



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
61 FORSYTH STREET, SW, SUITE 23T85  
ATLANTA, GEORGIA 30303-8931

July 27, 2006

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: SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT  
05000327/2006003 AND 05000328/2006003

Dear Mr. Singer:

On June 30, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Sequoyah Nuclear Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on July 7, 2006, with Mr. D. Kulisek and other members of your staff.

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

The report documents one NRC-identified finding and one self-revealing finding of very low safety significance (Green). One of these findings was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these two findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV in this 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 Resident Inspector at the Sequoyah Nuclear Power Plant.

TVA

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Sincerely,

*/RA/*

Malcolm T. Widmann, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Docket Nos.: 50-327, 50-328  
License Nos.: DPR-77, DPR-79

Enclosure: Inspection Report 05000327/2006003 and 05000328/2006003  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Ashok S. Bhatnagar  
Senior Vice President  
Nuclear Operations  
Tennessee Valley Authority  
Electronic Mail Distribution

Preston D. Swafford  
Senior Vice President  
Nuclear Support  
Tennessee Valley Authority  
Electronic Mail Distribution

Larry S. Bryant, Vice President  
Nuclear Engineering &  
Technical Services  
Tennessee Valley Authority  
Electronic Mail Distribution

Randy Douet  
Site Vice President  
Sequoyah Nuclear Plant  
Electronic Mail Distribution

General Counsel  
Tennessee Valley Authority  
Electronic Mail Distribution

John C. Fornicola, Manager  
Nuclear Assurance and Licensing  
Tennessee Valley Authority  
Electronic Mail Distribution

Glenn W. Morris, Manager  
Corporate Nuclear Licensing and  
Industry Affairs  
Tennessee Valley Authority  
Electronic Mail Distribution

Paul L. Pace, Manager  
Licensing and Industry Affairs  
ATTN: James D. Smith  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

David A. Kulisek, Plant Manager  
Sequoyah Nuclear Plant  
Tennessee Valley Authority  
Electronic Mail Distribution

Lawrence E. Nanney, Director  
TN Dept. of Environment & Conservation  
Division of Radiological Health  
Electronic Mail Distribution

County Mayor  
Hamilton County Courthouse  
Chattanooga, TN 37402-2801

Ann Harris  
341 Swing Loop  
Rockwood, TN 37854

James H. Bassham, Director  
Tennessee Emergency Management  
Agency  
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Report to K.W. Singer from Malcolm T. Widmann dated July 27, 2006

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT  
05000327/2006003 AND 05000328/2006003

Distribution w/encl:

D. Pickett, NRR  
L. Slack, RII EICS  
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-327, 50-328

License Nos: DPR-77, DPR-79

Report No: 05000327/2006003 and 05000328/2006003

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant

Location: Sequoyah Access Road  
Soddy-Daisy, TN 37379

Dates: April 1, 2006 - June 30, 2006

Inspectors: S. Freeman, Senior Resident Inspector  
M. Speck, Resident Inspector  
J. Griffis, Health Physicist (Sections 2PS1, 4OA1)  
R. Hamilton, Senior Health Physicist (Section 2PS3)  
W. Loo, Senior Health Physicist (Sections 2OS3, 4OA1, 4OA5)  
T. Nazario, Reactor Inspector (Section 1R08)

Approved by: M. Widmann, Chief  
Reactor Projects Branch 6  
Division of Reactor Projects

Enclosure

## SUMMARY OF FINDINGS

IR 05000327/2006003, IR 05000328/2006003; 04/01/2006 - 06/30/2006; Sequoyah Nuclear Plant, Units 1 & 2; Operability Evaluations, Event Response.

The report covered a three-month period of inspection by resident inspectors, three regional health physicists and one regional inspector. One NRC-identified Green finding, which was also a non-cited violation, and one self-revealing Green finding were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. 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: Initiating Events

- Green. A self-revealing finding was identified for failure to implement effective preventive maintenance procedures to identify and correct a loose isolated phase bus duct gasket before its attachment degraded to the point of allowing the gasket to contact the bus duct conductor and cause a trip. The licensee entered the problem into their corrective action program and corrected the procedures.

This finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone and resulted in an upset in plant stability by causing a reactor trip. While the finding resulted in an actual trip, the inspectors determined that it did not contribute to the likelihood of a primary or secondary system loss of coolant accident initiator, did not contribute to a loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood. Thus, the finding was considered to be of very low safety significance. (Section 4OA3)

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of Technical Specification 6.8.1 for failure to follow procedure when entering containment at the beginning of the Unit 2 Cycle 13 outage. The doors between the raceway and the lower part of the polar crane wall were left unsecured while in Mode 3. This would result in a lower containment sump level than was assumed in design basis calculations. The licensee immediately secured the doors and changed the procedure to emphasize the need to close and secure the doors.

This finding was more than minor because, although the licensee demonstrated that sufficient water was available for the containment sump to remain operable, the functional evaluation used assumptions substantially different from those in the design basis calculations with a significant reduction in margin in the calculation output. This finding was of very low safety significance because the

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degraded condition did not result in a loss of safety function of one or more trains and was not potentially risk-significant due to possible external events. (Section 1R15)

B. Licensee-Identified Violations

A violation of very low safety significance, which was identified by the licensee, was reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and corrective actions are listed in Section 4OA7.



## REPORT DETAILS

### Summary of Plant Status:

Unit 1 began the period at 90% rated thermal power (RTP). On April 10, 2006, the unit was shutdown for a scheduled refueling outage. Outage activities were completed and the unit was restarted on May 14, 2006. The unit returned to 100% RTP on May 18, 2006, and remained at or near 100% RTP through the end of the inspection period.

Unit 2 began the period at 100% RTP and remained there for the entire inspection period.

## **1. REACTOR SAFETY**

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

#### 1R04 Equipment Alignment

##### a. Inspection Scope

Partial System Walkdowns. The inspectors performed a partial walkdown of the following three systems to verify the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify any discrepancies that could impact the function of the system and, thereby, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control system components, and verified that selected breakers, valves, and support equipment were in the correct position to support system operation. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program. Documents reviewed are listed in the Attachment.

- Invertors, Vital Instrument Boards, and Vital Battery Boards during Breaker Testing on Vital Instrument Board 1-II
- Containment Spray Train 1A during Maintenance on Train 1B
- Motor-Driven Auxiliary Feedwater (AFW) Train 1A and Unit 1 Turbine-Driven AFW during maintenance on Motor-Driven AFW Train 1B

##### b. Findings

No findings of significance were identified.

#### 1R05 Fire Protection

##### a. Inspection Scope

The inspectors conducted a tour of the nine areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that combustibles and ignition sources were controlled in accordance with the licensee's administrative procedures; that fire detection and suppression equipment was available for use; that passive fire barriers were maintained in good material condition; and that

compensatory measures for out-of-service, degraded, or inoperable fire protection equipment were implemented in accordance with the licensee's fire plan. Documents reviewed are listed in the Attachment.

- Control Building Elevation 669 (Mechanical Equipment Room, 250-VDC Battery and Battery Board Rooms)
- Control Building Elevation 706 (Cable Spreading Room)
- Control Building Elevation 685 (Auxiliary Instrument Rooms)
- Control Building Elevation 732 (Mechanical Equipment Room and Relay Room)
- Auxiliary Building Elevation 690 (Corridor)
- Auxiliary Building Elevation 749 (480V Board Rooms and Battery Rooms)
- Auxiliary Building Elevation 714 (Corridor)
- Essential Raw Cooling Water (ERCW) Building
- Emergency Diesel Generator Building

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Internal Flooding

a. Inspection Scope

The inspectors reviewed the licensee's moderate energy line break flooding study to verify that it was consistent with General Design Criterion 4 of 10 CFR 50, Appendix A and that breaks in pipes within the auxiliary building would not incapacitate equipment important to safety. Since the licensee did not include line breaks from portions of the refueling water storage tank (RWST) piping that could not be isolated in the moderate energy line break study, the inspectors reviewed the licensee's critical crack analysis to ensure that line stresses were calculated in accordance with General Design Criterion 4 and the NRC standard review plan. The inspectors also walked down the RWST supply headers in the auxiliary building supply tunnels to verify the material condition and to ensure no other items could cause a line break. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors observed performance and reviewed the results of the following activity to verify that the acceptance criteria and results appropriately considered differences between testing conditions and design conditions; that test results were appropriately categorized against preestablished acceptance criteria; that the frequency of testing was

sufficient to detect degradation prior to loss of heat removal capability below design basis values; and that test results considered test instrument inaccuracies and differences.

- 1-PI-SFT-070-001.0, Performance Testing of Component Cooling Heat Exchangers 1A1, 1A2, Revision 13

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

.1 Piping and Pressure Boundary Systems ISI

a. Inspection Scope

From April 17-21, 2006, the inspectors reviewed the implementation of the licensee's ISI program for monitoring degradation of the reactor coolant system boundary and the risk significant piping system boundaries for Unit 1. The inspectors selected a sample of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI required examinations and Code components in order of risk priority as identified in Section 71111.08-03 of inspection procedure 71111.08, Inservice Inspection Activities, based upon the ISI activities available for review during the onsite inspection period.

