. Inspection Scope

The inspectors evaluated the efficacy of licensee programs that addressed weaknesses and deficiencies in emergency preparedness. The procedure governing the plant corrective action program was reviewed for applicability to the emergency preparedness program. Since the last inspection of this program area (April 2002), no emergency declarations were made by the licensee. Reports on one audit, performed in accordance with 10 CFR 50.54(t), and five self-assessments were reviewed. The inspectors evaluated selected drill scenarios and associated critiques to determine whether the licensee had properly identified failures to implement regulatory requirements and planning standards. A sample of weaknesses and deficiencies identified by means of these licensee processes was evaluated to determine whether corrective actions were effective and timely. The inspectors also attended the licensee's Nuclear Safety Review Board Meeting No. 291 on June 10, 2004, in which emergency preparedness performance issues and corrective actions were discussed. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator (PI) Verification

.1 Cornerstones: Mitigating Systems, Initiating Events

Safety System Unavailability - Heat Removal
Unplanned Transients per 7000 Critical Hours
Reactor Coolant System Activity

a. Inspection Scope

The inspectors reviewed the licensee's procedures and methods for compiling and reporting PIs, including Procedure SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, Revision 0, for compiling and reporting PIs to the NRC. The inspectors reviewed raw PI data for the PIs listed for the second quarter 2003 through the first quarter 2004. The inspectors compared graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. The inspectors reviewed licensee procedure SPP 6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting - 10 CFR 50.65; relevant category A and B PERs; relevant engineering evaluations and associated PERs; and licensee records to verify that the PI data was appropriately captured for inclusion into the PI report, and that the PI was calculated correctly. The inspectors observed RCS activity sampling and analysis and reviewed Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guideline, Revision 2, to verify that industry reporting guidelines were applied. Additional documents reviewed are listed in the Attachment.

- Unit 2 Safety System Unavailability - Heat Removal Systems - Reactor Core Isolation Cooling (RCIC)
- Unit 3 Safety System Unavailability - Heat Removal Systems - RCIC
- Unit 2 Unplanned Transients per 7000 Critical Hours
- Unit 3 Unplanned Transients per 7000 Critical Hours
- Unit 2 Reactor Coolant System (RCS) Specific Activity
- Unit 3 RCS Specific Activity

b. Findings

No findings of significance were identified.

.2 Cornerstone: Emergency Preparedness

a. Inspection Scope

The inspectors sampled licensee submittals relative to the PIs listed below for the period April 1, 2003 through March 31, 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory

Assessment Performance Indicator Guideline”, Revision 2, were used to confirm the reporting basis for each data element.

- Emergency Response Organization (ERO) Drill/Exercise Performance
- ERO Drill Participation
- Alert and Notification System Reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors verified the accuracy of the PI for alert and notification system reliability through review of a sample of the licensee’s records of periodic ANS tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment.

b. Findings

No findings of significance were identified.

40A2 Identification & Resolution of Problems

.1 Daily Reviews

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee’s corrective action program. This review was accomplished by reviewing daily PER summary reports and attending daily PER review meetings.

.2 Annual Sample Review

a. Inspection Scope

The inspectors reviewed PERs and corrective action documents for the three Standby Gas Treatment system trains associated with system flow switch actuation and calibration problems that resulted in making the systems inoperable multiple times. PERs 04-710373-000, 04-000006-000, 04-000001-000, and 03-023563-000 were reviewed in detail to ensure that the full extent of the issue was identified, an appropriate evaluation was performed, and appropriate corrective actions were specified, prioritized, and completed. The inspectors also evaluated licensee actions against the requirements of the licensee’s corrective action program as specified in SPP-3.1, Corrective Action Program, and 10 CFR 50, Appendix B. Additional PERs, evaluations, work orders, and corrective action documents reviewed are listed in the Attachment.

