



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

October 25, 2004

Tennessee Valley Authority
ATTN: Mr. K. W. Singer
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

**SUBJECT: SEQUOYAH NUCLEAR POWER PLANT - NRC INTEGRATED INSPECTION
REPORT 05000327/2004004 AND 05000328/2004004**

Dear Mr. Singer:

On September 25, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Sequoyah Nuclear Power Plant, Units 1 and 2. The enclosed integrated inspection report documents the inspection findings, which were discussed on October 1, 2004, with Mr. Dave Kulisek and other members of your staff.

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

Based on the results of this inspection, one finding with potential safety-significance greater than very low significance was identified. This finding, involving the demand failure of a Residual heat Removal System pump breaker, remains unresolved pending NRC determination of the significance of the condition. This failure presented an immediate safety concern, but the breaker was replaced promptly and the system has been returned to service. The NRC will inform you of our final determination of the significance of the condition and any associated enforcement action.

In addition, the inspectors identified two issues of very low safety significance (Green). Both of these issues were determined to be a violation of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these non-cited violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report 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 facility.

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Sincerely,

/RA/

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

Docket No.: 50-327, 50-328
License No.: DPR-77, DPR-79

Enclosure: Inspection Report 05000327/2004004 AND 05000328/2004004
w/Attachment: Supplemental Information

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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: 05000327/2004004 and 05000328/2004004

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant

Location: Sequoyah Access Road
Soddy-Daisy, TN 37379

Dates: June 27, 2004 - September 25, 2004

Inspectors: S. Freeman, Senior Resident Inspector
M. Speck, Resident Inspector
R. Carrion, Project Engineer (Sections 1R06, 1R16, 4OA1)
G. Laska, Operations Engineer (Sections 1R04, 1R13, 1R15,
1R19, 1R22)
E. Riggs, Resident Inspector, Oconee (Section 1R15)
T. Ross. Senior Resident Inspector, St. Lucie (Section 4OA1)
E. Testa, Senior Health Physicist (Sections 4OA1, 4OA5, and
2PS3)
R. Hamilton, Health Physicist (Sections 2OS1 and 2PS1)
A. Nielsen, Health Physicist (Section 2OS3)

Approved by: S. Cahill, Chief
Reactor Projects Branch 6
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000327/2004004, IR 05000328/2004004; 06/27/2004 - 09/25/2004; Sequoyah Nuclear Power Plant, Units 1 & 2; Operability Evaluations, Identification and Resolution of Problems, Event Followup.

The report covered a three-month period of inspection by resident inspectors, a project engineer, an operations engineer, and three region-based health physicists. Two Green non-cited violations (NCVs) and one unresolved item with potential safety significance greater than Green were identified. The significance of most findings is indicated by the color assigned (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: Mitigating Systems

- Green. The inspectors identified a non-cited violation (NCV) for a failure to comply with Technical Specification 3.3.1. when a Loop Control Processor (LCP) failed in Unit 2. The processor failure caused one channel of the reactor protection system to be inoperable and that required the channel to be placed in trip within 6 hours. Because of a licensee position that the processor failure placed all channel bistables in the correct position, operators took no action to trip the channel until approximately 9½ hours after the failure, when preparing to replace the failed processor.

This finding was more than minor because it affected the configuration control attribute of the mitigating systems cornerstone in that it reduced the reliability of the required number of operable channels required by the reactor protection system. Had actual plant conditions called for a trip, not taking deliberate operator action to place the inoperable channels in a tripped condition would reduce the likelihood of proper coincident protection system actuation. This finding is of very low safety significance because there was no loss of safety function and the bistables were actually in the tripped condition. (Section 1R15)

- TBD. The inspectors identified an Unresolved Item (URI) for failure to promptly identify and correct binding problems with the Siemens breaker mechanism operated cell (MOC) slide assembly that resulted in the failure of Residual Heat Removal Pump 1A to start on demand. This has potential safety significance greater than very low significance and will remain unresolved pending completion of the significance determination process.