The inspectors conducted an on-site review of nondestructive examination (NDE) activities to evaluate compliance with Technical Specifications (TS), ASME Section XI, 1989 Edition no Addenda, and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of ASME Section XI, IWB-3000 or IWC-3000 acceptance standards. Specifically, the inspectors observed the following examinations and/or examination records:

Ultrasonic Testing (UT)

- AFWF-150, 4" pipe to reducer, ferritic pipe weld
- AFWF-172, 4" pipe to reducer, ferritic pipe weld

Visual Testing (VT)

- VT-3 of support SGH-4-1
- VT-2-E of PZR nozzle to safe end RCW-29-SE
- VT-1 of bolting for 1-63-641-BC, RHR
- VT-1 of bolting for 1-63-632-BC, SIS

Radiographic Testing (RT)

- Weld 1-SI-176B, -176C and 176D on 1-VLV-063-0634 (Work Order (WO) 04-783562-001)

Welding

- 1-VLV-063-0155 (WO 04-777535-000)
- 1-VLV-062-0542 (WO 03-013748-000)

Qualification and certification records for examiners, inspection equipment, and consumables, along with the applicable NDE procedures, for the above ISI examination activities were reviewed and compared to requirements stated in ASME Section V and Section XI.

The inspectors performed a review of piping system ISI related problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed corrective action documents to confirm that the licensee had appropriately described the scope of the problems. Additionally, the inspectors' review included confirmation that the licensee had an appropriate threshold for identifying issues and had implemented effective corrective actions. The inspectors evaluated the threshold for identifying issues through interviews with licensee staff and review of licensee actions to incorporate lessons learned from industry issues related to the ISI program. The inspectors performed these reviews to ensure compliance with 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" requirements. The corrective action documents reviewed by the inspectors are listed in the Attachment.

The inspectors also reviewed L29 060316 802, "Technical Review and Justification For Not Performing Primary or Secondary Inspections of the Steam Generators, SQN Unit 1 Cycle 14 Outage."

b. Findings

No findings of significance were identified.

.2 Boric Acid Corrosion Control (BACC) ISIa. Inspection Scope

The inspectors reviewed the licensee's BACC activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05 "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary" and Bulletin 2002-01 "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity."

The inspectors conducted an on-site record review as well as an independent walkdown of parts of the reactor building that are not normally accessible during at-power operations to evaluate compliance with licensee BACC program requirements. In particular, the inspectors assessed whether the visual examinations focused on locations where boric acid leaks can cause degradation of safety significant components and that degraded or non-conforming conditions were properly identified in the licensee's corrective action system.

The inspectors reviewed a sample of engineering evaluations completed for boric acid found on reactor coolant system piping and components. The inspectors also reviewed licensee corrective actions implemented for evidence of boric acid leakage to confirm

that they were consistent with requirements of Section XI of the ASME Code and 10 CFR 50, Appendix B, Criterion XVI.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors observed as-found simulator training on June 5, 2006. The training involved a condensate booster pump trip followed by a reactor coolant system (RCS) leak that increased to the point of requiring a reactor trip and safety injection. When required, the residual heat removal (RHR) suction failed to swap automatically to the containment sump. The inspectors observed crew performance in terms of communications; ability to take timely and proper actions; prioritizing, interpreting and verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high risk operator actions; oversight and direction provided by shift manager, including the ability to identify and implement appropriate TS actions; and group dynamics involved in crew performance. The inspectors also observed the evaluators' critique and reviewed simulator fidelity to verify that it matched actual plant response. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following two maintenance activities to verify the effectiveness of the activities in terms of: 1) appropriate work practices; 2) identifying and addressing common cause failures; 3) scoping in accordance with 10 CFR 50.65(b); 4) characterizing reliability issues for performance; 5) trending key parameters for condition monitoring; 6) charging unavailability for performance; 7) classification in accordance with 10 CFR 50.65(a)(1) or (a)(2); 8) appropriateness of performance criteria for systems, structures, and components (SSCs) and functions classified as (a)(2); and 9) appropriateness of goals and corrective actions for SSCs and functions classified as (a)(1). Documents reviewed are listed in the Attachment.

- Problem Evaluation Report (PER) 103323, Preventable Functional Failure That Caused a U2 Trip Not Presented to Expert Panel
- Radiation Monitor 0-RM-90-122 Multiple High Radiation Alarms and High Background Counts

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the following six activities to verify that the appropriate risk assessments were performed prior to removing equipment from service for maintenance. The inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors verified the appropriate use of the licensee's risk assessment tool and risk categories in accordance with Procedure SPP-7.1, On-Line Work Management, Revision 7. Documents reviewed are listed in the Attachment.

- Essential Raw Cooling Water (ERCW) Supply Header 1B removed from service for maintenance
- Common Station Service Transformer B removed from service for maintenance
- Unit 1 Outage Risk During Head Lift with RCS Inventory at Flange Level
- Unit 1 Outage Risk During Reduced Inventory and Mid-loop Operations
- Main Control Room Chiller B-Train removed from service for maintenance
- Motor-Driven AFW Pump 1B removed from service for maintenance

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the five operability evaluations described in the PERs listed below, the inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) to verify that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to verify that the compensatory measures worked as stated and the measures were adequately controlled. The inspectors also reviewed a sampling of PERs to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

- PER 100843, Pinhole Leak on ERCW Pipe
- PER 103341, Missed Post Maintenance Test on Motor Driven AFW Pump Auto-Start Circuitry

- PERs 81622 and 103226, Unit 2 Lower Containment Crane Wall Doors Open in Mode 3
- PER 102415, Bent Sensing Line on Containment Sump Level Instrument 1-LT-63-177
- PER 104839, Battery Charger Bolting Issue

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of TS 6.8.1.c for failure to follow procedure when entering containment at the beginning of the Unit 2 Cycle 13 outage. The doors between the raceway and the lower part of the polar crane wall were left unsecured while in Mode 3, which would result in a lower water level for the containment sump than was assumed in design basis calculations.

Description: On April 25, 2005, the inspectors conducted a containment tour shortly after the licensee shut down Unit 2 to start the Cycle 13 outage. During the tour, while the unit was still in Mode 3, the inspectors noted that the doors through the polar crane wall separating the raceway from the containment sump were not secured. Because the crane wall served as the containment sump boundary and the UFSAR assumed the wall would be sealed to Elevation 693, this resulted in a situation whereby water could flow from inside the polar crane wall into the raceway. This would result in a lower containment sump level than assumed in the design basis calculations. The doors were unsecured because licensee radiation protection and engineering personnel had already entered containment at the time the inspectors observed the doors. Procedure 0-SI-OPS-000-011.0, Containment Access Control During Modes 1-4, Revision 17, required these doors to be closed and secured. Upon notification, the licensee immediately secured the doors.

The licensee performed a functional evaluation of this situation and concluded that the sump had remained operable with the doors not secured. The evaluation determined that even with water able to pass from the sump into the raceway, sufficient water would have been available to provide the level needed to prevent vortexing or loss of net positive suction head on any of the emergency core cooling system (ECCS) pumps. The inspectors reviewed this evaluation and the design basis calculations for sump level and noted that the licensee made assumptions substantially different from those in the design basis calculations. First, the design calculation for a small break loss of coolant accident (LOCA) assumed that no ice melt was needed to provide the minimum level in the sump. In the functional evaluation for this issue, the licensee assumed 484,000 pounds of ice melt in order to assure the minimum level. Secondly, the design calculation for a large break LOCA assumed that RWST volume equivalent to the upper limit of the low level setpoint (188 inches) would be pumped into the containment, whereas the licensee evaluation assumed that the RWST would be pumped down to the low-low level setpoint of 54.2 inches. The result of the evaluation with this assumption was a reduction in calculated level from 9.06 ft to 6.04 ft. The inspectors determined this to be a significant reduction in the margin of water available above the minimum required sump level of 5.0 ft.

Analysis: The inspectors determined that the above assumptions were within reasonable engineering judgement given that the containment contained greater than 2,000,000 pounds of ice and that emergency procedures directed operators to continue injection from the RWST until the low-low setpoint was reached in a large break LOCA. However, the use of different assumptions and reduced margin from the design basis calculations made this issue more than minor. This was similar to re-performing the accident analysis calculations with a significant reduction in margin in the calculation output as discussed in Manual Chapter 612, Appendix E, section 3, examples i, j, and k. This finding is associated with the Mitigating Systems Cornerstone since the containment sump is part of ECCS and containment cooling system flow paths. The finding was determined to be of very low safety significance (Green) because the degraded condition did not result in a loss of safety function of one or more trains and was not potentially risk-significant due to possible external events.

Enforcement: TS 6.8.1.c requires that procedures be implemented covering surveillance and test activities of safety-related equipment. Unit 2 TS Surveillance Requirement 4.5.2 requires the ECCS subsystem to be demonstrated operable. Procedure 0-SI-OPS-000-011.0, which implements portions of Surveillance Requirement 4.5.2, requires the doors through the polar crane wall separating the raceway from the containment sump be secured in Modes 1-4. Contrary to this, on April 25, 2005, licensee personnel failed to follow Procedure 0-SI-OPS-000-011.0 when they did not secure the doors while Unit 2 was in Mode 3. Because this violation was determined to be of very low safety significance (Green), it is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000328/2006003-01, Failure to Secure Crane Wall Doors in Mode 3. This violation is in the licensee's corrective action program as PERs 81622 and 103226.