Enclosure

b. Findings and Observations

There were no findings of significance identified during this PI&R Annual Sample review. The inspectors determined that the licensee identified flow switch problems in 1998. Licensee Engineering staff had completed several actions to resolve the issues. Extensive flow switch millivolt data collection activities between 1998 and 2000 were completed to revise surveillance procedures for electronic calibration of the flow switches. During troubleshooting of continued flow switch problems in 2001, engineering determined that new flow switch calibration curves would be required because balance numbers being used for the flow switches and electronic calibration had not been recorded during earlier data collection and were different from the original balance numbers. Each time that a flow switch was replaced, a new calibration curve had to be generated. In late 2001, engineering determined that the method and procedure used to calibrate the flow switches allowed the balancing number to be changed to verify the bridge zero point. In addition, engineering determined that the calibration procedure requirements were being changed by maintenance personnel without system engineering review or approval. Corrective actions for these problems were completed in early 2002. In late 2002, engineering determined that error calculations built into the calibration procedures could exceed the allowable millivolt limit for the flow instruments. The inspectors reviewed the corrective actions from this PER and determined that they were appropriate. The flow switch calibration procedures for all units were revised in early 2003 to use the vendor-supplied balance number stamped on the flow instruments.

In addition, there were three PERs written in 2003 and two PERs written in 2004 that focused efforts on taking data, switch calibration, and using the flow balancing number determined by actual flow measurements taking into account switch position and location within the systems. Flow switch position within the system and the actual sensed flow seemed to be key elements for proper switch calibration. In addition, licensee management informed the inspectors that engineering personnel had not fully understood all aspects of flow switch setpoint changes and calibration methodologies until early 2004.

The inspectors verified that the corrective actions had been completed and that system performance and overall health had improved in the recent past. The inspectors determined that the problems with the flow switch calibration issues had been corrected with a series of individual PERs to address each unique problem over a period of about five years. There was no trend PER and no single PER collectively addressed the various procedure and human performance deficiencies. Although several evaluations were completed, no formal root cause was initiated to focus efforts on all aspects of the continued problems. As a result, a complete understanding of system problems and actions to correct the problems was slow to develop. A design change was recently approved to remove the function of the flow switches.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, the inspectors performed a review of the licensee's corrective action program (CAP) and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in section 4OA2.1, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered a six-month period, although some examples expanded beyond those dates when the scope of the trend warranted.

The inspectors also reviewed nine specific PERs associated with the Diesel Generator starting air system that occurred during 2004. In addition, the inspectors reviewed PERs associated with chemical treatment of raw water systems that affect safety-related systems. The review also included issues documented outside the normal CAP in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance audit/surveillance reports, self-assessment reports, and maintenance rule assessments. The inspectors compared and contrasted their results with the results contained in the licensee's latest quarterly trend reports. Corrective actions associated with a sample of the issues identified in the licensee's trend report were reviewed for adequacy.

The inspectors also evaluated the report against the requirements of the licensee's corrective action program as specified in SPP-3.1, Corrective Action Program, and 10 CFR 50, Appendix B. Additional documents reviewed are listed in the Attachment.

b. Assessment and Observations

There were no findings of significance identified. The inspectors evaluated the licensee trending methodology and observed that the licensee had performed detailed reviews. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in their CAP database. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends in the CAP data that the licensee had failed to identify. The inspectors noted that, for the nine PERs reviewed associated with DG air start system, there was no PER specifically identified as a trend PER. However, the Operations Department initiated a PER in February 2004, identifying multiple problems with the DG air systems during the previous 12 months (Units 1 and 2 DGs, 15 of 43 WOs were for the DG air system; Unit 3, 13 of 23 WOs were for the DG air systems). The inspectors observed that licensee management's response to the Operations Department PER was timely and comprehensive. Licensee management directed immediate increased focus and attention to improve system performance. Engineering and design personnel were directed to evaluate the problems and recommend short- and long-term actions to correct the problems. Engineering determined that some of the equipment and components are becoming

obsolete and procurement of parts is difficult. The inspectors noted that design changes were recently approved to improve overall performance of the air systems. The design changes are scheduled to be implemented on all units. The inspectors concluded that licensee actions were appropriate and met the requirements of the CAP, even though a specific trend PER was not initiated.