This finding was considered more than minor because, given that Siemens breakers were used in both trains of several emergency core cooling subsystems, the failure to identify and correct a problem that resulted in a pump failure to start on demand could reasonably be viewed as a precursor to a

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significant event. This finding was also determined to potentially have greater significance because the loss of one train of residual heat removal would result in reduced sump re-circulation capability following a small or medium break size loss-of-coolant accident and no re-circulation capability following the loss of 125-volt DC Battery Board 2. (Section 4OA2)

- Green. The inspectors identified a non-cited violation of Technical Specification 6.8.1 for a self-revealing failure to comply with procedures for monitoring the plant. Operators failed to adequately monitor appropriate parameters and respond to reactor coolant system leakage greater than technical specification limits for a two-hour period which included another activity affecting reactor coolant system inventory. This resulted in a loss of 800 gallons of reactor coolant system inventory over the two-hour period.

This finding is more than minor because it was a post-event human error. This finding is of very low safety significance because once identified, the leak was readily isolated and no loss of safety function occurred. The cause of the finding is related to the cross-cutting element of human performance. (Section 4OA3)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Status:

Both Units 1 and 2 operated at or near 100% rated thermal power (RTP) during the entire inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed a partial walkdown of the following four 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, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control systems 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.

- Unit 2 Residual Heat Removal (RHR) Train B During Mid-Cycle Train A Outage
- Emergency Gas Treatment System (EGTS) Train A during Maintenance on B Train
- Component Cooling System (CCS) Train A during Valve Testing on B Train Heat Exchanger Outlet
- Unit 1 RHR Train A During Mid-Cycle Train B Outage

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; 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

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equipment were implemented in accordance with the licensee's fire plan. Documents reviewed are listed in the attachment.

- Emergency Diesel Generator (EDG) Building
- Control Building Elevation 669 (Mechanical Equipment Room, Battery Rooms, and Battery Board Rooms)
- Essential Raw Cooling Water (ERCW) Building
- Control Building Elevation 706 (Spreading Room)
- Auxiliary Building Elevation 714 (Corridor)
- Control Building Elevation 685 (Auxiliary Instrument Rooms)
- Auxiliary Building Elevation 690 (Corridor)
- Control Building Elevation 734 (Shutdown Board Rooms and Battery Board Rooms)
- Auxiliary Building Elevation 653 (Corridor, RHR and Containment Spray Pump Rooms)

The inspectors observed the performance of the site fire brigade during an unannounced drill on August 19, 2004 to evaluate the readiness of the fire brigade to fight fires. The observed drill simulated a fire in the bay for EDG 1A.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk-important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analysis and design documents, including the updated final safety analysis report (UFSAR), engineering calculations, and abnormal operating procedures, for licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding due to the Fire Protection System. The inspectors performed a walkdown of the fire water header in the Auxiliary Building to verify its configuration and reviewed results of the latest (July 2004) Auxiliary Building High Pressure Fire Suppression System flow test to verify that the acceptance criteria were met.

The inspectors also reviewed the licensee's corrective action documents with respect to flood-related items identified in Problem Evaluation Reports (PERs) written from January 1 through August 25, 2004, to verify the adequacy of the corrective actions. The most significant reviewed PERs written with respect to internal flooding during the period are listed in the attachment.

b. Findings

No findings of significance were identified.

.2 External Flooding

a. Inspection Scope

The inspectors reviewed the design, material condition, and procedures for coping with the design basis probable maximum flood. First, the inspectors reviewed the flooding sections of the UFSAR to determine the barriers required to mitigate the flood. Next, the inspectors reviewed piping layout drawings and walked down the manholes for underground piping to ensure that the ERCW system would remain available following the probable maximum flood. As part of this review, the inspectors also reviewed the licensee analysis for the use of cable insulation degradation due to moisture in the manholes.

The inspectors also reviewed the abnormal operating procedure (AOP) for mitigating the design basis flood. This procedure included different sections for different operating modes, however, for this review, the inspectors focused on flood mitigation with both units operating at 100% RTP. The flooding AOP also included provisions for installing spool pieces in different sections of piping throughout the plant. In order to verify that these pieces were properly staged the inspectors walked down the fuel pool cooling heat exchangers, the component cooling heat exchangers, and associated ERCW piping. The inspectors also walked down the auxiliary charging system to verify that the installed equipment matched that assumed in the procedure and that the procedure would properly put the system in service.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed simulator training on July 26, 2004. The training involved a controlling instrument and charging pump failure followed by a Reactor Coolant System (RCS) leak that required a manual trip, safety injection, and emergency classification. 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 Technical Specifications (TS) actions; and group dynamics involved in crew performance. The inspectors also observed the evaluators' critique and reviewed simulator fidelity to verify that it closely paralleled recent modifications.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following three 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 Code of Federal Regulations (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.

