UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

July 29, 2005

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 05000259/2005003, 05000260/2005003, AND 05000296/2005003

Dear Mr. Singer:

On June 30, 2005, 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 7, 2005, with Mr. B. Aukland, and other members of your staff. Additionally, the enclosed report also documents some inspection of Unit 1 that was performed per our letter to you on December 29, 2004, regarding transitioning Unit 1 into the Reactor Oversight Program (ROP). In that letter we indicated that the NRC had determined that the ROP cornerstones of Occupational Radiation Safety, Public Radiation Safety, Emergency Preparedness, and Physical Protection would be incorporated into the routine ROP baseline inspection program effective January 1, 2005. Remaining results from our inspection of your Unit 1 Recovery Project continue to be 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.

This report documents one NRC-identified finding and three self-revealing findings of very low safety significance (Green) which were determined to involve violations of NRC requirements. However, because of the very low safety significance and because the findings were entered into your corrective action program, the NRC is treating the findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy

The report details a violation of 10 CFR 50, Appendix R, requirements involving circuit analysis issues for which the NRC is exercising enforcement discretion and reactor oversight process discretion (i.e., not subjecting the violation to the significance determination process (SDP)). The basis for the enforcement discretion is NRC Enforcement Manual Section 8.1.7.1, Fire Induced Circuit Failures. One of the conditions for applying discretion is that the circuit vulnerabilities be corrected within a reasonable time frame.

NRC Inspection Manual Chapter 0305, Operating Reactor Assessment Program, Section 06.06.2, Violations in Specified Areas of Interest Qualifying for Enforcement Discretion, states that violations related to certain circuit issues which are eligible for enforcement discretion shall also be eligible for reactor oversight process discretion.

If you contest any non-cited violation in the enclosed report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Senior Resident Inspector at the Browns Ferry Nuclear Plant.

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

Enclosure: Inspection Report 05000259/2005003, 05000260/2005003 AND 05000296/2005003
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION REGION II

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|---|---|
| Docket Nos: | 50-259, 50-260, 50-296 |
| License Nos: | DPR-33, DPR-52, DPR-68 |
| Report Nos: | 05000259/2005-003, 05000260/2005-003, 05000296/2005-003 |
| Licensee: | Tennessee Valley Authority (TVA) |
| Facility: | Browns Ferry Nuclear Plant, Units 1, 2 & 3 |
| Location: | Corner of Shaw and Nuclear Plant Roads<br>Athens, AL 35611 |
| Dates: | April 1, 2005 - June 30, 2005 |
| Inspectors: | T. Ross, Senior Resident Inspector<br>R. Monk, Resident Inspector<br>E. Christnot, Resident Inspector<br>R. Hamilton, Senior Health Physicist (Sections 2PS2, 4OA1)<br>H. Gepford, Health Physicist (Sections 2OS2)<br>D. Carter, Health Physicist, Region IV (Section 2OS1)<br>R. Carrion, Project Engineer (Section 2OS2)<br>L. Miller, Senior Emergency Preparedness Inspector (Sections 1EP1,1EP4, 4OA1)<br>J. Kreh, Emergency Preparedness Inspector (Sections 1EP1, 4OA1)<br>M. Scott, Senior Reactor Inspector (Section 1R12.2)<br>A. Vargas, Reactor Inspector (Section 1R08) |
| Approved by: | Stephen J. Cahill, Chief<br>Reactor Project Branch 6<br>Division of Reactor Projects |

Enclosure

SUMMARY OF FINDINGS

IR 05000259/2005-003, 05000260/2005-003, 05000296/2005-003; 04/01/2005 - 06/30/2005; Browns Ferry Nuclear Plant, Units 1, 2, and 3; Maintenance Effectiveness, Access Control To Radiologically Significant Areas.

The report covered a three-month period of routine inspection by resident inspectors and announced inspections by regional reactor inspectors, emergency preparedness inspectors, health physicists, and a project engineer. One NRC-identified finding and three self-revealing findings of very low safety significance (Green) which also involved violations of regulatory requirements were identified. The significance of issues is indicated by the color assigned (Green, White, Yellow, Red) using the Significance Determination Process in Inspection Manual Chapter 0609, Significance Determination Process (SDP). 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. NRC-Identified and Self-Revealing Findings

**Cornerstone: Barrier Integrity**

- Green. The inspectors identified a non-cited violation of 10CFR50.65(a)(1) in which the licensee has failed to implement timely and effective corrective actions to preclude multiple, repetitive failures of containment isolation valves in the Unit 2 and 3 Residual Heat Removal (RHR) Keep Fill System. These failures ultimately resulted in the failure of two containment isolation valves simultaneously for the same penetration, which created an open pathway from containment and a consequential loss of the maintenance rule safety function. Licensee monitoring and corrective actions per 10 CFR 50.65(a)(1) were ineffective at ensuring that containment isolation valves in the RHR Keep Fill System were capable of performing their intended safety function.

  The finding is greater than minor because if left uncorrected it would become a more significant safety concern and because it affected the Containment Isolation SSC Reliability objective of the SSC and Barrier Performance attribute under the Barrier Integrity Cornerstone. The finding was assessed using the SDP, Manual Chapter 0609, Appendix H, Table 4.1. This assessment determined the finding to be of very low safety significance because, in the case of the most consequential containment isolation valve failures, the associated pathway was a small (i.e., 2-inch) line and would not have significantly contributed to Large Early Release Frequency (LERF). This finding had cross-cutting aspects associated with Problem Identification and Resolution. (Section 1R12)

**Cornerstone: Occupational Radiation Safety**

- Green. The inspectors reviewed a self-revealing, non-cited violation of Technical Specification (TS) 5.7.2 resulting from the licensee's failure to properly control a high radiation area with dose rates greater than 1.0 rem per hour at 30

centimeters (cm) from the source. Specifically, on February 5, 2004, an operator entered the waste backwash transfer pump room on the 546-foot elevation of the radwaste building and received a electronic dosimeter dose rate alarm. A survey of the area identified dose rates of 10,000 millirem (mrem) per hour on contact and 1500 mrem per hour at 30 cm on a section of pipe. The area was immediately controlled as a locked high radiation area.

The finding is greater than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of exposure control and it affected the associated cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve: (1) As Low As Reasonably Achievable (ALARA) planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. (Section 2OS1)

- Green. The inspectors reviewed a self-revealing, non-cited violation of TS 5.7.1 resulting when operations personnel failed to inform radiation protection personnel of the operation of the waste backwash transfer pump which caused an increase in dose rates to high radiation area levels. Specifically, on November 24, 2004, a radwaste operator received an electronic dosimeter dose rate alarm when he entered the waste surge and collector pump room on the 546-foot elevation of the radwaste building. The operator entered an area with dose rates of 159 mrem per hour and received a dose of 5 mrem from the entry. A survey of the area showed contact dose rates with overhead piping were as high as 2500 mrem per hour, with general area dose rates of 300 mrem per hour.

  The finding is greater than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of exposure control and it affected the associated cornerstone objective to ensure the adequate protection of worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. The cause of this finding had cross-cutting aspects associated with human performance. (Section 2OS1)

- Green. The inspectors reviewed two examples of a self-revealing, non-cited violation of TS 5.4.1 for the failure of workers to comply with radiation work permit (RWP) requirements. The first example occurred on March 22, 2004, when an operator entered a posted high radiation area on an RWP that did not allow entry into high radiation areas. The operator received a electronic dosimeter dose rate alarm. Radiation dose rates in the area were 600 mrem per hour on contact and 300 mrem per hour at 30 cm from the radiation source. The second example occurred on October 4, 2004, when a craft worker entered an

area in the overhead, greater than 6 feet, of the Unit 1 reactor building 593-foot elevation without contacting radiation protection personnel as required by the RWP. The worker did not review the planned work with radiation protection personnel prior to entry and did not monitor electronic dosimetry prior to reaching the dose alarm setpoint. A survey of the overhead area indicated dose rates of 200 mrem per hour on contact, 60 mrem per hour at 30 cm, and 25 mrem per hour general area from overhead piping.

The finding is greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute of program and process and it affected the associated cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. Using the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it did not involve (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. In addition, this finding had cross-cutting aspects associated with human performance when personnel failed to follow radiation work permit instructions. (Section 2OS1)

B. Licensee Identified Findings

One violation of very low safety significance was identified by the licensee and has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation is listed in Section 4OA7 of this report.

## Report Details

### Summary of Plant Status

Unit 1 was defueled and in a recovery status.

Unit 2 began the report period in the midst of a refueling outage (U2C13). The unit was restarted on April 16 and achieved full power on April 22, 2005. Unit 2 operated at essentially full power for the rest of the report period, expect for two significant downpowers. On June 12, Operations executed a rapid power reduction of Unit 2 to 35% power due to the loss of the 2C Main Transformer cooling system. Temporary repairs were effected, and the unit was returned to full power on the same day. On June 18, Unit 2 power was reduced to 50% for two days to effect permanent repairs to the 2C Main Transformer cooling system and main bus duct cooling fan.

Unit 3 operated at or near full power for the entire report period expect for planned downpowers of limited duration to exercise control rods and/or implement a sequence exchange.

### 3. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R01 Adverse Weather Protection

a. Inspection Scope

Prior to and during the onset of hot weather conditions, the inspectors reviewed the licensee's implementation of 0-GOI-200-3, Hot Weather Inspection, including applicable checklists - Attachment #1, Hot Weather Prep Annual Checklist; Attachment #2, Hot Weather Operational Checklist; Attachment #3, Hot Weather Daily Log (Outside); and Attachment #4, Hot Weather Daily Log (Inside). The inspectors also reviewed the Hot Weather Discrepancy Log (PA-104); and discussed implementation of 0-GOI-200-3 with responsible Operations personnel and management. Furthermore, the inspectors conducted walkdowns of two potentially affected systems, the risk significant systems of Residual Heat Removal Service Water (RHRSW) and Emergency Equipment Cooling Water (EECW). The inspectors also reviewed and discussed (with Operations), the procedural and TS requirements for operation and continued availability of the ultimate heat sink (i.e., river).

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial Walkdown

a. Inspection Scope

Partial System Walkdown The inspectors performed partial walkdowns of the three safety systems listed below to verify redundant or diverse train operability, as required by the plant TSs. 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 verified that selected breaker, valve position, and support equipment were in the correct position for system operation. Also, the walkdown was done to identify any discrepancies that could impact the function of the system and lead to increased risk. The inspectors' observations of equipment and component alignment for the partial walkdowns were compared to the licensee alignment procedures.

- Unit 2 Division II Residual Heat Removal (RHR) per operating instruction (OI) 2-OI-74 checklist attachments and dwg. 2-47E811
- Unit 3 Core Spray Division I per 2-OI-75 checklist attachments and dwg. 3-47E814
- Unit 3 High Pressure Coolant Injection (HPCI) per 3-OI-73 checklist attachments and dwg. 3-47E812

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

Walkdowns. The inspectors reviewed licensee procedures, Standard Program and Process (SPP)-10.10, Control of Transient Combustibles, and SPP-10.9, Control of Fire Protection Impairments, and conducted a walkdown of the ten fire areas/zones and impairments listed below. Selected fire areas/zones were examined in order to verify licensee control of transient combustibles and ignition sources; the material condition of fire protection equipment and fire barriers; operational lineup; and/or operational condition of selected components. Also, the inspectors verified that 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 (FHA), Volume 1 and 2 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.