#### 1R17 Permanent Plant Modifications

##### a. Inspection Scope

The inspectors reviewed Design Change Notice D21926-A, Add Unit 1 ECCS High Point Vents, and interviewed engineering personnel regarding the modification and associated post-modification testing to verify that 1) the design bases, licensing bases, and performance capability had not been degraded through this modification and 2) the modification was not performed during increased risk-significant configurations that placed the plant in an unsafe condition. The inspectors also observed modification work in progress and post-modification testing, and reviewed applicable sections of the UFSAR, plant modification procedures, system drawings, supporting analyses, technical specifications, and related PERs.

##### b. Findings

No findings of significance were identified.



1R19 Post-Maintenance Testinga. Inspection Scope

The inspectors reviewed the eight post-maintenance tests listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee's test procedure to verify that the procedure adequately tested the safety function(s) that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed the test data, to verify that test results adequately demonstrated restoration of the affected safety function(s). Documents reviewed are listed in the Attachment.

- WO 06-773463-000, Change Out Transfer Switch 1-XS-57-71
- WO 06-771455-000, Perform Thrust Clearance Check on SI Pump 1A
- WO 06-773113-000, Replace Zone Switch on MSIV 1-FCV-1-22
- WO 04-771832-000, Replace Static Switch on Vital Inverter 1-IV
- WO 06-773181-000, Containment Spray Pump 1A Slave Relay Troubleshooting
- WO 05-778409-000, Repair Reactor Vessel Head Vent Valves
- WO 05-771462-000, Rebuild 1-FCV-1-52, Terry Turbine Governor Valve
- WO 04-783562-000, Repair 1-VLV-063-0634, Cold Leg Accumulator 3 RHR Discharge Check Valve

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activitiesa. Inspection Scope

For the Unit 1 refueling outage that began on April 10, 2006, the inspectors evaluated licensee activities to verify that the licensee considered risk in developing outage schedules, followed risk reduction methods developed to control plant configuration, developed mitigation strategies for the loss of key safety functions, and adhered to operating license and TS requirements that ensure defense-in-depth. The inspectors also walked down portions of Unit 1 not normally accessible during at-power operations to verify that safety-related and risk-significant SSCs were maintained in an operable condition. Specifically, between April 10, 2006 and May 15, 2006, the inspectors performed inspections and reviews of the following outage activities. Documents reviewed are listed in the Attachment.

- Outage Plan. The inspectors reviewed the outage safety plan and contingency plans to confirm that the licensee had appropriately considered risk, industry experience, and previous site-specific problems in developing and implementing a plan that assured maintenance of defense-in-depth.

- **Reactor Shutdown.** The inspectors observed the shutdown in the control room from the time the reactor was tripped until operators placed it on the RHR system for decay heat removal to verify that TS cooldown restrictions were followed. The inspectors also toured the lower containment as soon as practicable after reactor shutdown to observe the general condition of the RCS and ECCS components and to look for indications of previously unidentified leakage inside the polar crane wall.
- **Licensee Control of Outage Activities.** On a daily basis, the inspectors attended the licensee's outage turnover meeting, reviewed PERs, and reviewed the defense-in-depth status sheets to verify that status control was commensurate with the outage safety plan and in compliance with the applicable TS when taking equipment out-of-service. The inspectors further toured the main control room and areas of the plant daily to ensure that the following key safety functions were maintained in accordance with the outage safety plan and TS: electrical power, decay heat removal, spent fuel cooling, inventory control, reactivity control, and containment closure. The inspectors also observed a tagout of the ERCW System 1-B supply header to verify that the equipment was appropriately configured to safely support the work or testing. To ensure that RCS level instrumentation was properly installed and configured to give accurate information, the inspectors reviewed the installation of the Mansell level monitoring system. Specifically, the inspectors discussed the system with engineering, walked it down to verify that it was installed in accordance with procedures and adequately protected from inadvertent damage, verified that Mansell indication properly overlapped with pressurizer level instruments during pressurizer draindown, verified that operators properly set level alarms to procedurally required setpoints, and verified that the system consistently tracked while lowering RCS level to reduced inventory conditions. The inspectors also observed operators compare the Mansell indications with locally-installed ultrasonic level indicators during entry into mid-loop conditions.
- **Refueling Activities.** The inspectors observed fuel movement from the main control room, at the spent fuel pool, and at the refueling cavity in order to verify compliance with TS and that each assembly was properly tracked from core offload to core reload. In order to verify proper licensee control of foreign material, the inspectors verified that personnel were properly checked before entering any foreign material exclusion (FME) areas, reviewed FME procedures, and verified that the licensee followed the procedures. To ensure that fuel assemblies were loaded in the core locations specified by the design, the inspectors independently reviewed the recording of the licensee's final core verification.
- **Reduced Inventory and Mid-Loop Conditions.** Prior to the outage, the inspectors reviewed the licensee's commitments to Generic Letter 88-17. Before entering reduced inventory conditions, the inspectors verified that these commitments were in place, that plant configuration was in accordance with those commitments, and that distractions from unexpected conditions or emergent work did not affect operator ability to maintain the required reactor vessel level. While in mid-loop conditions, the inspectors verified that licensee procedures for

closing the containment upon a loss of decay heat removal were in effect, that operators were aware of how to implement the procedures, and that other personnel were available to close containment penetrations, if needed.

- Heatup and Startup Activities. The inspectors toured the containment prior to reactor startup to verify that debris that could affect the performance of the containment sump had not been left in the containment. The inspectors reviewed the licensee's mode change checklists and observed operators in the main control room to verify that appropriate prerequisites were met prior to changing TS modes. To verify RCS integrity and containment integrity, the inspectors further reviewed the licensee's RCS leakage calculations and containment isolation valve lineups. In order to verify that core operating limit parameters were consistent with core design, the inspectors observed portions of the low power physics testing, including reactor criticality.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the seven surveillance tests identified below, by witnessing testing and/or reviewing the test data, the inspectors verified that the SSCs involved in these tests satisfied the requirements described in the TS surveillance requirements, the UFSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions. Documents reviewed are listed in the Attachment. Those tests included the following:

- 1-SI-SXV-074-203.2, Full Stroking of RHR Valves 1-FCV-74-1 and 1-FCV-74-2, Revision 2
- 0-SI-SXV-001-266.0, ASME Section XI Valve Testing (As found stroke timing of U1 MSIVs)\*
- 1-SI-OPS-000-009.0, Actuation of Emergency Core Cooling system and Boron Injection Flowpath Valves Via SI Signal, Revision 1
- 0-SI-MIN-061-105.0, Ice Condenser - Ice Weighing, Revision 4\*\*
- 1-SI-ICC-063-178.3, Channel Calibration of Containment Sump Level Channel III, Rack 10, Loop L-63-178 (L-940), Revision 12
- 1-SI-ICC-077-410.0, Channel Calibration of Reactor Building Auxiliary Floor and Equipment Drain Sump Level (1-L-77-410), Revision 8\*\*\*
- 1-SI-ICC-030-045.1, Channel Calibration of Containment Pressure Channel I, Rack 3, Loop P-30-45 (P-937), Revision 11

\*This procedure included inservice testing requirements.

\*\*This procedure included an ice condenser system surveillance.

\*\*\*This procedure included an RCS leakage detection surveillance.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modificationsa. Inspection Scope

The inspectors reviewed the temporary modification described in Temporary Alteration Control Form (TACF) 0-06-009-077, Radwaste Liquid Effluent Line to Cooling Tower Blowdown, Revision 1, and the associated 10 CFR 50.59 screening, and compared it against the UFSAR and TS to verify that the modification did not affect the operability or availability of any safety system. The inspectors walked down the TACF to ensure it was installed in accordance with the modification documents and reviewed post installation and removal testing to verify the actual impact on permanent systems was adequately verified by the tests. The inspectors also verified that permanent plant documents were updated to reflect the TACF to ensure that plant configuration control was maintained. Documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

**2. RADIATION SAFETY****Cornerstones: Occupational Radiation Safety and Public Radiation Safety**2OS3 Radiation Monitoring Instrumentation and Protective Equipmenta. Inspection Scope

Radiation Monitoring Instrumentation. During tours of the auxiliary building and refueling floor, the inspectors observed installed radiation detection equipment that included Area Radiation Monitors (ARMs), Continuous Air Monitors (AMS-4s), Personnel Contamination Monitors (PCMs) (PCM-1Bs and PCM 2s), and components of the Post-Accident Sampling System. The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with the UFSAR and other applicable requirements.

In addition to equipment walkdowns, the inspectors observed functional checks and alarm setpoint testing of various fixed and portable detection instruments. These observations included response checks of portable ion chambers, friskers and teletectors, and source checks of small article monitors (SAM-11) and a whole body counter. The most recent 10 CFR Part 61 analysis for Dry Active Waste was reviewed to determine if calibration and check sources were representative of the plant source term.

The inspectors reviewed the most recent calibration records for select auxiliary building AMS-4s and Unit 1 and Unit 2 containment high-range ARMs. The records were

evaluated to determine frequency and adequacy of the calibrations. In addition, calibration stickers on portable survey instruments were noted during inspection of storage areas for “ready-to-use” equipment.

Operability and reliability of selected radiation detection instruments were reviewed against details documented in the following: 10 CFR Part 20; NUREG-0737, Clarification of TMI Action Plan Requirements; TS Section 3; UFSAR Chapter 12; and applicable licensee procedures. Documents reviewed during the inspection are listed in the Attachment.

Self-Contained Breathing Apparatus (SCBA) and Protective Equipment. Selected SCBA units staged for emergency use in the control room and other locations were inspected for material condition, air pressure, and number of units available. The inspectors also reviewed maintenance records for components of select SCBA units and certification records associated with supplied air quality.