- Momentary opening of RCS Power Operated Relief Valve (PORV) during quarterly testing of Pressurizer Pressure Channel
- Availability of the Unit 2 6.9-kV Shutdown Boards
- Containment Spray Pump 2B Breaker Cell Switch repair and adjustment

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the following six activities to verify that the appropriate risk assessments were performed prior to removing equipment for work. 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 SS1, and Instruction 0-TI-DSM-000-007.1, Risk Assessment Guidelines, Revision 8. Documents reviewed are listed in the attachment.

- RHR Pump 1A failure to start during surveillance
- Unit 2 RHR, Containment Spray, and Safety Injection A Train Outage
- Unit 2 Centrifugal Charging Pump B Train Outage
- Replacement of 6.9-kV Auto-Close Siemens Breakers with ABB Breakers

- Unit 1 Component Cooling Train B Outage
- Unit 1 Auxiliary Building Ventilator and Electric Board Room Chiller A out-of-service concurrently

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the six 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 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 64015, Evaluation of Auxiliary Building Room Coolers with Access Panels Removed
- PER 64477, Failure of Eagle 21 Logic Card in Unit 2 Protection Set 4, Rack 13
- PER 64674, RHR Pump 1A Failed to Start on Demand
- PER 66924, Higher-Than-Predicted Water Gap Closure on Framatome Alliance Lead Test Assemblies
- PER 61789, Nuclear Instrument N41 Upper Detector Ammeter Found Out-of-Tolerance
- PER 62486, One Section of Intake Damper for Diesel Generator 2B Failed Closed

b. Findings

Introduction: The inspectors identified a green non-cited violation (NCV) for a failure to comply with TS 3.3.1 when a Loop Control Processor (LCP) failed in Unit 2.

Description: On July 1, 2004, an LCP failure occurred in Protection Set 4 Rack 13 of the Eagle 21 Reactor Protection System of Unit 2. This affected Delta T, Tavg, pressurizer pressure, PORV Interlock, Refueling Water Storage Tank Level, Containment Sump Level, and Wide-Range Steam Generator Level control and protection functions. Operators followed actions of the appropriate AOPs to defeat the control functions of the affected channels and attempted to reset the LCP, but were unsuccessful.

In addition, based on the licensee position that a LCP failure placed all associated channel bistables in the correct TS position for an inoperable channel, operators took no further action to trip the bistables. Approximately 9½ hours after the failure occurred, operators tripped all channel bistables when preparing to replace the failed LCP.

The inspectors reviewed logs and procedures, compared TS requirements to the actions taken, and interviewed licensee operations and engineering staff members. The inspectors also reviewed the licensee's written position on LCP failure and discussed it with the NRC Office of Nuclear Reactor Regulation. From this, the inspectors determined that operator action to trip the channel bistables 9½ hours after the failure occurred did not comply with TS 3.3.1, Action 9, and TS 3.3.2, Action 36, which required the inoperable channels to be placed in the tripped condition within six hours.

Analysis: This finding was more than minor because it affected the configuration control attribute of the mitigating systems cornerstone in that it reduced the reliability of the required number of operable channels required by the reactor protection system. Had actual plant conditions called for a trip, not taking deliberate operator action to place the inoperable channels in a tripped condition would reduce the likelihood of proper coincident protection system actuation. The TS action statement to "place" the channel in the tripped condition is deliberate in that there is no assurance that the channel will fail in the safe condition and raises an operability question if this action is not taken. Because there was no loss of safety function and the bistables were actually in the tripped condition due to the failed LCP input, the failure to meet the TS was considered to be of very low safety significance (Green).