- Unit 1 Control Building, elevation 593' (Fire Area 16)
- Unit 1 Control Building, elevation 593' (Fire Area 17)
- Fire Pumps
- Compensatory Measures for Unit 1,2,3 Control Bay Impairments
- Compensatory Measures for Unit 2 Reactor Building Impairments
- Compensatory Measures for Unit 3 Reactor Building Impairments
- Compensatory Measures for Unit 1 Reactor Building Impairments (that potentially affected Unit 2)
- Intake Pumping Station/RHRSW Pump Rooms (Fire Area 25)
- Control Building elevation 617' (Fire Area 16)
- Control Building elevation 606', including Cable Spreading Rooms (Fire Area 16)

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

a. Inspection Scope

The inspectors observed in-process ISI work activities on Unit 2 during the refueling outage, reviewed ISI procedures, and reviewed selected ISI records associated with risk-significant structures, systems, and components. The observations and records were compared to the requirements specified in the TSs and the ASME Boiler and Pressure Vessel Code, 1995 Edition 1996 Addenda, to verify compliance and to ensure that examination results were appropriately evaluated and dispositioned.

The inspectors observed and reviewed non-destructive examination (NDE) activities. Specific NDE activities were:

Direct Observation

Ultrasonic examination (UT):
Weld # RWC-2-001-G002, Stainless Steel Valve to Carbon Steel Elbow
Weld # RCRD-2-50, Stainless Steel Valve to Carbon Steel Elbow

Record Review

Ultrasonic Examination (UT):
High Pressure System, elbow to valve Weld # HPCI-2-004-009

Liquid Penetrant (PT):
Residual Heat Removal System Weld Attachment # 2-47B452S0239-1A

Radiographic Examination (RT):
High Pressure System, elbow to valve Weld # HPCI-2-004-009

Qualification and certification records for examiners, equipment and consumables, and NDE procedures for the above ISI examination activities were also reviewed.

The inspectors also reviewed corrective action items such as Problem Evaluation Reports (PERs) and Routine Work Orders (WOs), associated with the ISI program to determine if problems were being identified at appropriate thresholds and if adequate corrective actions were being taken.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed operator crew performances during conduct of Simulator Exercise Guide, 173S225, "RHR Room Cooler Inoperable, HPCI Inadvertent Start With Failure To Isolate, Fuel Failure, Loss Of Offsite Power and RCIC Controller Failure"; and Simulator Evaluation Guide OPL 177.060, "RWCU Isolation, Loss of RPS Bus, MSL Pressure Transmitter Failure, and ATWS with MSIV Closure," to verify that performance was in accordance with licensee procedures and regulatory requirements.

The inspectors specifically evaluated the following attributes related to the operating crews' performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of Emergency Operating Instructions
- Timely and appropriate Emergency Action Level declarations per Emergency Plan Implementing Procedures
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by operations supervision, including ability to identify and implement appropriate TS actions, regulatory reporting requirements, and emergency plan actions and notifications

The inspectors attended the post-exercise critiques to assess their effectiveness, and verify that the licensee-identified issues were comparable to issues identified by the inspectors.

b. Findings

No findings of significance were identified

1R12 Maintenance Effectiveness

.1 Routine Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the two systems listed below with regard to some or all of the following attributes: (1) work practices; (2) identifying and addressing common cause failures; (3) Scoping in accordance with 10 CFR 50.65(b) of the maintenance rule (MR); (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and re-classification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for Systems, Structures 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). The inspectors also compared the licensee's performance against site procedure SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting; Technical Instruction 0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting; 0-TI-362, Inservice Testing of Pumps and Valves; and SPP 3.1, Corrective Action Program. The inspectors also reviewed applicable work orders, engineering evaluations and system testing to verify that regulatory and procedural requirements were met.

- Unit 2 High Pressure Core Injection
- Unit 2 & 3 RHR Keep Fill Check Valves (Containment Isolation Valves)

b. Findings

Introduction: A Green non-cited violation (NCV) of 10 CFR 50.65(a)(1) was identified by the inspectors for the licensee's failure to implement timely and effective corrective actions to preclude multiple, repetitive failures of containment isolation valves in the Unit 2 and 3 Residual Heat Removal (RHR) Keep Fill System (e.g., 3-CKV-074-792, 2-CKV-074-802 and 2-CKV-074-803). These failures ultimately resulted in the failure of two containment isolation valves simultaneously for the same penetration which created an open pathway from containment and a consequential loss of the maintenance rule safety function. Licensee monitoring and corrective actions per 10CFR50.65(a)(1) were ineffective at ensuring containment isolation valves in the RHR Keep Fill System were capable of performing their intended function.

Description: The inspectors reviewed PER, work order (WO) records, and Effectiveness Reviews related to leakage of several RHR Keep Fill Check Valves which are also Containment Isolation Valves tested in accordance with 10 CFR 50 Appendix J. The inspectors noted that repetitive local leakrate test (LLRT) failures had occurred since 1998. The second of two consecutive failures of Unit 3 RHR Keep Fill check valve 3-CKV-074-792 occurred in 1998 and was determined by the licensee to have exceeded its performance criteria as described in 0-TI-346, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10 CFR 50.65. This valve was

subsequently placed in Maintenance Rule Category a(1). Analysis and corrective actions were documented in PER 98-013383 (PER 36374). The licensee had concluded that the check valves were being fouled by entrained sediment. The corrective actions initially included cleaning of the Pressure Suppression Chamber (PSC) head tank and flushing the check valve. WO 98-015733-000 was written to document this action for Unit 3 and WO 99-001253-000 was written to document the action on Unit 2. However, prior to the implementation of this corrective action, Unit 2 RHR Keep Fill check valves 2-CKV-074-802 and 2-CKV-074-803 failed their next regularly scheduled LLRT and exceeded their performance criteria and were also placed in Maintenance Rule Category a(1) in June of 1999. The existing corrective actions for Unit 3 check valve 3-CKV-074-792 already planned were considered adequate and applied to the Unit 2 check valves.

In August and September of 1999, the Unit 3 PSC head tank was cleaned and RHR Keep Fill check valves 3-CKV-074-792 and 3-CKV-074-804 were flushed. In April of 2000, 3-CKV-074-792 passed its LLRT. However, 3-CKV-074-804 failed. The licensee determined that the corrective action to flush and clean the PSC head tank and piping was ineffective and decided not to clean and flush the Unit 2 RHR Keep Fill System. Another corrective action was added to PER 98-013383 in November of 2000 to develop a design change for each unit to install crud traps in the system.

In March of 2001, 2-CKV-074-802 and 2-CKV-074-803 passed their regularly scheduled LLRT prior to any corrective action being done. In March of 2002, 3-CKV-074-792 passed its regularly scheduled LLRT with no corrective action other than the flush and PSC head tank cleaning which had been deemed ineffective. Afterward, during the same refueling outage, DCN 50830 was implemented to install crud traps in Unit 3.

Similarly, in February of 2003, during the Unit 2 refueling outage, check valves 2-CKV-074-802 and 2-CKV-074-803 again passed their regularly scheduled LLRT prior to installation of the crud traps. In March 2003, DCN 50894 installed the crud traps in Unit 2.

In April of 2003, the licensee determined that all corrective actions had been completed and that there had been two consecutive successful LLRT's on each valve and hence Maintenance Rule a(1) actions and monitoring were considered complete. All valves were returned to Maintenance Rule Category a(2). In actuality, the successful LLRTs occurred prior to implementation of the corrective actions in each case.

Subsequent to returning these valves to a(2) status, 3-CKV-074-792 failed its next regularly scheduled LLRT by a large margin, along with two other Unit 3 check valves in March of 2004. In September of 2004, 2-CKV-074-802 and 2-CKV-074-803, simultaneously failed thus creating a pathway from the Suppression Pool to the PCS head tank, which overflowed (PER 68246).

The licensee has since concluded that the completed corrective actions were ineffective and that additional corrective actions are need to ensure reliability of the RHR Keep Fill check valves and have placed all Keep Fill check valves for both RHR and Core Spray on each unit (16 valves) into Maintenance Rule Category a (1) as of June 2005.

Analysis: The inspectors determined that the licensee's failure to develop effective corrective actions and to adequately monitor those corrective actions for effectiveness as required by 10 CFR 50.65a(1) in order to prevent recurring failures of the Unit 2 and Unit 3 RHR Keep Fill check valves was more than minor because if left uncorrected it could become a more significant safety concern and it affected the Containment Isolation SSC Reliability objective of the SSC and Barrier Performance attribute under the Barrier Integrity Cornerstone. The inspectors assessed the finding using the SDP, Manual Chapter 0609, Appendix H, Table 4.1, and determined the finding to be of very low safety significance. The finding was of low safety significance because for the most consequential failure event that resulted in an open pathway from containment, the containment isolation valves were in a small (i.e., 2-inch) line to the PSC head tank and would not significantly contribute to Large Early Release Frequency (LERF). This finding also had cross-cutting aspects, as described above, associated with Problem Identification and Resolution.

Enforcement: 10 CFR 50.65, Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Paragraph (a)(1), states, in part, that the licensee "...shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components...are capable of fulfilling their intended functions." Contrary to the above, the licensee goals and corrective actions were untimely and ineffective in assuring the RHR Keep Fill check valves would be capable of performing their containment isolation function. The failure to effectively monitor and correct conditions adverse to quality of the RHR Keep Fill check valves under Category a(1), is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000260, 296/2005003-01, Untimely and Ineffective Corrective Actions To Ensure RHR Keep Fill Containment Isolation Valves Fulfill Their Safety Function Per 10 CFR 50.65 (a)(1). This issue is in the licensee's Corrective Action Program as PER 85130.

.2 Periodic Evaluation (Biennial)

a. Inspection Scope

The inspectors reviewed the licensee's Maintenance Rule (MR) periodic assessment, "Maintenance Rule 4th Periodic Assessment Report, April 2002 to March 2004, dated June 30, 2004, while on site during the week of April 18, 2005. The report was issued to satisfy paragraph (a)(3) of 10 CFR 50.65, and covered the period as indicated for Units 2 and 3. The inspection was to determine the effectiveness of the assessment and that it was issued in accordance with the time requirement of the MR and included evaluation of: balancing reliability and unavailability, (a)(1) activities, (a)(2) activities,

and use of industry operating experience. To verify compliance with 10 CFR 50.65, the inspectors reviewed selected MR activities completed during the assessment period for the following maintenance rule systems: Reactor Fuels, Intermediate Range Monitoring, Main Steam Relief Valves, Inverters, Drywell Head, and Repetitive Unit Scrams (Unplanned Capacity Loss). In addition, the inspectors reviewed the most recent structural inspection report and inspected select plant structures. Specific procedures and documents reviewed are listed in the attachment to this report.