Qualifications for offsite staff (no maintenance is performed onsite) responsible for testing and repairing SCBA equipment were evaluated through review of training records. In addition, select control room operators were interviewed to determine their knowledge of available SCBA equipment locations, including corrective lens inserts if needed, and their training on bottle change-out during a period of extended SCBA use. Respirator qualification records were reviewed for several control room and emergency response (fire brigade) personnel. In addition, SCBA training was observed for select personnel with regards to checks of SCBA equipment prior to use and bottle changeout.

Licensee activities associated with maintenance and use of respiratory protection equipment were reviewed against 10 CFR Part 20; Regulatory Guide (RG) 8.15, Acceptable Programs for Respiratory Protection; American National Standards Institute (ANSI)-Z88.2-1992, American National Standard for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in the Attachment.

Problem Identification and Resolution. Select licensee PERs and self-assessments associated with instrumentation and protective equipment were reviewed and assessed. The inspectors evaluated the licensee’s ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure SPP-3.1, Corrective Action Program, Revision 11. Documents reviewed are listed in the Attachment.

The inspectors completed nine of the required nine samples for Inspection Procedure (IP) 71121.03. All samples have now been completed for this IP.

b. Findings

No findings of significance were identified.

## 2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

### a. Inspection Scope

Effluent Monitoring and Radwaste Equipment. During inspector walkdowns, accessible sections of the Units 1 and 2 liquid and gaseous radioactive waste (radwaste) and effluent systems were assessed for material condition and conformance with the UFSAR. The inspection included the waste hold-up tanks, waste monitoring tank, mobile radwaste ion exchange equipment, Liquid Radwaste Effluent Monitor (0-RM-90-122), Turbine Building Sump Effluent Monitor (0-RM-90-212A), Steam Generator Blowdown Line Effluent Monitors (1,2RM-90-120A,121A), Auxiliary Building Vent Monitors (0-RM-90-101B), U2 Shield Building Vent Monitor (2-R-90-400), Condenser Vacuum Exhaust Monitors (1,2-RM-90-99,119), Waste Gas Disposal System Monitor (0-RM-90-118A), and associated airborne effluent sample lines. The inspectors interviewed chemistry and engineering staff regarding radwaste equipment configuration requirements for representative sampling, and effluent monitor operation. In addition, the inspectors reviewed the modifications that the licensee had made to the liquid radwaste discharge line in support of groundwater monitoring activities. These modifications included isolation of the original discharge piping that ran underground from the Auxiliary Building to the diffuser ponds, and installation of a temporary above-ground hose for discharging liquid radwaste.

The inspectors reviewed performance records and calibration results for selected radiation monitors, flow meters, and air filtration systems. For effluent monitors 0-RM-90-101B, 0-RM-90-118, 0-RM-90-122, 0-RM-90-212, 1-RM-90-099, 1-RM-90-121, 2-RM-90-119, and 2-RM-90-400, the inspectors reviewed the last loop/isotopic calibration records. The most recent High Efficiency Particulate Air surveillances for the Auxiliary Building Gas Treatment System were also reviewed. The inspectors evaluated out-of-service effluent monitor events and reviewed compensatory actions taken for the period of September 2004 - June 2006.

Installed configuration, material condition, operability, and reliability of selected effluent sampling and monitoring equipment were reviewed against details documented in the following: 10 CFR Part 20; RG 1.21, Measuring, Evaluating and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials In Liquid and Gaseous Effluents from Light-Water Cooled Nuclear Power Plants; ANSI-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; TS Section 6; the Offsite Dose Calculation Manual (ODCM), Revision 48; and UFSAR, Chapter 11. Procedures and records reviewed during the inspection are listed in the Attachment.

Effluent Release Processing and Quality Control (QC) Activities. The inspectors directly observed a liquid effluent release that was monitored by 0-RM-90-122 and discussed release procedures with chemistry staff. As part of the observation, the inspectors walked down the temporary discharge hose during the liquid release. The inspectors also observed chemistry technicians processing particulate and iodine samples from the Auxiliary Building Vent release path and preparing permits for the release.

QC activities regarding gamma spectroscopy and beta-emitter detection were discussed with count room technicians and chemistry supervision. The inspectors reviewed daily QC data logs from April 2006 - June 2006 for High Purity Germanium (HPGe) detectors Number (No.) 1 and No. 4, and daily QC printouts from May 2006 - June 2006 for Liquid Scintillation Counter No. 407624. The inspectors reviewed calibration records for HPGe detectors No. 1 and No. 4 (select counting geometries). In addition, quarterly results of the radiochemistry cross-check program for calendar year 2005 were reviewed.

Selected portions of procedures for effluent sampling, processing, and release were evaluated for consistency with licensee actions. Four liquid and three gaseous release permits were reviewed against ODCM specifications for pre-release sampling and effluent monitor setpoints. For the liquid releases reviewed, the inspector verified the performance of supplemental sampling for releases with the main liquid effluent monitor (0-RM-90-122) out of service. The inspectors discussed performance of pre-release sampling and analysis, release permit generation, and radiation monitor setpoint adjustment with chemistry staff. The inspectors also observed closure of a release permit by a chemistry technician. The inspectors reviewed the 2004 and 2005 Annual Effluent Reports to evaluate reported doses to the public and ODCM changes. Public dose calculations were reviewed and discussed with cognizant licensee personnel. In addition, changes to the radwaste and effluent systems were discussed with engineering and chemistry personnel.

Current licensee programs for monitoring, tracking, and documenting the results of both routine and abnormal liquid releases to the onsite and offsite surface water or river environs were reviewed and discussed in detail. Specifically, the inspectors reviewed the effect of routine effluent liquid releases made in accordance with ODCM requirements on tritium concentrations in ground water samples reported from onsite groundwater monitoring wells. In addition, reports associated with abnormal liquid releases and corrective actions were reviewed to evaluate the potential onsite/offsite environmental impact of significant leakage/spills from onsite systems, structures, and components. Also, the inspectors verified that these areas had been properly documented in the licensee's site decommissioning files in accordance with 10 CFR 50.75(g), if required. Finally, licensee current capabilities and routine surveillances to minimize and rapidly identify any abnormal leaks from liquid radioactive waste tanks, processing lines, and spent fuel pools were reviewed and discussed in detail.

Observed task evolutions, count room activities, and offsite dose results were evaluated against details and guidance documented in the following: 10 CFR Part 20 and Appendix I to 10 CFR Part 50; ODCM; RG 1.21; RG 1.33, Quality Assurance Program Requirements (Operation); and TS Section 6. Procedures and records reviewed during the inspection are listed in the Attachment.

Problem Identification and Resolution. Several PERs and two self-assessment reports associated with effluent release activities were reviewed. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve selected issues in accordance with procedure SPP-3.1, Corrective Action Program, Revision 11. Reviewed documents are listed in the Attachment.

The inspectors completed 10 of the required 10 samples for IP 71122.01. All samples have now been completed for this IP.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Implementation. The inspectors observed routine sample collection and surveillance activities as required by the licensee's REMP. The inspectors noted the material condition and operability of airborne particulate filter and iodine cartridge sample stations at monitoring locations PM-2, PM-9, PM-3, RM-2, and LM-2. Environmental thermoluminescent dosimeters (TLDs) SW-2, WSW-2A, NNW-1, and W-3, were checked for material condition and appropriate identification. Collection of a milk sample was observed at a farm near the plant. In addition, automatic water samplers were inspected for material condition at the City of Dayton Municipal Water Supply Intake. The inspectors determined the current location of selected air samplers, TLDs, water samplers, and dairy farm using NRC global positioning system instrumentation. Land use census results, changes to the ODCM, and sample collection/processing activities were discussed with environmental technicians.

The inspectors reviewed the most recent calibration records for selected environmental air samplers. The inspectors also reviewed the 2004 and 2005 Radiological Environmental Operating Reports, results of the 2004 and 2005 interlaboratory cross-check program, a procedure for environmental sample collection and processing, and two ODCM Special Reports for tritium in onsite groundwater. Selected environmental measurements were reviewed for consistency with licensee effluent data, evaluated for radionuclide concentration trends, and compared with detection level sensitivity requirements.

Procedural guidance, program implementation, and environmental monitoring results were reviewed against: 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS Section 5.0; ODCM; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Documents reviewed are listed in the Attachment.

Meteorological Monitoring Program. The inspectors observed the physical condition of the tower and discussed equipment operability and maintenance history with a technician. The inspectors compared locally generated meteorological data with information available to control room operators. For the 10-meter meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed calibration records for applicable tower instrumentation, maintenance records, and problem reports and evaluated measurement data recovery for 2004 and 2005. The inspectors interviewed the individuals responsible for maintaining the meteorological program to determine problems, resource issues, reliability issues, and organizational



support for program. The relatively infrequent failures in relation to number of lightening strikes was of interest to the inspectors. The inspectors examined the arc gap and opto-isolator systems used to protect the instruments from lightening.

Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; FSAR Section 2.3; ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites; and Safety Guide 23, Onsite Meteorological Programs. Documents reviewed are listed in the Attachment.

Unrestricted Release of Materials from the Radiologically Controlled Area (RCA). The inspectors observed surveys of material and personnel being released from the RCA using gamma tool monitors (GTM), PCMs, and portal monitor instruments. The inspectors also observed source checks of these instruments and discussed equipment sensitivity and release program guidance with licensee staff. To evaluate the appropriateness and accuracy of release survey instrumentation, radionuclides identified within recent waste stream analyses were compared with radionuclides used in current calibration sources and performance check sources. The inspectors also reviewed the last two calibration records for selected GTMs, PCMs and portal monitor instruments.

Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. Documents reviewed are listed in the Attachment.

Problem Identification and Resolution. The inspectors reviewed work requests and problem reports for the meteorological instruments and an audit in the areas of environmental monitoring, meteorological monitoring, and release of materials. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure SPP-3.1, Corrective Action Program, Revision 11. Documents reviewed are listed in the Attachment.

The inspectors completed 10 of the required 10 samples for IP 71122.03. All samples have now been completed for this IP.

b. Findings

No findings of significance were identified.

#### 4. OTHER ACTIVITIES

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

###### a. Inspection Scope

###### Cornerstone: Initiating Events

The inspectors sampled licensee submittals for the three performance indicators listed below for the period from January 1, 2004 through March 31, 2006. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, Regulatory Assessment Indicator Guideline, Revision 3, were used to verify the basis in reporting for each data element.

- Unplanned Scrams per 7000 Critical Hours
- Scrams with Loss of Normal Heat Removal
- Unplanned Power Changes per 7000 Critical Hours

The inspectors reviewed selected licensee event reports (LERs) and portions of the operator logs to verify that the licensee had accurately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters for both units. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for crediting normal heat removal capability for each of the reported scrams. Documents reviewed are listed in the Attachment.

###### Cornerstone: Occupational Radiation Safety

To evaluate the Occupational Exposure Control Effectiveness PI, the inspectors reviewed data collected from January 2005 through April 2006. For the reviewed period, the inspectors assessed corrective action program records to determine whether High Radiation Area (HRA), Very HRA, or unintended radiation exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and electronic dosimeter alarms associated with dose rates exceeding 1 rem/hr and cumulative dose rates exceeding established set-points from January 2005 through April 2006. To verify the accuracy of the PI data reported during the period reviewed, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the basis for each data element. Reviewed documents relative to this PI are listed in the Attachment.

###### Cornerstone: Public Radiation Safety

To evaluate the Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences PI, the inspectors reviewed data for calendar year 2005. This included records, such as monthly effluent dose calculations, that are used by the licensee to identify occurrences of quarterly doses from liquid and gaseous effluents in excess of the values specified in NEI 99-02 guidance. The inspectors also interviewed licensee personnel that were responsible for collecting and reporting the PI

data. In addition, licensee procedural guidance for classifying and reporting PI events was evaluated. To verify the accuracy of the PI data reported during the period reviewed, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Revision 4, were used to verify the basis for each data element. Reviewed documents are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

.1 Daily Review

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

.2 Semi-Annual 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 was focused on repetitive equipment issues, but also included licensee trending efforts and licensee human performance results. The inspectors' review nominally considered the six-month period of January 2006 through June 2006, although some examples expanded beyond those dates when the scope of the trend warranted.

Specifically, the inspectors consolidated the results of daily inspector screening discussed in Section 4OA2.1 into a log, reviewed the log, and compared it to licensee trend reports for the period from October 2005 through December 2005 in order to determine the existence of any adverse trends that the licensee may not have previously identified.

b. Findings and Observations

No findings of significance were identified. In general, the licensee had identified trends and appropriately addressed them in the corrective action program. The inspectors evaluated the licensee trending methodology and observed that the licensee had performed a detailed review. The licensee routinely reviewed cause codes, involved organizations, key words, and system links to identify potential trends in the data. The inspectors compared the licensee process results with the results of the inspectors' daily screenings and did not identify any discrepancies or potential trends that the licensee had failed to identify.

Two equipment issues that had developed and continued throughout 2005 were resolved during this inspection period. These had previously been discussed in IRs 05000327,328/2005003 and 05000327,328/2005005. Unit 1 RCS activity, which had been elevated due to a small leak in one rod of one fuel assembly, returned to normal after the fuel assembly with the leaking rod was replaced during the refueling outage. Leakage through the RHR Check Valve 1-63-634, which required a temporary modification to continuously vent the RHR headers and fill Cold Leg Accumulator 3, stopped after the check valve was repaired during the same refueling outage.

#### 4OA3 Event Followup

(Closed) Licensee Event Report (LER) 05000328/2006-001-00, Unit 2 Reactor Trip Resulting From Actuation of the Main Generator Neutral Overvoltage Relay

##### a. Inspection Scope

On March 22, 2006, Unit 2 tripped due to a main generator neutral overvoltage relay actuation. The inspectors reviewed the LER and PER 99755, Unit 2 Reactor Tripped on Main Generator Neutral Overvoltage Relay Actuation, which documented this event in the licensee's corrective action program, to verify that the cause of the reactor trip was identified and that corrective actions were appropriate. The inspectors also verified that timely notifications were made in accordance with 10 CFR 50.72, that licensee staff properly implemented the appropriate plant procedures, and that plant equipment performed as required. Documents reviewed are listed in the Attachment.

##### b. Findings

Introduction: A Green self-revealing finding was identified for failure to implement effective preventive maintenance procedures to identify and correct a loose isolated phase bus duct gasket before its attachment degraded to the point of allowing the gasket to contact the bus duct conductor and cause a trip.

Description: The licensee identified the cause of the event to be ineffective corrective action from of a previous similar event in 1995. Following a Unit 2 trip in 1995, the licensee changed the vendor manual to show that bus duct gaskets were attached to the housing by two independent means, tie-wraps and an RTV seal. The licensee also changed the preventive maintenance procedure. However, the steps were confusing and lacked sufficient detail to ensure proper inspection, such as verifying the condition and integrity of the tie-wraps. Even though the procedure was performed during every unit refueling outage, the licensee failed to detect the attachment degradation. This degradation allowed the gasket material to come into contact with the phase C bus duct conductor and provided an electrical leakage path to ground sufficient to actuate the main generator neutral overvoltage relay. This condition tripped the main transformer, resulting in subsequent turbine and reactor trips.

Analysis: The finding was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone and resulted in an upset in plant stability by causing a reactor trip. While the finding resulted in an actual trip, the inspectors determined that it did not contribute to the likelihood of a primary or secondary

system LOCA initiator, did not contribute to a loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood. Thus, the finding was considered to be of very low safety significance (Green). This issue is in the licensee corrective action program as PER 99755.

Enforcement: Because the affected equipment was non-safety related, no violation of regulatory requirements occurred. Therefore, this finding is identified as FIN 05000328/2006003-02, Loose Isolated Phase Bus Duct Gasket Actuated Main Generator Neutral Overvoltage Relay Causing Reactor Trip. This LER is closed.

#### 4OA5 Other Activities

##### .1 (Closed) NRC Temporary Instruction (TI) 2515/165: Operational Readiness of Offsite Power and Impact on Plant Risk

The inspectors reviewed licensee procedures and controls and interviewed operations and maintenance personnel to verify these documents contained specific attributes delineated in the TI to ensure the operational readiness of offsite power systems in accordance with plant Technical Specifications; the design requirements provided in 10 CFR 50, Appendix A, General Design Criterion 17, Electric Power Systems; and the impact of maintenance on plant risk in accordance with 10 CFR 50.65(a)(4), Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. Documents reviewed are listed in the Attachment. Appropriate documentation of the results of this inspection was provided to NRC headquarters staff for further analysis, as required by the TI. This completes the Region II inspection TI requirements for the Sequoyah Nuclear Plant.

##### .2 Independent Spent Fuel Storage Installation (ISFSI) Radiological Controls

###### a. Inspection Scope

The inspectors conducted independent gamma surveys of the ISFSI facility and compared the results to previous quarterly surveys. The inspectors also observed and evaluated implementation of radiological controls, including Radiation Work Permits and postings, and discussed the controls with a health physics technician and health physics supervisory staff. Radiological controls for loading Hi-Storm ISFSI casks were also reviewed and discussed.

Radiological control activities for ISFSI areas were evaluated against 10 CFR Parts 20 and 50, NRC Certificate of Compliance No. 1014 and applicable licensee procedures. Documents reviewed are listed in the Attachment.

###### b. Findings

No findings of significance were identified.

#### 4OA6 Meetings, Including Exit

##### .1 Exit Meeting Summary

On July 7, 2006, the resident inspectors presented the inspection results to Mr. Dave Kulisek and other members of his staff, who acknowledged the findings. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

##### .2 Interim Exit Meetings

Interim exits were conducted as follows:

- On April 21, 2006, the inspectors discussed results of the baseline inspection 71111.08. The licensee confirmed that none of the material discussed was considered proprietary.
- On June 9, 2006, the inspectors discussed results of the onsite radiation protection inspection with Mr. R. Douet and other responsible staff. The inspectors noted that proprietary information was reviewed during the course of the inspection but would not be included in the report.