The inspectors completed a detailed review of 18 PERs associated with chemical treatment of raw water systems that affect safety-related systems that were initiated from mid-2003 to early 2004. The review was to verify that the licensee was identifying, correcting, and trending problems while operating and maintaining the raw water systems in accordance with Generic Letter 89-13, Service Water System Problems Affecting Safety-Related Equipment. The PERs identified problems where the chemical treatment such as: (1) Inappropriate system operation during treatment, including excessive system flow, improper system alignment and realignment, and unanticipated stopping and starting of equipment; (2) treatment not performed due to a lack of equipment availability; (3) residual chemical concentrations lower than expected; (4) mortality rate less than expected; and (5) clam shells found in safety-related raw water heat exchangers. The inspectors noted that these problems were not identified in any trend PER; however, chemistry personnel had identified and assessed these issues during a department Quarterly Assessment Report. The licensee had assessed 26 PERs initiated in the previous 12 months and concluded that there was no discernible trend. The inspectors determined that the CAP procedure did not specifically identify a set number of PERs or events needed to indicate a trend. A trend determination is a subjective call of the worker, responsible engineer, department manager, or as directed by plant management. The inspectors did not identify any root cause or comprehensive assessment of short- or long-term system affects based upon the deficiencies. Also, the inspectors did not identify any example where the safety function of safety-related equipment had been affected. The inspectors observed that some PERs, initiated based upon system alignment and realignment, were due to a lack of coordination and communications between departments and that actions had been initiated to strengthen this area. Although the inspectors observed two areas where trend PERs were not initiated, the licensee was identifying deficiencies and completing corrective actions.

4OA5 Other

.1 (Open) NRC Temporary Instruction (TI) 2515/154, Spent Fuel Material Control and Accounting at Nuclear Power Plants

The inspectors completed Phase I and Phase II of Temporary Instruction 2515/154, Spent Fuel Material Control and Accounting at Nuclear Power Plants. Appropriate documentation of the results was provided to NRC management, as required by the TI.

.2 Review of Plant Operations Review Committee (PORC) Activities

On May 13 and 19, the inspectors attended two different PORC meetings to assess licensee activities with respect to review and approval of a temporary alteration (TACF 0-04-004-023) that had the potential to affected the operation of Units 2 and 3 during a

postulated down stream dam break. The inspectors reviewed the 10 CFR 50.59 screening and completed evaluation for the temporary change. The inspectors also reviewed licensee procedure SPP-9.5, Temporary Alterations, to verify that procedure requirements were met. The inspectors reviewed the licensee's Nuclear Quality Assurance Plan, TVA-NQA-PLN89A, Section 9.9, Plant Reviews, to verify that program requirements were met during the PORC meetings. No findings of significance were identified.

.3 Review of Institute of Nuclear Power Operations (INPO) Report

In June, 2004, the inspectors reviewed the results of an INPO accreditation team visit and review of Browns Ferry training programs. The INPO accreditation review was completed February 2 -13, 2004 and the final report was issued to Browns Ferry on May 13, 2004. The report did not identify any significant issues that had not been previously addressed and/or reviewed by the NRC.

.4 Review of Nuclear Safety Review Board (NSRB) Activities

On June 10, the inspectors attended selected NSRB meetings and reviewed site documents selected by the NSRB for their review and assessment. The inspectors verified that items selected by the NSRB committee for review, such as PERs, System Health Reports, adverse trends, Technical Specification changes, 10 CFR 50.59 evaluations, site self-assessments and audits, and corrective action documents met the requirements specified in the Nuclear Quality Assurance Plan for review of items to ensure compliance with regulatory requirements and improve nuclear safety. No findings of significance were identified.