During the inspection, the inspectors reviewed selected plant WO data, assessments, modifications, and the site guidance implementing procedure; discussed and reviewed relevant PERs; reviewed generic operations event data, and probabilistic risk reports; and discussed issues with system engineers. Operational event information was evaluated by the inspectors in its use in MR functions. The inspectors selected WOs and other corrective action documents on systems recently removed from 10 CFR 50.65 a(1) status and those in a(2) status to assess the justification for their status. The documents were compared to the site's MR program criteria, and the MR a(1) evaluations and rule-related data bases.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

k. Inspection Scope

For the five 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:

- Risk Avoidance during 2A RHR 14-Day Extended TSAS
- Work Scheduling Accounting for 2A RHR Hx Continued OOS
- Emergent Work Related to Leak on 2A RHR Hx
- Replacement of Main Control Board Switch 3-HS-85-48
- Unit 1 Refueling Zone Supply Damper (Secondary Containment Boundary)

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

Routine Baseline Review

a. Inspection Scope

The inspectors reviewed the five operability/functional evaluations listed below to verify technical adequacy 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, 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. Furthermore, where applicable, inspectors reviewed implemented compensatory measures to verify they worked as stated and that the measures were adequately controlled. The inspectors also reviewed PERs daily to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- Non-conservative Unit 2 Core Spray System Discharge Valve Torque Switch Settings (PER 80624)
- Continued Unit 2 HPCI Operation with Unresolved Long-Term Equipment Performance Issue with 2-LCV-73-8 (PER 80689)
- Compensatory Measures For Inoperable Unit 2/3 Offgas System Check Valves as Part of Main Steam Ruggedness Boundary for Alternate Source Term (PER 80690)
- Foreign Material Left In Unit 2 Drywell Following Closeout (PERs 80909 and 80856)
- Seismic, Structural Integrity, and Leak Tightness Evaluation of Unit 1 Refueling Zone Supply Dampers and Temporary Blank with Minimum Bolting (Technical Evaluation and Calculation # CDQ1-064-2005-0136)

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Annual Review

Inspection Scope

The inspectors reviewed Engineering Document Change (EDC) 64175 and Drawing 0-69D160-05 for seal weld activities on the 2A RHR Heat Exchanger floating head. As part of this inspection, inspectors selectively reviewed licensee procedures 0-TI-405, Plant Modifications and Design Change Control, and SPP-9.3, Plant Modifications and

Engineering Change Control. The inspectors also 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. Furthermore, the inspectors reviewed selected ongoing and completed work activities to verify that installation was consistent with the design control documents.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (PMT)

a. Inspection Scope

The inspectors witnessed and/or reviewed documentation of post-maintenance test (PMT) activities of the seven risk significant SSCs listed below were adequate to verify system operability and functional capability following completion of associated work. For each of the PMTs, some or all of the following aspects were inspected: (1) Effect of testing on the plant recognized and addressed by control room and/or engineering personnel; (2) Testing consistent with maintenance performed; (3) Acceptance criteria demonstrated operational readiness consistent with design and licensing basis documents such as TS, UFSAR, and others; (4) Range, accuracy and calibration of test equipment; (5) Step by step compliance with test procedures, and applicable prerequisites satisfied; (6) Control of installed jumpers or lifted leads; (7) Removal of test equipment; and, (8) Restoration of SSCs to operable status. The inspectors also verified PMT activities were consistent with applicable procedural requirements of SPP-6.3, Post-Maintenance Testing, and MMDP-1, Maintenance Management System. Furthermore, the inspectors also reviewed problems associated with PMTs that were identified and entered into the corrective action program.

- Unit 2 #1 Turbine Stop Valve Limit Switch (WO 05-712536-001 and 2-SR-3.3.1.1.14(8II), Turbine Stop Valve Closure-RPS Trip (Channel B1/B2) Logic System Functional Test)
- Unit 2 RCIC Pump (WO 03-009820 and 2-SR-3.5.3.3)
- Unit 3 #1 Turbine Stop Valve (WO 05-713332-000)
- Unit 3A Control Room A/C (WO 04-713508-001)
- Fire Pump A Head Replacement (WO 05-714630-000 and 0-SI-4.11.B.1.f(2), Electric Fire Pump Capability Test)
- Unit 1 Refueling Zone Supply Dampers (Secondary Containment Boundary) (WO 05-714965)
- 2A RHR Heat Exchanger (WO 05-714436-000 and MCI-0-074-HEX001m Maintenance of RHR Heat Exchangers)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

Unit 2 Cycle 13 (U2C13) Scheduled Refueling Outage

a. Inspection Scope

Ongoing Outage Activities

The inspectors continued to examine critical U2C13 outage activities to verify that they were conducted in accordance with TSs, applicable procedures, and the licensee's outage risk assessment and management plans. Some of the more significant inspection activities accomplished by the inspectors were as follows:

- Walked down of selected safety-related equipment clearance orders (i.e., 2-TO-2005-0001, Sections 2-85-069 and 2-63-001)
- Verified operability of reactor coolant system (RCS) pressure, level, and temperature instruments during various modes of operation
- Verified electrical systems availability and alignment
- Monitored important control room plant parameters
- Verified shutdown cooling, alternate decay heat removal, and spent fuel pool cooling systems operation
- Evaluated implementation of reactivity controls
- Examined foreign material exclusion (FME) controls put in place around the spent fuel pool and reactor cavity.

Refueling Activities and Containment Closeout

The inspectors witnessed selected fuel handling operations during the Unit 2 reactor core fuel shuffle being performed on the refuel floor according to TS and applicable operating procedures, such as 2-GOI-100-3B, Refueling Operations. The inspectors also witnessed and examined the video verification of the final reactor core. Furthermore, the inspectors performed detailed closeout inspections of the Unit 2 drywell and suppression chamber prior to plant startup and reviewed licensee implementation of 2-GOI-200-2, Drywell Closeout.

Heatup, Mode Transition, Reactor Startup, and Power Ascension Activities

The inspectors examined selected TSs, license conditions, license commitments and verified that administrative prerequisites were being met prior to Unit 2 mode changes. The inspectors also reviewed measured RCS identified and unidentified leakage tests, and verified that containment integrity was properly established. The results of low power physics testing were discussed with Reactor Engineering and Operations personnel to ensure that the core operating limit parameters were consistent with the design. The inspectors witnessed portions of the reactor startup, heatup, and power ascension in accordance with 2-GOI-100-1A, Unit Startup and Power Operation.

Correction Action Program

The inspectors reviewed PERs generated during U2C13 to verify that initiation thresholds, priorities, mode holds, and significance levels were assigned as required. Resolution and implementation of corrective actions of several PERs were also reviewed for completeness.

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 seven risk-significant SSC's listed below 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 and fulfilled the intent of the associated surveillance requirement. Applicable IST data was compared against the requirements of licensee procedures 0-TI-362, Inservice Testing of Pumps and Valves; 0-TI-230, Vibration Monitoring and Diagnostics.

- Unit 2 Standby Liquid Control System Functional Test per 2-SR-3.1.7.7
- 1-2A EDG Monthly Surveillance Test per 0-SR-3.8.1.1(A)
- Unit 2 Turbine Control Valve Fast Closure Test per 2-SR-3.3.1.1.8(9)
- Unit 3 HPCI Main and Booster Pump Set Developed Head and Flow Rate Test at Rated Reactor Pressure per 3-SR-3.5.1.7 *
- Unit 2 RCIC Comprehensive Test per 2-SR-3.5.3.3
- Unit 3 Drywell Floor Drain Sump Flow Integrator Calibration per 3-SR-3.4.5.3 **
- Unit 3 Diesel Generator 24 Hour Run per 3-SR-3.8.1.7(3A)

*This procedure included inservice testing requirements.
**This procedure included testing of a containment isolation valve.

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 temporary modification 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 reviewed selected completed work activities and walked down portions of the systems to verify that installation was consistent with the modification documents and Temporary Alteration Control Form (TACF).

- TACF 1-05-001-231, Temporary Recorder on Breaker 1-BKR-231-0001A/3D

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation

a. Inspection Scope

Prior to the inspection activity, an in-office review was conducted of the exercise objectives and scenario submitted to the NRC to determine if the exercise would test major elements of the emergency plan as required by 10 CFR 50.47(b)(14).

The onsite inspection consisted of the following review and assessment of the licensee's biennial exercise conducted June 8, 2005:

- The adequacy of the licensee's performance in the biennial exercise was reviewed and assessed regarding the implementation of the risk-significant planning standards (RSPS) in 10 CFR 50.47(b)(4), (5), (9), and (10), which are emergency classification, offsite notification, radiological assessment, and protective action recommendations, respectively.

- The overall adequacy of the licensee's emergency response facilities with regard to NUREG-0696, "Functional Criteria for Emergency Response Facilities" and Emergency Plan commitments. The facilities assessed were the Control Room simulator, Technical Support Center (TSC), Operations Support Center (OSC) and Central Emergency Control Center.

- Other performance areas besides the RSPS, such as the emergency response organization's (ERO) recognition of abnormal plant conditions, command and

control, intra- and inter-facility communications, prioritization of mitigation activities, utilization of repair and field monitoring teams, interface with offsite agencies, and the overall implementation of the emergency plan and its implementing procedures.

- Past performance issues from NRC inspection reports and Federal Emergency Management Agency (FEMA) exercise reports to determine effectiveness of corrective actions as demonstrated during this exercise to ensure compliance with 10 CFR 50.47(b)(14).

- The post-exercise critique to evaluate the licensee's self-assessment of its ERO performance during the exercise and to ensure compliance with 10 CFR 50 Appendix E.IV.F.2.g.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed of revisions to the emergency plan, implementing procedures and EAL changes to determine if changes had decreased the effectiveness of the plan. The inspectors also evaluated the associated 10 CFR 50.54(q) reviews associated with non-administrative emergency plan changes, implementing procedures changes, and EAL changes. Revision 75 covered the period of July 27, 2004 to March 22, 2005.

The inspection was conducted in accordance with NRC Inspection Procedure 71114, Attachment 04, "Emergency Action Level and Emergency Plan Changes." The applicable planning standards, 10 CFR 50.47(b)(4), and its related 10 CFR 50 Appendix E requirements, were used as reference criteria. The criteria contained in NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels," Revision 2, and Regulatory Guide 1.101 were also used as references.

The inspectors reviewed various documents which are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation

a. Inspection Scope

On April 27, 2005, the inspectors observed a quarterly emergency preparedness drill of the licensee's emergency response organization for personnel in the control room (i.e., simulator), TSC and the OSC. During this drill the inspectors assessed operator performance to determine if emergency classification, notification, and protective action recommendations were made in accordance with emergency preparedness procedures. The inspectors evaluated the adequacy of the post-drill critiques conducted in the TSC and the simulator.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

Licensee activities for monitoring workers and controlling access to radiologically significant areas were inspected. The inspectors evaluated procedural guidance and directly observed implementation of administrative and physical controls; appraised radiation worker and technician knowledge of, and proficiency in implementing, radiation protection program activities; and assessed worker exposures to radiation and radioactive material.

Radiological postings and material labeling were directly observed during tours of the Unit 1 (U1), Unit 2 (U2), and Unit 3 (U3) turbine and reactor buildings and radwaste processing areas. The inspectors conducted independent surveys in these areas to verify posted radiation levels and to compare with current licensee survey records. During plant tours, control of Locked High Radiation Area (LHRA) keys and the physical status of LHRA doors were examined. In addition, the inspectors observed radiological controls for non-fuel items stored in the spent fuel pools. The inspectors also reviewed selected Radiological Control (Radcon) procedures and radiation work permits (RWPs), and discussed current access control program implementation with Radcon supervisors.