#### 4OA7 Licensee-Identified Violations

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

- TS 6.8.1 requires procedures covering the activities specified in Appendix A of Regulatory Guide 1.33, Revision 2. Paragraph 3a of the appendix requires procedures for draining the reactor coolant system. Procedure 0-GO-13, Reactor Coolant System Drain and Fill Operations, Revision 53, specified the system lineup needed to ensure that a vent path existed for draining the RCS to a mid-loop condition. Contrary to that procedure, on May 7, 2006, the Reactor Vessel Level Indicating System spoolpiece was installed prior to reaching mid-loop conditions, thereby removing the existing vent path. This was documented in PERs 102591 and 102589. This violation is of very low significance because the licensee immediately stopped draining the RCS when the error was discovered and indicated level did not change when a vent path was reestablished.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee personnel:

J. Adams, Boric Acid  
J. Bajraszewski, Licensing Engineer  
D. Bodine, Chemistry/Environmental Manager  
K. Clayton, Maintenance Manager  
R. Douet, Site Vice President  
J. Dvorak, Unit 1 Outage Manager  
J. Goulart, ISI  
Z. Kitts, Licensing Engineer  
D. Kulisek, Plant Manager  
R. Reynolds, Site Security Manager  
**D. Nida, Chemistry Support Manager**  
**T. Niesson, Site Quality Manager**  
M. A. Palmer, Radiation Protection Manager  
M. H. Palmer, Operations Manager  
K. Parker, Maintenance and Modifications Manager  
J. Proffitt, Licensing Engineer  
R. Rogers, Engineering Manager  
J. Smith, Site Licensing Supervisor  
**W. Smith, RP Support Manager**  
J. Whitaker, ISI  
K. Wilkes, Emergency Preparedness Manager  
K. Wilson, Component Engineering

NRC personnel:

R. Bernhard, Region II, Senior Reactor Analyst  
D. Pickett, Project Manager, Office of Nuclear Reactor Regulation

**LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

Open and Closed

05000328/2006003-01	NCV	Failure to Secure Crane Wall Doors in Mode 3 (Section 1R15)
05000328/2006003-02	FIN	Loose Isolated Phase Bus Duct Gasket Actuated Main Generator Neutral Overvoltage Relay Causing Reactor Trip (Section 4OA3)

Closed

05000328/2006-001-00	LER	Reactor Trip Resulting From Actuation of the Main Generator Neutral Overvoltage Relay (Section 4OA3)
05000327,328/2515/165	TI	Operational Readiness of Offsite Power and Impact on Plant Risk (Section 4OA5)



**LIST OF DOCUMENTS REVIEWED**

**Section R04: Equipment Alignment**

0-SO-72-1, Attachment 1 Containment Spray System Power Checklist, Change 9  
0-SO-72-1, Attachment 7, Containment Spray System Valve Checklist, Change 9  
1,2-47W812, Flow Diagram Containment Spray System, Revision 41  
1-SO-3-2, Attachment 1, Auxiliary Feedwater System Power Checklist, Change 11  
1-SO-3-2, Attachment 2, Auxiliary Feedwater System Valve Checklist, Change 15

**Section R05: Fire Protection**

0-PI-FPU-317-530.Y, Plant Operating Area Fire Extinguisher Annual Inspection, Revision 3

**Section R06: Flood Protection Measures**

SQS40056, Moderate Energy Line Break Flooding Study, Revision 11  
CEB-PR/N2-012, Pipe Rupture, Flooding, Critical Crack Exclusion, Revision 6  
N2-63-72-74-1A, 2A; Piping Analysis SIS, CSS, RHR Pump Suction, Unit 1; Revision 12  
N2-63-9A; Piping Analysis, SIS, CSS, RHR Pump Suction, Unit 2; Revision 4  
0600104-01-01; Piping Analysis, Containment Spray, Unit 1; Revision 31

**Section R08: Inservice Inspection Activities**

Nondestructive Examination

**Sequoyah Nuclear Plant Unit 1 Cycle 14 Inservice Inspection Scan Plan, Revision 0**  
**Sequoyah Nuclear Plant Unit 1 Cycle 13, 90-Day-Inservice Inspection Summary Report, 2/15/05**  
N-UT-76, Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds, Revision 5  
N-VT-19, Visual Inspection of Alloy 600/82/182 Pressure Boundary Components, Revision 1  
N-VT-1, Visual Examination Procedure for ASME Section XI Preservice and Inservice, Revision 38

**Other Documents**

SPP 10.7, Housekeeping/Temporary Equipment Control, Revision 1  
WO 06-771181-000  
WO 06-770988-000  
WO 05-777912-001  
WO 05-771810-000  
WO 06-772927-000  
WO 06-773009-000  
WO 04-777535-000  
WO 06-773267-000  
0-TI-DXX-000-097.1, Boric Acid Corrosion Control Program, Revision 0  
SPP-9.7, Corrosion Control Program, Revision 12  
SQN-ENG-03-007, Boric Acid Program Effectiveness  
PM 06302563, Preventive Maintenance Work Instructions, Revision 0  
L29 060316 802, Technical Review and Justification For Not Performing Primary or Secondary Inspections of the Steam Generators, SQN Unit 1 Cycle 14 Outage

**Corrective Action Documents (Problem Evaluation Reports)**

PER 101297, Delinquent Eye Exam  
PER 101416, VT-1 of Valves 1-63-641 and 1-63-632  
PER 101281, Unit 1 RCP 2 Boric acid leakage  
PER 100940, Flange bolting for 1-VLV-67-661A shows signs of corrosion  
PER 70426, Safety Injection Piping  
PER 82645, Borated water packing leak SQN-2FCV-63-157  
PER 71188, Boric acid leak  
PER 75843, Boric acid on SI Pump seal areas  
PER 71190, Boric acid leak  
PER 70551, Structural steel boric acid corrosion  
PER 70560, 2-FCV-072-0022-A bonnet leak  
PER 95766, Boric Acid Corrosion Control Program Deviations  
PER 96819, Boric Acid Corrosion Control Program weaknesses  
PER 90714, 2-FCV-63-156 packing leak

**Section R11: Licensed Operator Requalification**

E-0, Reactor Trip or Safety Injection, Revision 27  
E-1, Loss of Reactor or Secondary Coolant, Revision 22  
ES-1.3, Transfer to RHR Containment Sump, Revision 13

**Section R12: Maintenance Rule Implementation**

TI-4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10 CFR 50.65, Revision 18  
System Health Report Cards - Radiation Monitoring, FY2005, FY2006  
0-SO-77-1, Waste Disposal System (Liquid), Revision 38  
0-SI-CEM-077-400.1, Liquid Waste Effluent Batch Release, Revision 29  
WO 06-772881-000, Troubleshoot, Rework/Replace Parts as Necessary, RM 90-122  
Maintenance Rule Expert Panel Minutes dated May 25, 2006  
CDE 1946, Maintenance on Vital Battery Board IV Breaker 214 Caused a Unit Trip

**Section R13: Maintenance Risk Assessments and Emergent Work Evaluation**

Sentinel Risk Assessment for April 22, 2006 to May 15, 2006  
SPP-7.2, Outage Management, Revision 7  
O&SSDM 4.0, Operational Defense-in-Depth Assessment, Revision 15  
Unit 1 Cycle 14 Outage Safety Plan  
1-SI-OPS-068-001.0, Low Temperature Overpressure Protection, Revision 2  
Sentinel Risk Assessment for April 17, 2006 to May 8, 2006  
Tagout 1-TO-2006-0014, clearances 1-67-0478, 1-67-0507, 1-67-0749, and 1-67-0419  
Sentinel Risk Assessment for May 6 to May 21, 2006  
ORAM Risk Assessment for May 7, 2006  
SQN Safety Evaluation MEB-AOI-14 Revision 9, Mid-Loop Operation Contingency Action  
1-PI-OPS-068-673.D, Daily Requirements for Reduced Inventory/Midloop Operation, Revision 9  
Sentinel Risk Assessment for May 22 to June 11, 2006  
Sentinel Risk Assessment for June 1 to June 18, 2006

Sentient Risk Assessment for June 26 to July 16, 2006

**Section R15: Operability Evaluations**

1-47W845-6, Mechanical Flow Diagram Essential Raw Cooling Water, Revision 19  
FE #41405, Pinhole Leak on ERCW Pipe  
NRC RIS 2005-20, Revision to Guidance Formerly Contained in NRC Generic Letter 91-18  
UFSAR Section 5.5.15, Reactor Coolant System Head Vents  
AOP-N.08, Appendix R Fire Safe Shutdown, Revision 12  
ND-Q0063-980038, RWST and Containment RHR Sump Safety and Operational Limits, Setpoint Required Accuracy, and LBLOCA and SBLOCA Sump Minimum Levels, Revision 8  
1-PI-EFT-003-118.1, Motor Driven AFW Pump 1A-A, Time Delay Relay, TDR-AFWA, Setpoint Verification and Calibration, Revision 5  
WO 06-774459-000, Perform Independent Verification of TDR-AFWA Wiring  
1,2-45N765-6, Wiring Diagrams 6900V Shutdown Aux Power Schematic Diagram Sheet 6, Revision 31  
SQN-EEB-MS-TI28-0048, Instrument Accuracy Calculation for Containment Sump Level Indication, Revision 6  
NDQ0063980038, RWST and Containment RHR Sump Safety and Operational Limits, RWST Setpoint Required Accuracy and LBLOCA and SBLOCA Sump Minimum Levels, Revision 8