.5 (Open) NRC TI 2515/156, Offsite Power System Operational Readiness

a. Scope

The inspectors collected data from licensee maintenance records, event reports, corrective action documents and procedures, and through interviews of station engineering, maintenance, and operations staff, as required by TI 2515/156. The data was gathered to assess the operational readiness of the offsite power systems in accordance with NRC requirements such as Appendix A to 10 CFR Part 50, General Design Criterion (GDC) 17; Criterion XVI of Appendix B to 10 CFR Part 50, Plant Technical Specifications (TS) for offsite power systems; 10 CFR 50.63; 10 CFR 50.65(a)(4), and licensee procedures. Documents reviewed for this TI are listed in the Attachment.

b. Findings

No findings of significance were identified. Based on the inspection, no immediate operability issues were identified. In accordance with TI 2515/156 reporting requirements, the inspectors provided the required data to the headquarters staff for further analysis.

Enclosure

.6 Independent Spent Fuel Storage Installation (ISFSI)

a. Inspection Scope

The inspectors examined installation of the reinforcing steel and observed the concrete pour for the first section of the ISFSI Cask Storage Pad.

The inspectors witnessed placement of concrete in ISFSI pad Number 1. The inspectors examined the reinforcing steel to ensure that it was clean and installed in accordance with design requirements (size, spacing, and splice length) and observed the concrete forms for tightness and cleanliness. The inspectors reviewed placement activities to ensure that activities pertaining to concrete delivery time, flow distance, layer thickness, and concrete consolidation conformed to industry standards established by the American Concrete Institute. Concrete batch tickets were examined to ensure that the specified concrete mix was being delivered to the site. The inspectors also witnessed testing of the plastic concrete for slump, air content, temperature, unit weight, and molding of the concrete cylinders for testing, and verified that record samples were obtained at the point of placement (end of pumpline). Reviews were performed to ensure that concrete testing was performed and the cylinders were molded in accordance with applicable American Society for Testing and Materials (ASTM) requirements. In addition, the inspectors reviewed activities to ensure that concrete testing was performed by qualified inspectors from an independent testing company, and that concrete placement activities were continuously monitored by licensee and contractor quality control and quality assurance personnel.

The inspectors also reviewed records documenting inspection of the concrete batch plant and the concrete truck mixers. Activities were reviewed to determine if the contractor's inspection of the trucks and batch plant were performed in accordance with the guidance of the National Ready Mixed Concrete Association (NRMCA); the batch plant scales were calibrated in accordance with NRMCA recommendations; and mixer efficiency tests were performed on the truck mixers in accordance with ASTM C-94. The inspectors reviewed the concrete mix data to ensure that mix proportions for delivered concrete were selected based on trial concrete mix results, and that the trial mix met concrete strength requirements. The inspectors reviewed the results of in-process testing on the plastic concrete and the results of unconfined compression tests performed on concrete cylinders tested at the age of 28 days. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

Exit Meeting Summary

On July 15, 2004, the resident inspectors presented the inspection results to Mr. K. Kruger and other members of his staff. The inspectors confirmed that proprietary information reviewed by the inspectors during the inspection period was returned to the licensee.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Abney, Nuclear Site Licensing & Industry Affairs Manager
A. Bhatnagar, Site Vice President
J. Chenkus, Emergency Preparedness Systems Manager (Corporate)
L. Clardy, Site Nuclear Assurance Manager
A. Feltman, Emergency Preparedness Manager
R. Jones, Unit 1 Restart Manager
K. Kruger, Assistant Nuclear Plant Manager
J. Lewis, Nuclear Plant Operations Manager
B. Marks, Engineering & Site Support Manager
B. Mitchell, Radiation Protection Manager
J. Ogle, Site Security Manager
P. Olsen, Maintenance & Modifications Manager
C. Ottenfeld, Chemistry Manager
M. Skaggs, Nuclear Plant Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

05000260,296/2515/154	TI	Spent Fuel Material Control and Accounting at Nuclear Power Plants (Section 4OA5.1)
05000260,296/2515/156	TI	Offsite Power System Operational Readiness (Section 4OA5.5)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