During the inspection, radiological controls for work activities in High Radiation Areas (HRAs) were observed and discussed. The inspectors attended a pre-job briefing for work that involved entries into posted locked high radiation areas and directly observed the work activities involved. The inspectors observed workers' adherence to RWP guidance and Health Physics Technician (HPT) proficiency in providing job coverage. Controls for limiting exposure to airborne radioactive material were reviewed and

operation of ventilation units and positioning of air samplers were also observed. The inspectors evaluated electronic dosimeter alarm setpoints for consistency with radiological conditions in and around the drywell. In addition, the inspectors interviewed workers in the U1, U2, and U3 reactor buildings to assess knowledge of RWP requirements.

The inspectors evaluated worker exposures through review of data associated with discrete radioactive particle and dispersed skin contamination events. Controls used for monitoring extremity dose and the placement of dosimetry when work involved significant dose gradients were reviewed.

Radcon program activities were evaluated against 10 CFR Part 20; TS Sections 5.4, Procedures, and 5.7, HRA; Regulatory Guide 8.38, Control of Access to High and Very High Radiation Areas in Nuclear Power Plants; and approved licensee procedures. Licensee guidance documents, records, and data reviewed are listed in the report Attachment.

Problem Identification and Resolution: PERs and one audit associated with radiological controls, personnel monitoring, and exposure assessments were reviewed and discussed with Radcon supervisors. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedure SPP-3.1, Corrective Action Program, Revision 7. Specific documents reviewed are listed in the report Attachment.

b. Findings

(1) Introduction: A Green self-revealing NCV of TS 5.7.2 was identified for the failure to properly control a high radiation area with dose rates greater than 1.0 rem per hour at 30 centimeters (cm) from the source.

Description: On February 5, 2004, an operator entered the waste backwash transfer pump room on the 546-foot elevation of the radwaste building and received an electronic dosimeter dose rate alarm. The individual immediately exited the area and reported to radiation protection. The operator received a dose of one millirem (mrem) during the entry. Radiation protection performed a survey of the area and identified dose rates of 10,000 mrem per hour on contact and 1500 mrem per hour at 30 cm on a section of pipe. The area was immediately controlled as a locked high radiation area and a guard was stationed to keep personnel out of the area.

The inspectors determined from a review of log entries and personnel statements that on February 4, 2004, the Unit 2 spent fuel pool demineralizer was removed from service to be backwashed and pre-coated. The backwash water and resin were pumped into the waste backwash receiving tank. The operator would normally pump this tank to a condensate waste phase separator as needed. On this day, the tank was pumped to the B condensate waste phase separator at approximately 3:15 p.m. On February 5, 2004, at approximately 4:50 a.m., the operator reported receiving the dose rate alarm when entering the waste backwash transfer pump room. At approximately 4:55 a.m.,

the room was controlled as a locked high radiation area. Throughout the morning several attempts were made to flush the source of the radioactivity. On February 6, 2004, at 5:00 a.m., radiation protection reported that dose rates in the area had decreased to 70 mrem per hour on contact and 20 mrem per hour at 30 cm from the original source location. Surveys of adjacent piping showed no increase in radiation levels. From a review of previous surveys between May 2003 and the present, the inspectors determined that dose rates in the waste backwash transfer pump room and other radwaste building rooms have routinely fluctuated based on system operations, although dose rates approaching 1000 mrem per hour at 30 cm had not been previously identified. The inspectors concluded the licensee failed to implement timely radiation surveys after plant evolutions which altered dose rates in the waste backwash transfer pump room and other radwaste building rooms, such that any change in posting requirement would be recognized. Following the February 5 event, the licensee's corrective action document stated that operations would revise procedures to require a notification of radiation protection when the waste backwash transfer pumps were used for a transfer.

Analysis: The failure to correctly control a high radiation area is a performance deficiency in that the licensee failed to perform radiation surveys following a plant evolution which changed the posting requirements to a high radiation area with dose rates greater than 1.0 rem per hour at 30 cm from the source. The finding is greater than minor because it is associated with the cornerstone attribute of exposure control and adversely affected the cornerstone objective because the failure to control a high radiation area does not ensure adequate protection of worker health and safety from exposure to radiation. Because the finding involved the potential for workers to receive significant, unplanned, unintended doses as a result of conditions contrary to TS requirements, the inspector used the Occupational Radiation Safety Significance Determination Process described in Manual Chapter 0609, Appendix C, to analyze the significance of the finding. The inspectors determined that the finding was of very low significance because: (1) it was not an As Low As Reasonably Achievable (ALARA) finding, (2) it was not an overexposure, (3) it did have a substantial potential for overexposure, and (4) it did not compromise the ability to assess dose.

Enforcement: TS 5.7.2 requires that each entryway to a High Radiation Area with dose rates greater than 1.0 rem per hour at 30 cm from the radiation source, but less than 500 rads per hour at 1 meter from the radiation source, shall be provided with a locked door or gate or be continuously guarded to prevent unauthorized entry. The licensee violated this requirement by failing to control the waste backwash transfer pump room as a high radiation area with dose rates greater than 1.0 rem per hour at 30 cm from the source. The finding was documented in the licensee's corrective action program as PER 44288. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-259, 260, and 296/200503-02, Failure to Control a High Radiation Area with Dose Rates Greater than 1.0 Rem Per Hour.

(2) Introduction: A Green self-revealing NCV of TS 5.7.1 was identified for the failure to conspicuously post, barricade, and control access to high radiation areas with dose rates not exceeding 1.0 rem per hour at 30 cm from the source. The licensee also identified an additional example of a violation of TS 5.7.1 which is described in Section 4OA7 of the report.

Description: On November 24, 2004, a radwaste operator received an electronic dosimeter dose rate alarm when entering the waste surge and collector pump room on the 546-foot elevation of the radwaste building. The operator immediately exited the area and reported to radiation protection. The operator entered an area with dose rates of 159 mrem per hour and received a dose of 5 mrem from the entry. A survey of the area showed elevated dose rates in several areas of the 546-foot elevation, including the waste backwash transfer pump room. Contact dose rates with overhead piping were as high as 2500 mrem per hour, with general area dose rates of 300 mrem per hour. The licensee corrective action document stated that the possible cause of the elevated radiation levels was the transfer of water from several recent spent fuel pool cooling demineralizer backwashes. The operators failed to notify radiation protection personnel of the operation of the waste backwash transfer pumps as required by procedure 0-OI-77D, Backwash Receivers and Phase Separators System. This contributed to radiation surveys not being performed following the plant evolution which may have caused elevated dose rates and the change in the posting requirements. The licensee posted and controlled the affected areas as high radiation areas. The affected piping was flushed on November 26, 2004, and radiation levels returned to normal levels.

Analysis: The failure to identify changes in dose rates following plant evolutions and make corresponding changes to properly control a high radiation area is a performance deficiency. The finding is greater than minor because it is associated with the cornerstone attribute of exposure control and affected the cornerstone objective because it resulted in unplanned or unintended radiation dose. Because the finding involved the potential for workers to receive significant, unplanned, unintended doses as a result of conditions contrary to TS requirements, the inspector used the Occupational Radiation Safety Significance Determination Process described in Manual Chapter 0609, Appendix C, to analyze the significance of the finding. The inspectors determined that the finding was of very low significance because: (1) it was not an ALARA finding, (2) it was not an overexposure, (3) it did have a substantial potential for overexposure, and (4) it did not compromise the ability to assess dose.

In addition, this finding had cross-cutting aspects associated with human performance. When operators failed to notify radiation protection personnel of the operation of the waste backwash transfer pumps as required by Procedure 0-OI-77D, Backwash Receivers and Phase Separators System, it directly contributed to the finding.

Enforcement: TS 5.7.1 requires that high radiation areas with dose rates not exceeding 1.0 rem per hour at 30 cm from the radiation source shall have each entryway barricaded and conspicuously posted as a high radiation area. In addition, access to such areas shall be controlled by a radiation work permit that includes specification of

radiation dose rates in the immediate area and that entry personnel are knowledgeable of them. The licensee violated this requirement by failing to barricade and conspicuously post an area that had dose rates of greater 100 mrem per hour. The finding was documented in the licensee's corrective action program as PER 72725. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-259, 260, and 296/200503-03, Failure to Barricade, Conspicuously Post, and Control a High Radiation Area.

(3) Introduction: Two examples of a Green self-revealing NCV of TS 5.4.1 were identified for failure of workers to comply with radiation work permit requirements.

Description: On March 22, 2004, an operator entered a posted high radiation area on an RWP that did not allow entry into high radiation areas. The operator followed a chemistry technician into the B/D residual heat removal heat exchanger room and did not notice the high radiation area posting. The operator entered the room on RWP 04370011 which stated, in part, "No entry into high radiation areas on this RWP." The electronic dosimeter setpoints were 40 mrem for dose and 100 mrem per hour for dose rate. The operator received a electronic dosimeter dose rate alarm. Radiation dose rates in the area were 600 mrem per hour on contact and 300 mrem per hour at 30 cm from the radiation source.

On October 4, 2004, a craft worker entered an area in the overhead, greater than 6 feet, of the Unit 1 reactor building 593-foot elevation without contacting radiation protection as required by the RWP. The worker did not review the planned work with radiation protection prior to entry and did not monitor his electronic dosimetry prior to reaching the dose alarm setpoint. The worker received a dose alarm and a total dose of 11 mrem. The electronic dosimeter dose alarm setpoint was 10 mrem. A survey of the overhead area indicated dose rates of 200 mrem per hour on contact, 60 mrem per hour at 30 cm, and 25 mrem per hour general area from overhead piping.

Analysis: The failure to follow RWP instructions is a performance deficiency. The finding is greater than minor because it is associated with the cornerstone attribute of program and process and it adversely affected the cornerstone objective because not following RWP instructions does not ensure the adequate protection of the worker health and safety from exposure to radiation. Because the finding involved workers' unplanned, unintended dose or potential for such a dose which could have been significantly greater as a result of a single minor reasonable alteration of the circumstances, the inspector used the Occupational Radiation Safety Significance Determination Process described in Manual Chapter 0609, Appendix C, to analyze the significance of the finding. The inspectors determined that the finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose.

In addition, this finding had cross-cutting aspects associated with human performance. When the worker in the first example failed to follow the requirements of his RWP with

respect to entry into high radiation areas, it directly contributed to the finding. When the worker in the second example failed to follow the requirements of his RWP with respect to entry into the overhead area requiring notification of radiation protection personnel and receipt of a briefing of radiological conditions prior to entry, it directly contributed to the finding.

Enforcement: TS 5.4.1 requires that written procedures shall be established, implemented, and maintained covering access control to radiation areas including a RWP system. Station Procedure RCI-9.1, Radiation Work Permit Preparation and Administration, Revision 45, Section 7.4, states, in part, "...workers shall comply with all RWP protective and special instructions." This requirement was violated when the first worker failed to comply with the RWP requirement which prohibited entry into high radiation areas. This requirement was also violated when the second worker failed to: (1) review planned work with radiation protection prior to entry, (2) notify radiation protection prior to working in the overhead greater than 6 feet, and (3) monitor electronic dosimetry frequently and exit the area prior to exceeding an alarm setpoint. The finding was documented in the licensee's corrective action program as PERs 47669 and 69750. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-259, 260, and 296/2005003-04, Two Examples of Failure to Comply with Radiation Work Permit Requirements.