**Section R19: Post Maintenance Testing**

WO 06-773911-000, Switch 1-XS-57-071 Contact 15-16 Failed Acceptance Criteria of Procedure 1-PI-OPS-000-010.D  
1-PI-OPS-000-010.D, Verification of Remote Shutdown Transfer Switches, Revision 1  
1-SI-SXV-063-201.0, Safety Injection System Hot Leg and Cold Leg Injection Check Valve Full Stroke Test, Revision 5  
0-PI-SXV-001-001.0, Stroke Testing of MSIV's at Operating Temperature, Revision 3  
1-PI-EBT-250-731.0, 120VAC Vital Inverter Functional Test, Revision 3  
PER 24198, Static Switch Control PCBs in New Inverters Have Undersized Biasing Resistors  
1,2-45N765-3, 6900 Volt Shutdown Aux Power Schematic Diagram, Sheet 3, Revision 22  
1,2-45N765-4, 6900 Volt Shutdown Aux Power Schematic Diagram, Sheet 4, Revision 3  
1,2-45N765-5, 6900 Volt Shutdown Aux Power Schematic Diagram, Sheet 5, Revision 14  
1,2-45N765-7, 6900 Volt Shutdown Aux Power Schematic Diagram, Sheet 7, Revision 16  
1,2-47W803-2, Flow Diagram, Auxiliary Feedwater, Revision 61  
1-SI-SXV-069-202.0, Reactor Head Vent Valve Stroke Test During Cold Shutdown, Revision 1  
0-SI-SXV-068-266.0, ASME Section XI Valve Testing, Appendices I, J, K, and L, Revision 8  
PER 102757, Unit 1 RCS Head Vent Flow Modulating Valve 1-FSV-068-397A Deficient Test Points  
1-47W811-1, Flow Diagram Safety Injection System, Revision 67

**Section R20: Refueling and Outage Activities**

0-GO-6, Power Reduction from 30% Reactor Power to Hot Standby, Revision 31  
0-GO-7, Unit Shutdown From Hot Standby to Cold Shutdown, Revision 42  
0-GO-15, Containment Closure Control, Revision 20  
TI-45, Physical Verification of Core Load Prior to Vessel Closure, Revision 25  
DVD Recording of U1C15 Core Load Verification

0-GO-13, Reactor Coolant System Drain and Fill Operations, Revision 53  
1-PI-OPS-068-673.D, Daily Requirements for Reduced Inventory/Midloop Operation, Revision 9  
1-SI-OPS-000-002.0, Shift Log Appendix C, Revision 77  
0-TI-OPS-000-270.0, Refueling Outage System Review Program, Revision 6  
0-RT-NUC-000-001.0, Restart Test Program, Revision 29  
0-RT-NUC-000-003.0, Low Power Physics Testing, Revision 20  
0-SI-NUC-000-126.0, Hot Channel Factor Determination, Revision 17  
0-SI-NUC-000-133.0, Quadrant Power Tilt Ratio, Revision 13  
0-SI-NUC-092-079.0, Power Range Monitor Channel Calibration By Incore-Excore Axial Imbalance Comparison, Revision 10

**Section R22: Surveillance Testing**

0-SI-SXV-074-266.0, ASME Section XI Valve Testing, Revision 11  
0-SI-SXV-074-266.0, ASME Section XI Valve Testing, Revision 17  
NRC Part 9900, Technical Guidance, Ice Condenser System Inspections dated 06/06/05  
0-MI-MXX-061-003.0, Ice Condenser Maintenance Inspections, Revision 13  
0-MI-MXX-061-001.0, Ice Condenser Ice Servicing, Revision 23  
0-SI-MIN-061-105.0, Ice Condenser Ice Weighing, Revision 4  
Employee Concerns Program File, Loose Bolting in Ice Condenser, dated 11 May, 1998  
1-SI-ICC-030-044.2, Channel Calibration of Containment Pressure Channel II, Rack 7, Loop P-30-44 (P-936), Revision 12  
1-SI-ICC-030-043.3, Channel Calibration of Containment Pressure Channel III, Rack 11, Loop P-30-43 (P-935), Revision 11  
1-SI-ICC-030-042.4, Channel Calibration of Containment Pressure Channel IV, Rack 12, Loop P-30-42 (P-934), Revision 11  
1-SI-ICC-030-045.1, Channel Calibration of Containment Pressure Channel I, Rack 3, Loop P-30-45 (P-937), Revision 11  
SQN-EEB-MS-T128-0013, Instrument Accuracy Calc 1-LT-63-176, -177, -178, -179, Revision 9  
Loop 1-L-63-178 Setpoint and Scaling Document, Revision 10  
1-SI-ICC-063-177.2, Channel Calibration of Containment Sump Level Channel II, Rack 7, Loop L-63-177 (L-921), Revision 10  
1-SI-ICC-063-179.4, Channel Calibration of Containment Sump Level Channel IV, Rack 13, Loop L-63-179 (L-941), Revision 11  
Loop 1-PD-30-42 Setpoint and Scaling Document, Revision 2  
1-47W600-1146, Mechanical Instruments and Controls, Revision 6  
SQN-EEB-MS-T128-0064, Demonstrated Accuracy Calculation 1,2-L-77-125, 126, 410, & 411, Revision 6  
Loop 1-L-77-410, Setpoint and Scaling Document, Revision 6  
Loop 1-L-77-411, Setpoint and Scaling Document, Revision 6  
PER 104048, Containment Sump High Level Setpoint Requirement

**Section R23: Temporary Plant Modifications**

0-SI-CEM-077-400.1, Liquid Waste Effluent Batch Release, Revision 29  
0-SO-77-1, Waste Disposal System, Revision 38  
0-PI-OPS-027-431.0, Cooling Tower Blowdown Flowrate Determination, Revision 15  
Release Permit 2006.064.008.036.L

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**Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment**

Procedures and Guidance Documents

HPT 063.002, Self Contained Breathing Apparatus (SCBA) Training, Revision 7  
RCI-04, Respiratory Protection Program, Revision 45  
RCI-05, Radiation Protection Instrumentation Program, Revision 53  
0-PI-FPU-049-401.M, Self Contained Breathing Apparatus, Revision 21  
1-PI-CEM-043-487.0, Sentry Post Accident Sampling System Operability Verification and Calibration, Revision 19  
2-PI-CEM-043-487.0, Sentry Post Accident Sampling System Operability Verification and Calibration, Revision 20  
SPP-3.1, Corrective Action Program, Revision 11

Records and Data

10 CFR Part 61 Analysis for CVCS Resin, Dated 09/30/05; Dry Active Waste, Dated 05/17/05; Filter, Dated 10/01/04; and RADDI Resin, Dated 03/11/05  
AMS-4 Calibration Data Form for Air Flow Calibrator Nos. 860001, Dated 04/29/06, and 860002, Dated 03/03/06  
Calibration Data Sheets for: 1) Bicon RSO-5, TVA # 552085, Dated 02/02/06; 2) Bicon Surveyor 50, TVA # 860142, Dated 02/23/06; 3) Eberline RO2A, TVA # 517313, Dated 02/24/06; and 4) Eberline Teletector, TVA # 860312, Dated 03/28/06  
PCM-1B Calibration Data Form for Instrument Nos. 484685, Dated 03/08/06; 484690, Dated 03/10/06; 526451, Dated 02/09/06; and 576450, Dated 05/14/06  
PCM-2 Calibration Data Sheet for Instrument No. 860326, Dated 03/24/06  
ProCheck3 Test Results for MSA S/Ns RH327018 (45-7), RP178037 (45-32), and RP178163 (45-34), Dated 06/16/04, 04/02/04, and 06/16/04, respectively  
SCBA Breathing Air Quality Analysis, 12/21/05  
Small Article Monitor (SAM-11) Calibration Form for TVA Nos. 860322, Dated 02/23/06; 860324, Dated 01/19/06; and 860325, Dated 03/12/06  
SQN Instrument Response Window Data Package for Teletector 6112B Response Window Using Shepherd No. 8107, Dated 08/27/05  
Surveillance Task Sheets for Calibration of: 1) Condensate Demineralizer Area Radiation Monitor (ARM) 0-R-90-230, Dated 04/14/05; 2) Lower Compartment Reactor Building ARM 2-R-90-61, Dated 10/28/04; 3) Sample Room ARM 1-R-90-7, Dated 09/19/05; and 4) Upper Compartment Reactor Building ARM 1-R-90-59, Dated 08/03/05  
Surveillance Task Sheets for Channel Calibration of: 1) Containment Building Lower Compartment Air Monitors 1-R-90-106 and 2-R-90-106, Dated 11/25/05 and 07/08/05, respectively; 2) Lower Inside Containment Post Accident Hi Range Area Monitors 1-R-90-273, 1-R-90-274, 2-R-90-273, and 2-R-90-274, Dated 04/20/06, 04/16/06, 05/03/05, and 05/03/05, respectively; 3) Upper Inside Containment Post Accident Hi Range Area Monitors 1-R-90-271, 1-R-90-272, 2-R-90-271, and 2-R-90-272, Dated 04/23/06, 04/23/06, 05/07/05, and 05/07/05, respectively  
Surveillance Task Sheets for Sentry Post Accident Sampling System Operability Verification and Calibration for Unit 1, Dated 04/07/06 and 05/26/06, and Unit 2, Dated 03/30/06 and 06/02/06  
Whole Body Counting Measurement Quality Assurance Spring 2006 Performance Test Results, Dated 12/06/05 and 06/05/06

Corrective Action Program Documents

Assessment No. CRP-ERMI-04-002, Effectiveness of RADCON Instrument Calibration Program, Dated 04/26/04

Nuclear Assurance (NA) - TVA-Wide - Audit Report No. SSA0502 - Radiological Protection and Control Audit, Dated December 31, 2005

PER 80327, Count rate for the particulate channel of radiation monitor 1-RM-90-11 was increasing

PER 93153, Radiation monitor 1-RM-90-106 did not meet operability goal and taken out of service

PER 95900, U-1 PASF ventilation system was inoperable and a work request was scheduled

PER 96473, During Cycle 1 Week 3 Non-licensed operator requal, it was discovered that only one size of face mask was staged in the AOP-T.01 supply boxes.