Enforcement: TS 3.3.1 requires that inoperable channel bistables be placed in a tripped condition within six hours. Contrary to the above, on July 1, 2004, the licensee failed to place the inoperable channel bistables for functions served by the LCP in Protection Ste 4, Rack 13 of the Sequoyah Unit 2 RPS in a tripped condition within that time. Because this violation was determined to be of very low safety significance, it is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000328/2004004-01, Failure to Comply with TS 3.3.1. This violation is in the licensee's corrective action program as PER 64477.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed the cumulative effects of deficiencies that constituted operator workarounds to determine whether or not they could affect the reliability, availability, and potential for misoperation of a mitigating system; affect multiple mitigating systems; or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also assessed whether operator workarounds were being identified and entered into the licensee's corrective action program at an appropriate threshold. Documents reviewed are listed in the attachment.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the seven 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.

- Work Order (WO) 04-771681-000, Charging Pump 2B Train Outage
- WO 02-004750-000 and WO 02-004750-003, MCR Chiller B Oil Leaks and Compressor Replacement
- WO 04-775100-000, EDG 2B Idle Speed Testing and Relay Replacement
- WO 04-778943-000, Replace 30RX and 1X Relays in Control Circuit for Containment Spray 1B Motor
- WO 03-012491-000, Rebuild ERCW Pump R-A
- WO 04-779355-000, Containment Spray Pump 2B Breaker Cell Switch Repair and Adjustment
- WO 03-014194-000, MOVAT Testing on RHR 1B Minimum Flow Control Valve

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the six 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, 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:

- 0-SI-OPS-065-017.A, Containment Shield Building Emergency Gas Treatment System Flow Train A, Revision 11

- 2-SI-OPS-030-286.0, Cumulative Time That Containment Purge Supply and Exhaust Isolation Valves are Open, Revision 2
- 2-SI-SXP-003-201.A, Motor-Driven Auxiliary Feedwater Pump 2A-A Performance Test, Revision 10*
- 1-SI-IFT-068-322.4 Functional Test of Pressurizer Pressure Channel IV, Rack 13, Loop P-68-322, Revision 7
- 0-SI-SLT-030-258.1, Containment Isolation Valve Local Leak Rate Test Purge Air, Revision 3**
- 0-SI-SFT-065-001.B, Emergency Gas Treatment System Filter Train B, Revision 11

*This procedure included inservice testing requirements.

**This procedure included testing of a large containment isolation valve.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the two temporary modifications listed below and the associated 10 CFR 50.59 screening, and compared each against the UFSAR and TS to verify that the modification did not affect operability or availability of the affected system. The inspectors walked down each modification to ensure that it was installed in accordance with the modification documents and reviewed post-installation and removal testing to verify that the actual impact on permanent systems was adequately verified by the tests.

- TACF 1-04-0019-067, Leak Repair of Tube Leak on 1A Spent Fuel Pump/Thermal Barrier Booster Pump Area Cooler
- TACF 0-04-026-032, Temporary Compressor for Station Control and Service Air

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill on August 18, 2004 to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities. The

inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with EPIP-1, Emergency Plan Classification Matrix, Revision 35. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying failures.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety and Public Radiation Safety

2OS1 Access Control To Radiologically-Significant Areas

a. Inspection Scope

Access Controls: During tours of the auxiliary building and refueling floor, 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) and Unit 2 (U2)** auxiliary buildings and radwaste processing areas. The inspectors conducted independent surveys in several areas to verify posted radiation levels and to compare current licensee survey records. These surveyed areas included an abandoned positive displacement charging pump room 2C, safety injection pump room 2-B-B, waste condensate tanks, laundry and hot shower tanks, both hot sample rooms, protective clothing dressout, and an abandoned waste evaporator. During the 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 (SFPs). The inspectors also reviewed selected parts of seven Radiological Control (Radcon) procedures, two radiation work permits (RWPs), and discussed current access control program implementation with Radcon supervisors.

During the onsite inspection, radiological controls for work activities in High Radiation Areas (HRA) were observed and discussed. The inspectors observed minor maintenance work being performed in the auxiliary buildings. The inspectors observed workers' adherence to RWP guidance and Health Physics (HP) technician proficiency in providing job coverage. Controls for limiting exposure to airborne radioactive material were reviewed and operation of ventilation units and positioning of continuous air

monitors were also observed. The inspectors evaluated electronic dosimeter alarm set points for consistency with radiological conditions. In addition to observing the minor maintenance activities, inspectors interviewed workers in the U1 and U2 auxiliary buildings to assess knowledge of RWP requirements.