2OS2 ALARA Planning and Controls

a. Inspection Scope

ALARA: The inspectors evaluated ALARA program guidance and implementation for on-going tasks associated with the Unit 2 Cycle 13 (U2C13) refueling outage. In addition, post-outage ALARA activities associated with the Unit 3 Cycle 11 (U3C11) refueling outage and ALARA planning and performance for recovery efforts on Unit 1 were evaluated. The inspectors reviewed and discussed with licensee staff ALARA work plan documents, including dose estimates and prescribed ALARA controls for selected outage work activities expected to incur significant collective doses. The inspectors reviewed the implementation of dose-reduction initiatives for high person-rem expenditure tasks. These elements of the ALARA program were evaluated for consistency with the methods and practices delineated in applicable licensee procedures.

The implementation and effectiveness of ALARA planning and program initiatives during work in progress were evaluated. The inspectors made direct field observations of Unit 2 work activities involving: preparations of radioactive shipments; maintenance of the CRDMs; drywell cleanup and scaffolding removal; and refueling floor activities, including the decontamination of the #2 I/S camera. The inspectors also observed work activities in U1, including the painting of control rod drive accumulators in a contaminated area. The inspectors interviewed radiation workers and RPT staff to assess their understanding of dose reduction initiatives and their current and expected final accumulated occupational doses at completion of the task.

Projected RWP dose expenditure estimates from U3C11 and Unit 1 recovery efforts were compared to actual dose expenditures, and noted differences were discussed with cognizant ALARA staff. Changes to dose budgets relative to changes in job scope were identified and discussed. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel.

Implementation and effectiveness of selected program initiatives with respect to source-term reduction were evaluated. Chemistry program actions, including feedwater iron control and depleted zinc oxide injection initiatives, and their resultant effect on reactor coolant system (RCS) and equipment dose rate trending data were reviewed, discussed, and compared to previous data. The implementation of routine flushing procedures, hydrolazing, and de-sludging to reduce the source term were discussed with cognizant licensee personnel. The effectiveness of selected shielding packages installed for the current outage was assessed through completion of independent radiation surveys and comparison to applicable licensee survey records and expected planning data. Cobalt reduction initiatives for RCS valve replacement activities were reviewed and discussed in detail.

The plant collective exposure histories for calendar years (CY) 2001, 2002 and 2003, taken from data reported to the NRC pursuant to 10 CFR 20.2206), were reviewed and discussed with licensee staff, as were established goals for reducing collective exposure. The inspectors reviewed the applicable guidance and examined dose records of declared pregnant workers during CY 2003 and 2004 to evaluate current gestation doses for declared pregnant workers.

ALARA activities were evaluated against the requirements specified in 10 CFR 19.12; 10 CFR Part 20, Subparts B, C, F, G, H, and J; and approved licensee procedures. In addition, licensee performance was evaluated against Regulatory Guide (RG) 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable, and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Procedures and records reviewed within this inspection area are listed in Sections 2OS1 and 2OS2 of the report Attachment.

Problem Identification and Resolution: Licensee corrective action documents associated with ALARA activities were reviewed and assessed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with the corrective action program. Specific self-assessments, audits, and PERs reviewed and evaluated in detail for this inspection area are identified in Section 2OS2 of the report Attachment.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety [PS]

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization The inspectors reviewed the plant's solid radioactive waste system description in the Browns Ferry Nuclear Final Safety Analysis Report (FSAR) and process control program (PCP). The most recent radiological effluent release report was reviewed for information on the types and amounts of waste disposed. The scope of the licensee's audit program was reviewed to verify that it met the requirements of 10 CFR 20.1101. The inspectors walked down the accessible portions of the liquid and solid radioactive waste processing systems to verify and assess that the current system configuration and operation agreed with the FSAR and PCP. The liquid radioactive waste evaporator usage history and lay-up status was discussed with radwaste and operations personnel to determine its potential to create an unmonitored release pathway.

The inspectors reviewed the radiological operating report for any documented changes to the radwaste processing systems and discussed the observations with radwaste and operations department personnel. The inspectors reviewed the plant's process for transferring radioactive resin and sludge discharges into shipping/disposal containers to determine if appropriate waste stream mixing and/or sampling procedures and methodology for waste concentration averaging provided representative samples of the waste product for waste classification purposes. The inspectors reviewed current 10 CFR 61 analysis results and the procedures for obtaining the samples to support the analysis. The scaling factors used for radioactive waste streams and calculations used for determining the amount of hard-to-detect nuclides were reviewed. The program was reviewed to verify compliance with 10 CFR 61.55-56 and Appendix G of 10 CFR 20.

The inspector reviewed the program for provisions that would ensure that the waste stream composition accounted for changes in operational parameters and would remain valid between required periodic updates.

Transportation: The inspectors observed the preparation and shipment of contaminated laundry to a vendor facility. The observations included packaging, surveying, labeling, placarding, vehicle checks, driver's briefing and emergency instructions, a review of shipping papers provided to the driver, and licensee final verification of shipment readiness. The inspectors were unable to witness a Type B shipment because none were scheduled during the inspection period. The inspectors reviewed shipping documentation for several shipments that had occurred in the previous year. The inspectors reviewed the Quality Assurance (QA) surveillance documentation verifying compliance with the Certificate of Compliance for the Type B packages that included spent resin and crushed irradiated control rod blades.

The inspectors observed and interviewed the radwaste workers who were involved in the shipments and reviewed their training records.

Transportation program implementation was reviewed against regulations detailed in 10 CFR, Part 20; 10 CFR, Part 71; 49 CFR, Parts 172-178; as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR, Part 172, Subpart H. Documents reviewed during the inspection are listed in Section 2PS2 of the report Attachment.

Problem Identification and Resolution Five PERs and one self-assessment were reviewed in detail and discussed with licensee personnel. The inspectors assessed the licensee's ability to characterize, prioritize, and resolve the identified issues in accordance with licensee procedure SPP-3.1, Corrective Action Program, Revision 7. Documents reviewed for problem identification and resolution are listed in Section 2PS2 of the report Attachment.

b. Findings

No findings of significance were identified.

## 4. OTHER ACTIVITIES

### 4OA1 Performance Indicator (PI) Verification

#### .1 Emergency Preparedness (EP)

a. Inspection Scope

The inspectors reviewed the licensee's procedure for developing the data for the EP PIs which are: (1) Drill and Exercise Performance (DEP); (2) Emergency Response Organization (ERO) Drill Participation; and (3) Alert and Notification System (ANS) Reliability. The inspectors examined data reported to the NRC for the period April 2004 to March 2005. Procedural guidance for reporting PI information and records used by the licensee to identify potential PI occurrences were also reviewed. The inspectors verified the accuracy of the PI for ERO drill and exercise performance through review of a sample of drill and event 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 system tests.

The inspection was conducted in accordance with NRC Inspection Procedure 71151, "Performance Indicator Verification." The applicable planning standard, 10 CFR 50.9 and NEI 99-02, Revision 3, "Regulatory Assessment Performance Indicator Guidelines," were used as reference criteria.

b. Findings

No findings of significance were identified.

.2 Radiation Protection

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported PI data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, Revision 3, and the PI Frequently Asked Questions List.

Occupational Radiation Safety Cornerstone: The inspectors reviewed the Occupational Exposure Control Effectiveness PI results for the period of January 2004 through March 2005. For the assessment period, the inspectors reviewed electronic dosimeter alarm logs and licensee procedural guidance for collecting and documenting PI data. Report Section 2OS1 contains additional details regarding the inspection of controls for exposure-significant areas and the review of related PERs. Documents reviewed are listed in Sections 2OS1 and 4OA1 of the report Attachment.

Public Radiation Safety Cornerstone: The inspectors reviewed the RETS/ODCM Radiological Effluent Occurrences PI results for the period of January 2004 through March 2005. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and two PERs related to RETS/ODCM issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in Section 4OA1 of the report Attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification & Resolution of Problems

.1 Routine Review of Problem Evaluation Reports

a. Inspection Scope

The inspectors performed a daily screening of all PERs entered into the licensee's corrective action program. The inspectors followed NRC Inspection Procedure 71152, "Identification and Resolution of Problems," in order to help identify repetitive equipment failures or specific human performance issues for follow-up.

b. Findings and Observations

There were no specific findings identified from this overall review of the PERs issued each day.

.2 Semiannual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, the inspectors performed a review of the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review included the results from daily screening of individual PERs (see Section 4OA2.1 above), licensee quarterly trend reports and trending efforts, and independent searches of the PER database. The inspectors review nominally considered the six-month period of January 2005 through June 2005, although some PER database searches expanded beyond these dates. The inspectors also interviewed the Human Performance Manager, responsible corrective action program personnel, and key departmental personnel regarding integrated trend analysis and assessment. Furthermore, the inspectors verified whether adverse or negative trends and issues identified in the licensee's PERs, quarterly reports and trending efforts were entered into the corrective action program (CAP).

b. Findings and Observations

No violations of NRC requirements were identified. However, the inspector identified certain adverse trends related to corrective action extensions as well as inadequate procedure use and adherence. The consistent, high number of PER action extensions over the past five quarters was specifically discussed with the Human Performance Manager. Although this trend was not previously recognized, the licensee now plans to include it as a specific review item in the forthcoming CAP self-assessment. The adverse trend related to inadequate procedure use and adherence was based on a significant number of actual inspector-identified findings. These findings were of a minor nature, each of which was discussed in detail with responsible licensee personnel and management, and subsequently entered into the licensee's CAP. Inadequate procedure use and adherence had already been recognized by the licensee as a human performance area in need of significant improvement and for which specific human performance initiatives were being developed and instituted.

During review of the departmental quarterly trend analysis and summary reports, the inspector identified that these reports lacked consistency and standardization among departments, exhibiting a considerable variation in thoroughness and completeness. Furthermore, little or no information was provided by the departments regarding the effectiveness of prior actions and efforts to address previously recognized adverse trends.

.3 Focused Annual Sample Review

Failure to identify that all safety-related valve functional requirements were incorporated into the Motor Operated Valve Testing Program.

a. Inspection Scope

The inspectors reviewed PERs and corrective action documents and functional evaluations related to functional testing for Motor Operated Core Spray Injection valves. PERs 80624 and 97-001770 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.

b. Findings and Observations

There were no findings of significance identified during this Problem Identification and Resolution (PI&R) Annual Sample review. The inspectors determined that in 1998, as part of a Testing Methodology review, the licensee recognized that valve settings and testing requirements for some Motor-Operated Valves were non-conservative. Changes were made to the program. However, four Core Spray valves, which are also Containment Isolation valves, were not recognized as having a safety-related closure function in a post-LOCA environment. Therefore, valve settings and testing requirements for these valves were not changed. This resulted in in a lack of assurance that these valves would fully close to their required leak tightness requirements in a post-LOCA environment. These valves were the Core Spray Pump discharge valves for Division I and II on Units 2 and 3 (2-FCV-75-25, 2-FCV-75-53, 3-FCV-75-25, 3-FCV-75-53).