- 2-OI-74, Residual Heat Removal System Attachment 1, Valve Lineup Checklist, Attachment 2, Panel Lineup Checklist, Attachment 3, Electrical Lineup Checklist, Attachment 4, Instrument Inspection Checklist, and Drawing 2-47E811-1, Flow Diagram RHR system
- 2/3-OI-30A, Refuel Zone Ventilation System and Unit 2/3 OI-30B, Reactor Zone Ventilation System
- 0-OI-65, Standby Gas Treatment System, Attachment 1, Valve lineup checklist, Attachment 2, Panel lineup and Attachment 3, Electrical lineup checklist
- 2-OI-73, High Pressure Cooling System, Attachment 1, Valve lineup checklist, Attachment 2, Panel lineup checklist and Attachment 3, Electrical lineup checklist

Section 1R05: Fire Protection

- Fire Hazards Analysis, Volume 1 and 2
- Fire Pre-Plans: IS-550, IS 565, CB2-617, CB3-606, CB2-606
- Smoke Detector Locations: Procedure 0-SI-4.11.A.1(3)b

Section 1R07: Heat Sink Performance

- Technical Instruction, 0-TI-246, Inspection of Ponds, Dikes, and Channels, Revision 1
- Technical Instruction, 0-TI-389, Raw Water Fouling and Corrosion Control, Revision 4
- Chemical Instruction, CI-137.5, Raw Water Chemical Treatment Molluscicide Control, Revision 20
- TVA Standard, SPP-9.7, Corrosion Control Program, Revision 6
- Visual Obstruction and Sediment Survey Results of Wheeler Reservoir for Browns Ferry Nuclear Plant, June 1999
- Eddy Current (ET) Examination Report, RBCCW Heat Exchanger 2A, January 2002
- ET Examination Report, RBCCW Heat Exchanger 2B, September 2003
- ET Examination Report, RBCCW Heat Exchanger 3A, October 2002
- ET Examination Report, RHR Heat Exchanger 2C, October 2002
- ET Examination Report, RHR Heat Exchanger 3D, November 2003
- ET Examination Report, RHR Heat Exchanger 3B, January 2002
- ET Examination Report, Diesel Generator Jacket Cooling Water Heat Exchangers 3A1 and 3A2, April 2004
- ET Examination Report, Diesel Generator Jacket Cooling Water Heat Exchangers 1A1, 1A2, 1B1, 1B2, 1C1, 1C2, 1D1, and 1D2, September 2002
- ET Examination Report, Diesel Generator Jacket Cooling Water Heat Exchangers 3A1, 3A2, 3B1, 3B2, 3C1, 3C2, 3D1, and 3D2, February 2002
- Work Order (WO) 02-001409-000, RHR Heat Exchanger 2B visual inspection and evaluation
- WO 02-001410-000, RHR Heat Exchanger 2C visual inspection and evaluation
- WO 03-009252-000, RHR Heat Exchanger 3C visual inspection and evaluation
- WO 03-009253-000, RHR Heat Exchanger 3D visual inspection and evaluation
- WO 02-007034-000, RBCCW Heat Exchanger 2B visual inspection and evaluation
- WO 02-001810-000, RBCCW Heat Exchanger 3A visual inspection and evaluation

- WO 02-004747-000, RBCCW Heat Exchanger 3B visual inspection and evaluation
- WO 03-011845-000, RBCCW Heat Exchanger 1C visual inspection and evaluation
- WO 03-015778-000, RBCCW Heat Exchanger 2A visual inspection and evaluation
- Problem Evaluation Report (PER) 02-011868-000, Clams found in 3A RBCCW heat exchanger
- PER 60865, ERCW/RCW biocide treatment goals not satisfied
- RBCCW System Health Report, Unit 2, second, third, and fourth quarters FY03, and first quarter FY 04
- RBCCW System Health Report, Unit 3, second, third, and fourth quarters FY03, and first quarter FY 04
- RHRSW and EECW System Health Report, first, second, third, and fourth quarters FY03, and first quarter FY 04
- RCW System Health Report, Unit 2, first, second, third, and fourth quarters FY03
- RCW System Health Report, Unit 3, first, second, third, and fourth quarters FY03