PER 103572, The 106 monitor particulate was spiking bringing in the High Radiation alarm

**Section 2PS1: Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems**

Procedures and Guidance Documents

0-TI-CEM-000-005.0, Well Sampling, Revision 0000

0-PI-CEM-000-400.0, Quantification of Tritium Activity Released from Secondary Systems, Revision 0002

0-SI-CEM-000-403.0, Monthly Tritium and Noble Gas Analysis - Liquid Effluents, Revision 0006

0-SI-CEM-030-407.2, Radioactive Gaseous Waste Effluent Particulate and Iodine Dose Rates from Shield and Auxiliary Building Exhaust (Weekly/Special) and Condenser Vacuum Exhausts (Special), Revision 0009

0-SI-CEM-077-400.1, Liquid Waste Effluent Batch Release, Revision 0033

0-SI-CEM-077-410.4, Waste Gas Decant Tank Release, Revision 0013

SI-401, Steam Generator Blowdown Continuous Release, Revision 0028

SPP-3.1, Corrective Action Program, Revision 11

Records and Data

Auxiliary Building Gas Treatment System (ABGTS) Train A HEPA Filter Surveillance, 10/26/05

ABGTS Train B HEPA Filter Surveillance, 11/3/05

Annual Radioactive Effluent Release Report, 2004 and 2005

Germanium Detectors Nos. 1 and 4 Calibrations, various geometries, 2002 and 2006

Germanium Detectors Nos. 1 and 4, Daily Source Checks, 4/1/06 - 6/6/06

Gaseous Radioactive Waste Release Permit Nos. 2003245.047.003.G, 2004222.034.002.G, and 2005294.034.001G

Liquid Radioactive Waste Release Permit Nos. 2004160.008.101.L, 2005080.008.042.L, 2005187.007.018.L, and 2006.008.033.L

Results from Test Laboratory on Charcoal Test Sample from ABGTS Train A, 10/28/05

Results from Test Laboratory on Charcoal Test Sample from ABGTS Train B, 11/22/05

Results of Quarterly Radiochemistry Cross-Check Program, 2005

Radiation Monitor 0-RM-90-101B Calibration of RM and Vent Flow Monitor, 1/20/05

Radiation Monitor 0-RM-90-118 Calibration, 6/2/05

Radiation Monitor 0-RM-90-122 Calibration, 10/2/04

Radiation Monitor 0-RM-90-212 Calibration, 6/6/05

Radiation Monitor 1-RM-90-099 Calibration, 7/12/04

Radiation Monitor 1-RM-90-121 Calibration, 9/2/05

Radiation Monitor 2-RM-90-119 Calibration, 5/10/05  
Radiation Monitor 2-RM-90-400 Calibration, 9/9/05  
Quantasart Daily QC Prints for LSC No. 407624, 5/14/06 - 6/14/06

Corrective Action Program Documents

PER 27951, This PER is for tracking and trending of recent tritium concentrations detected, 12/22/03  
PER 69959, Ground Water Tritium, 10/27/04  
PER 82707, During the performance of PMTs on 0-RM-90-133/140, it was discovered that the suction isolation valve was closed, 05/19/05  
PER 83057, During the performance of SI-244 (Periodic Functional Test of Radioactive Effluent Monitoring Instruments), 0-FR-77-42 was found out of as found tolerance, 05/21/05  
PER 83841, Auxiliary Building Exhaust Vent particulate flow, plateout calculation and sampling issues, 06/08/05  
PER 84902, On 6-16-2005, Unit 1 Shield Building radiation monitor 1-RM-90-400, alarmed in the main control room and the appropriate ODCM LCO entered, 06/27/05  
PER 85280, There is a design deficiency with 0-LS-27-225, Cooling Tower Blowdown (CTBD) Weir Level, 07/01/05  
PER 87449, Chemistry to document the reasons in the annual effluent report why the Radiation Monitor 0-RM-90-212 could not be repaired, 09/14/05  
PER 87853, Condenser Vacuum Pump Radiation monitor SQN-2-RM-090-0099 failed on 08/18/2005 with indicated radiation level erratically falling, then increasing, 08/12/05  
PER 88851, Monitor Tank level is at 91 percent and is too radioactive to be released to the river or processed thru the Rad Chem Demineralizer, 09/08/05  
PER 91338, On 10/21/2005, 0-RM-90-212 experienced multiple instrument malfunction alarms due to low flow, 10/25/05  
PER 92845, During draining fo the "A" HUT the tank collapsed due to apparent lack of adequate vent path, 11/21/05  
PER 96150, The Turbine Building Sump radiation monitor (0-RM-90-212) was not operable, 01/31/06  
SA-SQN-CEM-04-005, Chemistry QA/QC Statistical Control Self-Assessment Report, 09/13/04  
SA-SQN-CEM-05-003, Liquid Radiological Releases Focused Self-Assessment Report, 09/19/05

**Section 2PS3: Radiological Environmental Monitoring Program**

Procedures and Guidance Documents

RCI-21, Control of Radioactive Materials, Revision 12  
SPP-3.1, Corrective Action Program, Revision 10

Records and Data

Air Sampler Gas Meter Calibration Data Sheets, SN. 1030539, PM-2, 08/10/05  
Air Sampler Gas Meter Calibration Data Sheets, SN. 1030597, PM-9, 08/10/05  
Field Sample Collection Sheets, RM-1 & RM-2, 05/26/06 and 06/08/06  
Sequoyah Nuclear Plant- 2005 Annual Radioactive Effluent Release Report (ARERR)  
Sequoyah Nuclear Plant- Annual Radiological Environmental Operating Report 2005  
Sequoyah Nuclear Plant Offsite Dose Calculation Manual, Revision 48  
Western Area Radiological Laboratory Interlab Crosscheck Results, 2004 and 2005



Corrective Action Program Documents

PER 25398, The SQN MET Station has experienced repeat failures due to lightening strikes

PER 73867, RCI-21 Control of Radioactive Material does not give clear guidance on requirements to label containers containing radioactive material (2/2/05)

PER 82181, A Radiation Protection Laborer alarmed portal monitor at gate house >100 CPM found on jacket.

PER 97016, On February 10, 2006 Power Stores received several packages containing radioactive material for Chemistry that was not marked as being radioactive. These sources are exempt and no regulatory requirements were violated.

Nuclear Assurance Audit Report SSA0502, Radiological Protection and Control Audit, 01/19/06

**Section 4OA1: Performance Indicator Verification**

Procedures and Guidance Documents

Sequoyah Nuclear Plant Desktop Guideline for Identification and Reporting of NEI 99-02

Performance Indicators for Occupational Exposure Control Effectiveness

SPP-3.4, Performance Indicator and MOR Submittal Using INPO Consolidated Data Entry, Revision 3

SPP-3.1, Corrective Action Program, Revision 11

SPP, SPP-3.4, Performance Indicator and MOR Submittal Using INPO Consolidated Data Entry, Revision 3

Records and Data

Unit 1 and 2 Narrative Logs

Monthly 10CFR50 Appendix I Dose Calculations Package for Liquid and Gaseous Effluents, 4/29/06

Corrective Action Program Documents

PER 82027, 2-VLV-78-559 at the transfer canal in Unit 2 raceway was found to have high radiation readings

PER 82643, Unexpected radiation level changes on the 690 elevation of the Auxiliary Building outside the U2 Mixed Bed Valve Gallery

**Section 4OA3: Event Followup**

PER 99755, Unit 2 Reactor Trip on March 22, 2006

PM #018152000, Internal Inspection of Unit 2 Isophase Bus Duct

**Section 4OA5: Other Activities**

Procedures and Guidance Documents

SPP-7.1, On-Line Work Management, Revision 7

O-SI-DCS-079-001.0 HI-Storm Average Surface Dose Rates, Revision 2

O-SI-DCS-079-002.0 HI-Trac Contamination Surveys, Revision 2

O-SI-DCS-079-003.0 HI-Storm Average Surface Dose Rates, Revision 2

Records and Data

Sequoyah Nuclear Station VSDS Survey Reports, Y110.000 - Y110 Dry Cask Storage Pad, Survey Nos. 020606-4, Dated 02/06/06; 030706-3, Dated 03/07/06; 040206-3,

Dated 04/02/06; 051106-7, Dated 05/11/06; and 060606-3, Dated 06/06/06  
SQN, QA Form 1.22, Area TLD Posting Data Sheets, 2<sup>nd</sup> Quarter 2005, Dated 07/18/05;  
3<sup>rd</sup> Quarter 2005, Dated 12/15/05; 4<sup>th</sup> Quarter 2005, Dated 01/17/06; and 1<sup>st</sup> Quarter 2006,  
Dated 04/11/06

Corrective Action Program Documents

SQN-NA-Audit Report No. SQA0408 - Independent Spent Fuel Storage Installation (ISFSI)  
Project, Dated May 14, 2004  
SQN-PROJ-04-001, Dry Cask Project

**Section 4OA7: Licensee-Identified Violations**

0-GO-13, Reactor Coolant System Drain and Fill Operations, Revision 53  
0-MI-MRR-068-006.0, Installation of Reactor Pressure Vessel Head and Attachments,  
Revision 23