The licensee did subsequently determine that the torque switch settings for the Unit 3 valves were non-conservative and re-adjusted them to meet the more conservative requirements in April of 2000. However, the licensee did not recognize that this condition affected the same valves on Unit 2. Not until March of 2003, during testing of the Unit 2 Division II injection valve, 2-FCV-75-53, was the valve torque switch setting adjusted, but the need to adjust Unit 2 Division I, 2-FCV-75-25, valve's torque switch settings was again not recognized.

In April of 2005, during MOVATs testing of 2-FCV-75-25, Division I Core Spray discharge valve, the licensee recognized that the valve would not meet the current requirements. Due to refueling outage constraints, the re-setting of the torque switch was deferred and a procedure change was made to secure the Division I Core Spray pumps prior to closing 2-FCV-75-25. Closing this valve with the associated pump secured is within the capability of the original torque setting.

The inspectors determined that the licensee failed to identify a condition adverse to quality in 1998 which ultimately resulted in the Core Spray valves not meeting licensing requirements for a time frame of 4 to 7 years. Furthermore, once recognized, the licensee failed to adequately identify the extent of condition. This constituted a performance deficiency and a finding. This finding is minor because the valves would partially close to a small equivalent orifice size and leakage would be into a closed

system whose pressure retaining capability exceeds the post-LOCA conditions at which time the valves would be required to close. This issue was determined to have cross-cutting aspects associated with Problem Identification and Resolution

.4 Cross-Cutting Aspects of Findings

Section 1R12, describes an NRC-identified Maintenance Rule finding with cross-cutting aspects related to PI&R due to untimely and ineffective corrective actions to ensure primary containment isolation valves in the PSC keep fill were capable of performing their intended safety function.

4OA3 Event Follow-up

.1 (Closed) Licensee Event Report (LER) 05000296/2005-001-00, Automatic Reactor Scram Due to False Main Transformer Differential Signal

At 1629 hours Central Standard Time on February 11, 2005, the Unit 3 reactor scrammed from 100% power. The scram was caused by a simultaneous false trip signal generated to the main generator circuit breaker 234, switchyard circuit breakers 5264 and 5268, and a main generator trip. This signal was generated when a PK block (disconnect device 26W), which had been pulled as part of a clearance for breaker 5264, was re-inserted as part of a switching order from the Load Dispatcher for returning the breaker to service. When the PK block 26W was inserted (out of sequence of the switching order), the associated current transformer (CT) circuit was momentarily grounded resulting in a false differential. The correct sequence of the switching order was to actuate the trip cutout switches for the differential trip functions prior to inserting any of the PK blocks. The generator trip resulted in a turbine trip and opening of the output breakers causing a power-load unbalance trip. The control valve (CV) fast closure caused the reactor to SCRAM. All rods inserted. Reactor water level lowered, as expected, and was recovered by normal feedwater flow. All expected Primary Containment Isolation System (PCIS) isolations were received along with the auto start of Control Room Emergency Ventilation (CREV), and the three Standby Gas Treatment (SGT) trains. The root cause of this event was determined to be personnel error, in that the licensed operator failed to follow the task sequence identified in the switching order. The inspectors reviewed the LER for completeness and accuracy and to verify the licensee had developed appropriate corrective actions. For enforcement and inspector followup activities, see NRC Inspection Report 05000260,296/2005002. This LER is closed.

.2 (Closed) LER 05000260,296/2003-004-00, Cable Separations Design Error Related to Appendix R Requirements.

Introduction: A violation of 10 CFR 50, Appendix R, III.G.1 and III.G.2 was identified for failure to protect cables from fire damage which could result in the propagation of the fire in a manner that could adversely affect safe shutdown. The NRC applied enforcement and reactor oversight process discretion to the violation.

Description: In June of 2003, during a review and validation of Appendix R-related calculations for restart of Unit 1, the licensee became aware of potential deficiencies with the Unit 2 and 3 calculations regarding associated circuits for certain 4-kV electrical distribution boards and loads. To evaluate and correct these deficiencies, PER 55116 was initiated. On July 7, 2003, the licensee determined that electrical cable routing associated with the Unit 2 and 3 recirculation pump electrical boards was not in compliance with Appendix R requirements. More specifically, the physical routing of control power cables in the reactor building cable spreading room for the recirculation pump power circuit breakers was in the proximity (i.e., within 20 feet) of the 4-kV power supply cables feeding the very same circuit breakers. Consequently, certain single fires could hypothetically cause electrical faults in the associated control power cables resulting in fuse failures that would disable remote operation from the main control room and automatic tripping of the 4-kV recirculation pump breakers. Whereupon, the same fire could then damage the power supply cables causing high fault currents along the entire length of these cables with no capability to automatically trip the power supply breakers to isolate the fault. In the case of this unlikely scenario, the power supply cable insulation could potentially ignite and spread anywhere along its cable run from the reactor building to the turbine building, adversely affecting both trains of safe shutdown equipment in other fire areas/zones.

Once this common vulnerability was identified, the licensee promptly implemented compensatory measures (i.e., roving fire watches) until such time as a permanent fix could be effected. To eliminate this vulnerability and restore compliance with Appendix R, the licensee developed and implemented DCN 60035. This DCN modified the control circuitry of the Unit 2 and 3 4-kV reactor recirculation pump boards to install coordinated fuses that would isolate any fire-induced shorts in associated trip circuits which could have prevented automatic tripping of the 4-kV recirculation pump feeder breakers. Physical modifications of Unit 2 and 3 were accomplished in December 2003 and March 2004, respectively. The inspectors reviewed and verified that the corrective actions of PER 55116 and this LER were completed. The inspectors also specifically reviewed and verified completion of DCN 60035. Based upon the results of this inspection, the licensee's compensatory measures were considered prompt and their corrective actions were timely.

Analysis The inspectors concluded that the licensee's identification of inadequate electrical cable routing associated with the Unit 2 and 3 recirculation pump electrical boards constituted a performance deficiency because it violated requirements in the area of fire protection, and was due to an error in Appendix R analysis that should have been previously recognized by the licensee. In addition, the finding was associated with the "protection against external factors" attribute and affected the objective of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events. Therefore, the finding is greater than minor. According to NRC Inspection Manual Chapter 0305, Operating Reactor Assessment Program, Section 06.06.2, Violations in Specified Areas of Interest Qualifying for Enforcement Discretion, the NRC did not evaluate the significance of this finding through use of the Significance Determination Process.

Enforcement 10 CFR 50, Appendix R, III.G.1, requires that fire protection features shall be provided for components important to safe shutdown such that one train of systems necessary to achieve and maintain hot shutdown conditions from the control room is free of fire damage. Specific requirements for protection of cables are contained in III.G.2. Contrary to these requirements, cables were not protected such that one train of systems necessary to achieve and maintain hot shutdown conditions was not free of fire damage or not independent from the area under consideration. As discussed in NRC Regulatory Issue Summary 2004-003, Revision 1, and the NRC's Enforcement Policy, the NRC may refrain from issuing enforcement action for violations associated with fire-induced circuit failures provided the licensee has taken prompt compensatory actions, and implements corrective actions within a reasonable time frame. For this case, the licensee did not dispute that the requirements of Appendix R were violated; and the conditions for applying enforcement discretion case were met. Consequently, pursuant to NRC Enforcement Manual Section 8.1.7.1, Fire-Induced Circuit Failures, the NRC has decided to exercise enforcement discretion. This LER is considered closed.

4OA4 Cross-Cutting Aspects of Findings

Section 2OS1 describes a self-revealing finding involving inadequate controls of high radiation areas and a self-revealing finding (with two examples) involving adherence to RWP requirements that have cross-cutting aspects associated with human performance. In one finding, the failure of operators to notify radiation protection of the operation of the waste backwash transfer pumps directly contributed to the licensee not recognizing in a timely manner that the conditions for a high radiation area existed. In the other finding, failure of the radiation workers to comply with RWP requirements directly contributed to the intended radiological controls not being fully implemented.

4OA5 Other

.1 (Closed) TI 2515/163 - Operational Readiness of Offsite Power

a. Inspection Scope

The inspectors collected data pursuant to TI 2515/163, "Operational Readiness of Offsite Power." The inspectors reviewed the licensee's procedures related to General Design Criteria 17, "Electric Power Systems;" 10 CFR 50.63, "Loss of All Alternating Current Power;" 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants;" and the Technical Specifications for the offsite power system. Documents reviewed for this TI are listed in the attachment.

b. Findings and Observations

No findings of significance or current operability issues were identified. In accordance with TI 2515/163 reporting requirements, the inspectors provided the required data to the headquarters staff for further review.

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

In May 2005, the inspectors reviewed the final report of the Browns Ferry INPO Plant Evaluation (October 2004). This report did not identify any safety or risk significant issues that had not been previously recognized and/or examined by the NRC.

.3 Visual Inspection of Plant Systems, Structures, and Components in Containment

a. Inspection Scope

The inspectors performed visual inspections of the interior of the Browns Ferry Unit 2 containment during Refueling Outage 13. This included observation of accessible portions of plant systems, structures, components, instrumentation lines, and electrical cables inside the containment to observe material condition and inspect for aging conditions that might not have been previously recognized and addressed in the License Renewal Application.

The observations of general material conditions included: inspection of piping components for evidence of leaks or corrosion, inspection of coatings (piping, tanks, and structural components), and inspection of electrical cables and instrumentation lines for indications of deterioration. With the exception of some minor degradation of coatings on the containment liner plate, the material condition at Browns Ferry was good and no significant aging management issues were identified. The degraded coatings are being identified and also have been entered into their program to be repaired.

b. Findings

The material condition at Browns Ferry was good and no significant aging management issues were identified. No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

During the inspection period regional inspectors discussed the results their inspections with the plant manager, and other responsible staff. A followup exit was held by teleconference on June 2, 2005 with Mr. Kurt Krueger and other responsible staff to discuss the final disposition of radiation protection findings. Then, on July 7, 2005, the resident inspectors presented the integrated inspection results to the Plant Manager, Mr. Bruce Aukland, and other members of his staff, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection period.

.2 Annual Assessment Meeting Summary

During this inspection period, on May 24, 2005, the NRC's Chief of Reactor Project's Branch 6 and the Senior Resident Inspector assigned to the Browns Ferry Nuclear Plant

met with the Tennessee Valley Authority (TVA) to discuss the NRC's Reactor Oversight Process (ROP) and the Browns Ferry annual assessment of safety performance for the period of January through December 2004. The major topics addressed were: the NRC's assessment program, the results of the Browns Ferry assessment, and NRC inspection plans. Attendees included Browns Ferry site management, members of site staff, and corporate management.

This meeting was open to the public. The presentation material used for the discussion is available from the NRC's document system (ADAMS) as accession number ML052090076. ADAMS is accessible from the NRC Web site at http://www/reading-rm/pdr.html (the Public Electronic Reading Room).