Section 1R20: Refueling and Outage Activities

- 3-GOI-100-1A, Unit Startup from Cold Shutdown to Power Operations and Return to Full Power from Power Reductions
- 3-OI-68, Reactor Recirculation System
- SPP-10.4, Reactivity Management
- 3-SR-3.3.1.1.5, Source Range Monitor and Intermediate Range Monitor Overlap Verification
- 3-SR-3.3.2.1.2, Rod Worth Minimizer Functional Test For Startup

Section 1R23: Temporary Plant Modifications

- 0-GOI-300-3, General Valve Operation
- 0-OI-23, Residual Hat Removal Service Water System
- 0-OI-50, Raw Water Chemical Treatment
- 0-AOI-100-4, Breach of Wheeler Dam
- FSAR Figure 10.9-1a, Sheet 1, Note 7A, 7B and 7C

Sections 1EP2 - 1EP5: Emergency Preparedness

- Radiological Emergency Plan, Revisions 70 (effective 12/08/2003), 71 (02/05/2004), 72 (03/22/2004), and 73 (04/15/2004)
- SPP-3.1, Corrective Action Program, Revision 7 (04/28/2004)
- EPIL-5, EP Tracking System: Activities Management Oversight System (AMOS), Revision 4 (05/31/2001)
- EPFS-9, Inspection, Service, and Maintenance of the Prompt Notification System at Browns Ferry, Sequoyah, and Watts Bar Nuclear Plants, Revision 1
- Nuclear Training Course No. OPL171.075, Radiological Emergency Plan, Revision 18
- 10 CFR 50.54(q) Plan Effectiveness Determinations for REP Revs. 70-73
- Siren System Availability Test Records for April 2002 - May 2004
- Documentation package (scenario/time line/event notification forms/critique report) for ERO drills on 07/16/2003 and 02/11/2004
- Summary Report to ERO and Plant Management re: 07/16/2003 ERO Drill, 08/11/2003
- Documentation of DEP Opportunities from Operations Requalification Examinations on

12/01/2003

- Documentation package for ERO augmentation drills on 11/04/2002 and 12/09/2003
- Nuclear Assurance Audit Report No. SSA 0206, dated 09/05/2002, "Radiological Emergency Preparedness Program"
- Nuclear Assurance Assessment Report No. NA-CH-03-002, Assessment of Radiological Emergency Preparedness Program, dated 07/25/2003
- Self-Assessment Report No. CRP-EP-02-002, Training, Drills, Maintenance of the Emergency Response Organization, issued 11/04/2002
- Self-Assessment Report No. CRP-EP-02-003, Emergency Preparedness Review of the NEI Beedle Letter (1/31/02), issued 06/28/2002
- Self-Assessment Report No. CRP-EP-03-001, State and Local Offsite Support, issued 06/30/2003
- Self-Assessment Report No. CRP-EP-03-002, Radiological Emergency Plan and Procedures, issued 12/12/2003
- Self-Assessment Report No. CRP-EP-04-001, Radiological Response Facilities and Equipment, issued 05/14/2004
- PER 02-015149-000, During the unannounced, off-hours staffing drill on 11/14/2002, three ERO positions were not filled within the 60-minute criterion specified in the REP, 11/20/2002
- PER 03-007568-000, Some employees had difficulty hearing the onsite assembly/accountability sirens during a 04/30/2003 drill, 05/01/2003
- PER 03-007891-000, Notified by ODS [Operations Duty Supervisor] that the REP paging terminal at BFN was not responsive, 05/07/2003
- PER 03-013328-000, During the ERO drill on 07/16/2003, the Shift Manager did not clearly examine and discern the wording of EAL 6.3-A, resulting in an erroneous event classification which was promptly corrected by the controller, 07/17/2003
- PER 03-000449-000, During the 09/23/2003 Browns Ferry exercise, the CECC State update form no. 2 was incomplete and inaccurate, 09/29/2003
- PER 03-000472-000, During the 09/23/2003 Browns Ferry exercise, there was a deteriorating quality of the HP radio system which progressed into an unusable condition, 10/10/2003