4OA7 Licensee-Identified Violations

The following finding of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

- TS 5.7.1 requires that each high radiation area be barricaded and conspicuously posted as a high radiation area and entry into such areas shall be made only after entry personnel are knowledgeable of them. On August 9, 2004, three individuals working in the Unit 1 drywell entered into a high radiation area without being briefed on the radiological conditions. The highest dose rates within the high radiation area were 150 mrem per hour on contact and 120 mrem per hour at 30 cm from the source for a localized hotspot on a pipe. The general area dose rate adjacent to the hotspot was 50 mrem per hour. The area was posted and barricaded as a high radiation area; however, the barrier and posting had been moved to an area approximately six feet above the floor that was not conspicuous to the workers. As recorded by electronic dosimetry, the highest radiation field actually entered by any of the workers was 39 mrem per hour. The finding was of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. The licensee entered this finding into its corrective action program as PER 66755.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Aukland, Nuclear Plant Manager
W. Crouch, Nuclear Site Licensing & Industry Affairs Manager
R. DeLong, Site Engineering Manager
A. Elms, Nuclear Plant Operations Manager
A. Feltman, Emergency Preparedness Supervisor
H. Hodges, ISI Program Coordinator
R. Jones, Unit 1 Restart Manager
J. Kennedy, Performance Improvement Manager
R. Kerwin, Acting Site Nuclear Assurance Manager
J. Lewis, Nuclear Plant Operations Manager
D. Logalbo, Unit 3 Outage Manager
B. Marks, Emergency Services - Corporate
R. Marks, Site Support Manager
R. Marsh, Operations Superintendent
M. Mitchell, Radiation Operations Manager
J. Mitchell, Site Security
D. Nye, Maintenance & Modifications Manager
C. Ottenfeld, Radiation Protection Manager
J. Parshall, Emergency Preparedness - Corporate
D. Pond, Emergency Preparedness - Corporate
M. Skaggs, Site Vice President
J. Sparks, Unit 2 Outage Manager
J. Steele, Daily Scheduling Manager
M. Welch, TVA Level III
K. Welch, Systems Engineering Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---|---|---|
| 05000260, 296/200503-01 | NCV | Untimely and Ineffective Corrective Actions To Ensure RHR Keep Fill Containment Isolation Valves Fulfill Their Safety Function Per 10 CFR 50.65 (a)(1) (Section 1R12) |
| 05000259, 260, 296/200503-02 | NCV | Failure to Control a High Radiation Area with Dose Rates Greater than 1.0 Rem Per Hour (Section 2OS1.1) |
| 05000259, 260, 296/200503-03 | NCV | Failure to Barricade, Conspicuously Post, and Control a High Radiation Area (Section 2OS1.2) |
| 05000259, 260, 296/200503-04 | NCV | Two Examples of Failure to Comply with Radiation Work Permit Requirements (Section 2OS1.3) |

Attachment

Closed

| | | |
|---|---|---|
| 05000296/2005-001-00 | LER | Automatic Reactor Scram Due to False Main Transformer Differential Signal (Section 4OA3.1) |
| 05000260, 296/2003-004-00 | LER | Cable Separations Design Error Related To Appendix R Requirements (Section 4OA3.2) |
| 05000259, 260, 296/2515/163 | TI | Operational Readiness of Offsite Power (Section 4OA5.1) |

Discussed

None

## LIST OF DOCUMENTS REVIEWED

### Section 1R08: Inservice Inspection Activities

Procedures

NDE Procedure, N-UT-76, PDI Generic Procedure for the Ultrasonic Examination of Ferritic Piping Welds, Revision 4
NDE Procedure N-VT-3, Visual Examination of Welds, Fit-Ups, and Dimensional Examination of Weld Joints, Revision 24
NDE Procedure, N-PT-9, Liquid Penetrant Examination of ASME and ANSI Code Components and Welds, Revision 27

Other Type Documents

Self Assessment Report # BFN-ENG-03-003 Browns Ferry Inservice Inspection Program
2nd Quarter Program/Component Status, Containment Inservice Inspection (IWE)

### Section 1R12: Maintenance Effectiveness

MR - Corrective Action Program Documents

Problem Evaluation Reports (PER)

05-78722, “B” CREV Started Unexpectedly
05-78273, 0-SR–3.8.1.9 (A OL) DG A Load Acceptance Test
04-53996, Unit 3 Fuel Leak (CDE 2004-08-01 and 10 point plan)
01-46033, Fuse 3-FU1-256-1F Fuse Cleared (failed)
02-57988, C RHRSW Pump Room Penetrations
05-77985, MR Performance Criteria Exceeded
02-45690, Unit 2 Load Reject Trip
02-39166, Unit 2 Main Transformer Phase Bushing Failure Induced Trip
04-64906, Unit 2 Hi HI IPRM Level Trip

Site Working Procedures

0-SR–3.8.1.9 (A OL), DG A Load Acceptance Test, competed end of recent Unit 2 outage
O-OI-57C, 208V/120V AC Electrical System, Revision 77

Work Orders

05712889, 0-BKR -067-A/7A testing
05713773, Relay 2-PLT-099-0002BK4 is not Calibrated (TYPICAL)

Miscellaneous

System Related Event Log Unit 2 System 256 (ECCS Inverters)
TSAIL (Technical Specification LCO Logs) for Unit 2
System Status [Health] Reports for the last year for all a(1) systems
Expert Panel Meeting Minutes (Example: R40 041122 292, 4/17/05)
Calculation CDQO-303-2003-00260, 2002 Maintenance Rule Structures Inspection, 1/4/03
CDE 2004-07-04, Unit 2 Scram due to a Turbine Generator Load Reject (TYPICAL)

**Section 1EP1: Exercise Evaluation**

Plans and Procedures
Radiological Emergency Plan (Generic Part), Revision 75
Plan Effectiveness Determination (Generic Part), Revision 75
EPIL-1, Procedures, Maps, and Drawings, Revision 19

**Section 1EP4: Emergency Action Level (EAL) and Emergency Plan Changes**

Plans and Procedures

EPIP-1, Emergency Classification Procedure, Revision 38
EPIP-3, Alert, Revision 29
EPIP-4, Site Area Emergency, Revision 28
EPIP-5, General Emergency, Revision 33
EPIP-6, Activation and Operation of the TSC, Revision 23

Records and Data from 06/08/2005 exercise

Site Emergency Director's Journal (maintained by TSC Clerk)
Control Room Simulator Log
TSC Maintenance Manager's Log
Team Tracking Form (from EPIP-7, Appendix A) as completed for all OSC teams

**Section 2OS1: Access Controls to Radiologically Significant Areas**

Problem Evaluation Reports

PER 41716, On 2/24/04 painters had to stop work due to airborne contamination, 2/25/04
PER 41752, Torus evacuated due to airborne alpha concentrations, 3/2/04
PER 41952, Operations failed to notified RP prior to placing HWC in service, 4/02/04
PER 44288, Operator received dose rate alarm in radwaste building, 2/6/04
PER 45297, Mechanic was contaminated during operation of RHR system, 3/8/04
PER 47083, A review of ED alarms from entering on wrong RWP's, 4/8/04
PER 47174, Draining equipment pit increased dose rates at handrails3/24/04
PER 47319, Laborer entered HRA on wrong RWP and received dose rate alarm, 3/23/04
PER 47474, Hot spot discovered on hose reading 1700/200 millirem per hour, 3/25/04
PER 47448, Two QC inspectors entered on wrong RWP and received dose rate alarm, 3/26/04
PER 47569, Maintenance worker entered HRA on wrong RWP, 3/16/04
PER 47669, Operator entered HRA on wrong RWP, 3/22/04
PER 47696, A 150 R/hr hot spot discovered during cleanout of the 3A hotwell, 3/21/04
PER 47708, 5 persons contaminated as the result of a spill, 3/10/04
PER 47772, Door to locked high radiation area found unsecured, 3/6/04
PER 47873, During removal of Control Rod Drives inconsistent dose rates recorded, 3/09/04
PER 48066, On the 23rd a Unit 1 laborer picked up 70 mrem picking up trash bag, 2/24/04
PER 48181, During investigation of dose rate alarm an individual entered on wrong RWP, 2/19/04
PER 60387, Operator received dose rate alarm, 5/1/04
PER 60421, Respiratory protection during Unit 3 equipment pit decontamination, 5/1/04
PER 62250, Individual in U2 on a U1 RWP and received dose rate alarm, 5/27/04
PER 63286, Two level 2 PC's from improper removal of contamination barrier, 6/15/04
PER 65860, Wrong scaffold location specified costs 60 mrem, 7/27/04
PER 66755, Unauthorized entry into a posted high radiation area, 8/9/04
PER 69750, Working on wrong RWP, 10/03/04
PER 72725, Emergent high radiation area in radwaste building, 11/24/04
PER 73009, Emergent high radiation area trend, 12/02/04
PER 74189, Laborers signed onto the wrong RWP, 12/28/04
PER 75141, Two workers working in overhead not briefed and in wrong unit, 1/19/05

Audits and Self-Assessments
BFN-RP-04-002, High Radiation Area Controls
BFN-RP–04-006, Radworker Practices/Radcon Practices

Radiation Work Permits
05290001 U2C13 Outage -Refuel Floor Activities
05280853 U2C13 Outage - Under-Vessel Work Activities
05282113 U2C13 Drywell Maintenance Carpenter Support
05282198 U2C13 Drywell Replace Reactor Head Vent Piping
05272072 U2C13 Reactor Building ISI
05272092 U2C13 Reactor Building IWE
05282003 U2C13 Drywell ISE

Procedures
SPP (Standard Programs and Processes)-3.1, Corrective Action Program, Revision 7
SPP-5.1, Radiological Controls, Revision 5
RCI (Radiological Control Instructions)-2.1, External Dosimetry Program Implementation, Revision 52
RCI-9.1, Radiation Work Permit Preparation and Administration, Revision 45
RCI-17, Control of High Radiation Areas and Very High Radiation Areas, Revision 48
RCI-23, Hot Spot Tracking Program, Revision 7
RCI-26, Radiation Protection Standards and Expectations, Revision 3
0-OI (Operating Instruction)-77D, Backwash Receivers and Phase Separators System, Revision 24
0-OI-77D, Backwash Receivers and Phase Separators System, Revision 25

Miscellaneous Documents
BFNP Internal Dose Assessment Greater than 50 mrem CEDE, Intake Date June 15, 2004, including whole body count, fecal analysis, and dose assessment
Spreadsheet: BFN U2C13 Investigation Counts (internal dose assessments for individuals exceeding 20 mrem CEDE, dated April 7, 2005
Abacus-Plus Printouts: whole body count results for contaminated individual, initial estimate 46 mrem CEDE, intake date April 6, 2005
Report: BFN - Unit Two Cycle 13 Bioassay Measurements, dated March 31, 2005

**Section 2OS2: ALARA Planning and Controls**

Self-Assessments and Audits
BFN-RP-04-008, Focused Self-Assessment: Electronic Dosimeter Issues, 12/1-12/03
BFN-RP-04-006, Focused Self Assessment: Radworker Practices / Radcon Practices, 10/6-18/03
BFR-RIM-03-002, Unit 1 Restart ALARA Program Self-Assessment, 5/12-15/03
BFR-RRC-04-002, Cobalt Source Term Reduction, 9/20-24/04
BFR-RRC-04-001, Unit 1 Restart ALARA Program Self-Assessment, 8/16-19/04