Section 40A1: Performance Indicator (PI) Verification

- Desktop Guide for Identification and Reporting of NEI 99-02, Revision 2, Performance Indicators
- CI 138, Reporting NEI Indicators, 2&3-SI-4.6.B.1-4, Reactor Coolant Chemistry
- SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, Revision 2
- EPIL-15, Emergency Preparedness Performance Indicators, Revision 7
- Siren System Availability Test Records for April 2003 - March 2004
- Documentation package (scenario/time line/event notification forms/critique report) for ERO drills on 07/16/2003 and 02/11/2004
- Documentation of DEP Opportunities from Operations Requalification Examinations on 12/01/2003

Section 40A2.2: Identification & Resolution of Problems

- SBTG System Health Report year 2003 and 1st Qtr 2004.

- PER 03-023682-000, 03-023563-000, 02-014981-000, 01-003557-000, 01-012714-000, 01-003557-000
- WO 03-23587-000, WO 01-12097003, WO 03-17236, WO 03-17237, WO 98-007623, WO 02-14981, WO 01-012714, WO 04-710386
- Functional Evaluation for PER 03-02368-000
- Calibration Data Sheets for WO 02-11508
- 10 CFR 50.59 Screening for PER 03-023563

Section 40A2.3: Semi-Annual Trend Review

- Licensee PER Data Base
- Chemistry Integrated Quarterly Assessment Report, January - March 2004
- Maintenance/Mods Integrated Quarterly Assessment Report, January - March 2004
- Browns Ferry Trend Summary Second Quarter FY 2004
- System Health Reports 4th Qtr 2003
- System Health Reports 1st Qtr 2004
- Chemistry Quality Deficiency Investigations last 1st and 2nd Qtr. 2004
- Site Engineering Integrated Quarterly Assessment Report, January - March 2004
- Operations Integrated Quarterly Assessment Report, January - March 2004

Section 40A5.5: TI 2515/156: Offsite Power System Operational Readiness

- General Operating Instruction, 0-GOI-300-4, Switchyard
- Intergroup Agreement (IGA) 6
- Operating Guides, E31 010914 150
- Special Operating Guides, E14 040416 002 and E14 040519 002.
- Calculation EDQ0057920034, 4.16-kV and 480-V Bus Load and Voltage Drop Calculation

Section 40A5.6: ISFSI

- TVA General Engineering Specification G-2, Revision 7, Plain and Reinforced Concrete
- Drawing Number 3914, Dry Fuel Storage Project Grading Sections, Sheet 4, Revision 2
- Drawing Number 3914, Dry Fuel Storage Project Cask Storage Pad Details, Sheet 5, Revision 2
- Drawing Number 3914, Dry Fuel Storage Project Cask Storage Pad Rebar Schedule, Sheet 6, Revision 2
- Procurement Data Sheet for Purchase of Concrete ready Mix, PEG PKG Number CHQ596K
- HOLTEC Standard Procedure HSP-170, Ready Mixed Concrete and Grout Requirements for Its Applications
- National Ready Mixed Concrete Association (NRMCA) certificate for concrete batch plant, DCA Decatur plant
- Records for calibration of concrete batch plant cement and aggregate scales
- Concrete placement records which included the pre-pour check list, concrete batch tickets, and the results of testing performed on the plastic concrete (slump, air content, temperature and unit weight) at the point of placement (end of pumpline)
- Result of 28-day unconfined compression testing performed for ISFSI cask storage pad

Number 1

- Summary of results of testing performed on concrete in ISFSI fabrication pad and turning pad placements, including entrained air, slump, unit weight, and unconfined compression test results
- Concrete batch plant surveillance checklist, documenting inspection of DCA Decatur plant on 3/1/04, by HOLTEC
- Results of testing on normal density concrete placed in HOLTEC Capsule Wall Units 142, 143, & 144. Data included 28 day strength tests, slump, temperature, and unit weight