Records, Reports and Data
Fiscal Year 2004 Annual ALARA Report (Units 2 and 3)
U3C11 Outage ALARA Report
Unit 1 Radiological Protection/ALARA Status Update, 3/21/05
Browns Ferry Nuclear Plant Site Dose Reduction Strategy, 9/22/04
Departmental Dose Reduction Plans (2004): Radiation Protection, Operations, Chemistry/Environmental, Modifications, Outage and Scheduling, Training, Maintenance, and Engineering
Table: List of Recurrent Work with ALARA Concerns and Actions Taken to Lessen Impact or Prevent Recurrence
Graph: TVA-Browns Ferry Unit 2 Recirc Pipe Dose Rates, July 1991 - January 2005
Graph: TVA-Browns Ferry Unit 3 Recirc Pipe Dose Rates, November 1995 - Feburary 2005
Spreadsheet: Collective Exposure Trends.xls
Spreadsheet: Declared Pregnancies, 2004
Exposure Report for Declared Pregnant Female and HIS-20 Dosimetry History by Individual for two declared pregnant females (declarations dated 9/27/04 and 11/10/04)
Table: BFN Annual ALARA Goals Dose Distribution by Section, 2002-2004

Chemistry CWPS Treatment Dose Results (graphs depicting Chemistry/Environmental Dose Performance comparing 2005 actual and goal with 2004 actual)

As Low As Reasonably Achievable/Radwaste Committee Meeting Minutes: 6/23/04, 6/30/04, 7/7/04, 7/14/04, 7/3/04, 7/30/04, 8/6/04, 8/13/04, 8/20/04, 10/29/04, 12/15/04, 12/17/04, 1/7/05, 1/14/05, 1/18/05, ½5/05, 2/1/05, 2/22/05
Survey No. 030105-3, Initial Contamination Survey of DW after the bellows flooding, 2/28/05

ALARA Planning Reports (APR)
APR 04-0041, U3C11 Outage - Refuel Floor Activities, Revision 2
APR 04-0062, U3C11 Outage - Encapsulate 3B and 3C RWCU Heat Exchangers, Revision 1
APR 05-0063, U2C13 Outage - Torus Desludge/Coating Inspection/Repair & ECCS Ring Header Cleaning, Revision 0
APR 04-0041 Post Job Report
APR 04-0062 Post Job Report

Temporary Shielding Requests (TSR)
TSR 04-0019, U2C13 Outage Drywell, 1/14/05
TSR 04-0032, U1/U2 Reactor Building 664' Elev. Refuel Floor Spent Fuel Storage Pool Transfer Canal, 12/6/04
TSR 05-0006, Unit 2 Drywell 550' Elev. Sub-Pile Room Floor Drain Grating Cover, 3/23/05
TSR 04-0041, U2C13 Reactor Cavity Inner and Outer Bellows, 3/21/05
TSR 02-0005, U3 Control Rod Drive System Drive Water Filters 3A and 3B

Radiation Work Permits (RWP)
RWP 05220742, Maintenance on RHR System (High Rad, Dose Control, Various Dress)
RWP 05222222, U2 RWCU HX Room Repair/Replace 2-FCV-069-0002 (High Rad, Dose Control, Various Dress)
RWP 05260081, U2C13 Turbine U/S Condenser Modifications / Repairs (Various Dress)
RWP 05260087, U2C13 Turbine I/S Condenser Modifications / Repairs (High Rad/Tyvec Hood/Various Dress)
RWP 05272322, U2C13, Rx Bldg, Disassemble/Repair Valve 2-74-57
RWP 05280002, U2C13, Drywell, Miscellaneous Maintenance
RWP 05280004, U2C13, Drywell, Miscellaneous Maintenance, Outside Support
RWP 05282032, U2C13 Drywell Snubber Maintenance (High Rad, Various Dress)
RWP 05282112, U2C13 Drywell Maintenance Carpenter Support (High Rad, Various Dress)
RWP 05282042, U2C13 Drywell MSRV Maintenance (High Rad, Various Dress)
RWP 05280912, U2C13 Drywell OPS Support Drywell/ Reactor Steam Tunnel (High Rad, Various Dress)
RWP 05290025, U2C13 RFF Vessel Maintenance / Support (High Rad, Resp. and Various Dress)
RWP 05290025, U2C13, Refuel Floor, Camera #2 I/S Decon
RWP 05333222, Replace/Repair RWCU Pump Mech. Seal (High Rad, Dose Control, Various Dress)
RWP 05330692, Maintenance on RWCU System (High Rad, Dose Control, Various Dress)
RWP 05040613, Maintenance in F and D Valve Room (LHRA, Dose Control, Various Dress)

Problem Evaluation Reports (PER)
PER 79075, Demineralizer Contamination, 3/21/05
PER 69454, Potential contamination in clean RCA trend PER, 9/28/04
PER 78229, Poor radworker practices resulted in contamination of technician, PCE 20050028, 3/22/05
PER 74390, Wrong valve thermographed in LHRA, 1/4/05
PER 74443, C-zone not address in RadCon brief, 1/5/05
PER 75415, Employees picked up excessive dose because lead blankets not placed in correct spot, 2/27/05
PER 49384, Actual dose accrued to complete WO#03-005760-000 and WO#03-015920-000 was 732 mrem vs. 300 mrem estimate, 10/7/03
PER 77623, U1 drywell spill during filling of reactor outer bellows with demin water, 3/1/05
PER 76843, U1 personnel concerned with expectations to stay in RCA for 7 ½ hours per day, 2/16/05
PER 65400, Non-DOP tested vacuum use, 7/14/04
PER 68875, Need for empirical dose study to develop dose goals, 9/16/04
PER 68883, Lack of knowledge of Radiological Survey Maps, 9/16/04

Procedures
RCI-1.1, Field Operations Program Implementation, Revision 116
RCI-15.1, Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable, Revision 31
RCI-15.2, Temporary Shielding, Revision 20
RCI-15.3, ALARA/Radwaste Committee, Revision 16
RCI-15.4, ALARA/Radwaste Volume Reduction Suggestion Program, Revision 6
RCI-17, Control of High Radiation Areas and Very High Radiation Areas, Revision 48
RCI-24, Control of Vacuum Cleaners and Portable HEPA Units within the RCA, Revision 20
RCI-26, Radiation Protection Standards and Expectations, Revision 3
SPP-5.1, Radiological Controls, Revision 5
SPP-5.2, ALARA Program, Revision 2
SPP-6.1-3, TVAN Pre-Job Brief Checklist
RCDP (Radiological Control Department Procedures)-10, Personnel Contamination Reporting, Revision 3

**Section 2PS2: Radioactive Material Processing and Transportation**

Procedures, Manuals, and Guides
SPP-5.0, Radiological and Chemistry Control, Revision 1
SPP-5.1, Radiological Controls, Revision 5
SPP-5.2, ALARA Program, Revision 2
SPP-5.6, Controlling Byproduct and Source Material, Revision 4
SPP-5.7, Radwaste Management, Revision 1
SPP-5.8, Special Nuclear Material Control, Revision 5
SPP-5.9, Radiological Control and Radioactive Material Shipment Augmented Quality Assurance Program, Revision 6
RCDP-1, Conduct of Radiological Controls, Revision 2
RCDP-2, Conduct of Chemistry, Revision 1
RCI-1.1, Field Operations Program Implementation, Revision 116
RCI-7, Receipt of Radioactive Materials, Revision 16

RCI-15.1, Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable (ALARA), Revision 31
RCI-15.3, ALARA/Radwaste Committee, Revision 16
RCI-26, Radiation Protection Standards and Expectations, Revision 3
RCI-27, Source Term Reduction and Control, Revision 2
RWTP (Rad Waste Technical Procedure) -100, Radioactive Material/ Waste Shipments, Revision 2
RWTP -101, 10 CFR 61 Characterization, Revision 0
RWTP-102, Use of Casks, Revision 1
0-OI-77E, Solid Radwaste, Revision 33
Browns Ferry Nuclear Plant Process Control Program Manual (PCP), Revision 3

CAP Documents
Self Assessment Report BFN-RP-05-001, Radwaste Reduction (Focused), 12/13-15, 2004
PER 40218, Incoming rad material was not escorted by RP for 10 minutes while paperwork issue was being resolved
PER 40971, Use of painted carbon steel is questioned for moisture separator/dryer strongbacks vs Stainless Steel for ease of decon.
PER 48938, Laborer received facial contamination and minor uptake while cleaning radwaste phase separators
PER 54155, Nuclear Assurance audit identified minor labeling problems in PASS area.
PER 75241, Rad waste shipment #050122 was above allowable weight by 4000 lb on one axle when weighed by DOT weigh station. Discrepancy in weight of sealand container 43,560
(DOT) 37,200 (TVA crane load cell) over all shipment weight 76,600 vs DOT limit 80,000 lb.

Shipping Records and Radwaste Data
Shipment 050208, Cross around valves to Wylie, 2/9/05
Shipment 050126, RWCU/ CWPS Resin to Barnwell SC, 01/26/05
Shipment 040104, LPRMS to GE Reuter Stokes, 1/10/04
Shipment 040509, Cask containing irradiated hardware to Barnwell (Crushed control rod blades), 5/27/04
Shipment 050408, Laundry to Unitech, 4/7/05 (Shipment observed)
Shipment 030716, CNS 14-170 cask of dewatered resin, 7/21/03
10 CFR 61 Analysis Report (Smears from all 3 units), 7/14/04
10 CFR 61 Analysis Report (CWPS Resin), 7/1/04
10 CFR 61 Analysis Report ( RWCU Resin) 7/6/04
Copies of training certificates for personnel involved in transportation of radioactive waste/ material

**Section 4OA1.1: Performance Indicator Verification - Emergency Preparedness**

Procedures

EPIL (Emergency Preparedness Instruction Letter) -15, Emergency Preparedness Performance Indicators, Revision 9

Records and Data

Documentation (scenario, time line, event notification forms, player logs and completed procedures) of ERO off-year exercise on 08/24/2004
Documentation of DEP opportunities from Operations Simulator evaluations on 04/21/2004, 04/26/2004, 06/21/2004, 12/07/2004
Selected training records of drill/exercise participation by ERO personnel during 2003-2004
Siren weekly and monthly tests 6/04 thru 3/05
Siren Maintenance records 6/04 thru 3/05

**Section 4OA1.2: Performance Indicator Verification - Radiation Protection**

Procedures
SPP-3.1, Corrective Action Program, Revision7
SPP-3.4, Performance Indicator and MOR Submittal Using INPO Consolidated Entry, Revision 2

Documents/Records
Browns Ferry Nuclear Plant (BFN) - Units 1,2 and 3- Annual Radiological Environmental Operating Report (AREOR) January Through December 2003 [ML041400033]
Browns Ferry, Units 1,2, and 3- Annual Radioactive Effluent Release (ARER) Report, January through December 2003 [ML041240353]
Effluent Release Permit-Continuous Plant Main Stack March 2005
Effluent Release Permit-Batch Liquid Release December 2004
Preliminary Effluent Release Summary -January Through December 2004
Internal Dose Assessment including both in-vivo and in-vitro analysis results, dated 6/15/2004

**Section 4OA5.1: TI 2515/163 - Operational Readiness of Offsite Power**

Procedures

TVAN SPP-7.1, On-line Work Management
0-AOI-57-1A, Loss of Offsite Power (161 and 500 KV)/Station Blackout
0-GOI-300-1, Attachment 15.23, Emergency Load Curtailment - TVA Power System Alerts
OPDP-9, Emergent Issue Response

Documents

Memorandum dated June 17, 2004, Browns Ferry Nuclear Plant Grid Operating Guide For BFN - West Point 500 KV Transmission Line And/Or BFN - Trinity 161KV Transmission Line Outage(s)

PER 83217

BFN SENTINEL computer tool guidance