Radcon program activities were evaluated against 10 CFR Part 20; Technical Specification (TS) Section 5; 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: Four Problem Evaluation Reports (PERs) and two audits 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 (CAP), Revision 5. Specific documents reviewed are listed in the report attachment.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment

a. Inspection Scope

Radiation Monitoring Instrumentation: During tours of the auxiliary building and refueling floor, the inspectors observed installed radiation detection equipment including the following instrument types: Area Radiation Monitors (ARMs), Continuous Air Monitors (AMS-4s), Personnel Contamination Monitors (PCM-1Bs), and components of the Post-Accident Sampling System (PASS). The inspectors observed the physical location of the components, noted the material condition, and compared sensitivity ranges with the Updated Final Safety Analysis Report (UFSAR) and other applicable requirements. The inspectors also observed HP technicians' use of portable air samplers and survey meters during an at-power entry into U1 upper containment.

In addition to equipment walk-downs, the inspectors observed functional checks and alarm setpoint testing of various fixed and portable detection instruments. These observations included: calibration of a refueling floor ARM; response checks of portable ion chambers and teletectors; and source checks of electronic dosimeters and a whole body counter. The most recent 10 CFR Part 61 analysis for Dry Active Waste (DAW) was reviewed to determine if calibration and check sources are representative of the plant source term.

The inspectors reviewed the two most recent calibration records for an auxiliary building AMS-4 and for all U2 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 Section 2OS3 of the report 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 four SCBA units for the past five years and certification records associated with supplied air quality.

Qualifications for off-site staff (no maintenance is performed on-site) responsible for testing and repairing SCBA equipment were evaluated through review of training records. In addition, three 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.

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; ANSI-Z88.2-1992, American National Standard for Respiratory Protection; and applicable licensee procedures. Documents reviewed during the inspection are listed in Section 2OS3 of the report attachment.

Problem Identification and Resolution: Three licensee PERs and one Self-Assessment 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, Rev. 7S1. Documents reviewed are listed in Section 2OS3 of the report Attachment.

b. Findings

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systemsa. Inspection Scope

Radioactive Effluent Treatment and Monitoring Systems: The operability, availability, and reliability of selected effluent process sampling and detection equipment were reviewed and evaluated. Inspection activities included record reviews and direct observation of equipment installation and operation. Current calibration data were reviewed for the selected process monitors.

The inspectors reviewed the most current Radioactive Effluent Report to assess report content and program implementation for consistency with TS, Offsite Dose Calculation Manual (ODCM) requirements and the guidance in 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." Changes to the current ODCM were also evaluated.

The accessible major components of the gaseous and liquid effluent processing and release systems were observed for material condition and for system configuration with respect to descriptions in the UFSAR and ODCM. Material condition, operability, and alarm set points were assessed for five effluent radiation monitoring systems. The inspectors assessed whether compensatory sampling and analyses were performed as required when effluent monitors were out of service. Calibration records for five effluent radiation monitors, one count room gamma spectroscopic instrument, and one liquid scintillation instrument were reviewed to assess whether required surveillances were current and whether procedurally established acceptance criteria were met. The selected process monitors were associated with liquid radwaste, (blowdown, sump discharge, essential raw water cooling, and cask decon collector tank) and gaseous effluents (shield building exhaust, auxiliary building vent, and containment purge). The inspectors reviewed the licensee's quality control (QC) evaluations of intra-laboratory comparison analytical results for samples typical of plant effluents.

Equipment configuration, material condition, and operation for the effluent processing, sampling, and monitoring equipment were reviewed against details documented in TS; 10 CFR Part 20; UFSAR Sections 11 and 12; ODCM, Rev. 47; American National Standards Institute (ANSI)-N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities; ANSI-N13.10-1974, Specification and Performance of On-Site Instrumentation for Continuously Monitoring Radioactivity in Effluents; and approved procedures listed in Section 2PS1 of the report Attachment.

Effluent sampling task evolutions, and offsite dose results were evaluated against 10 CFR Part 20 requirements, Appendix I to 10 CFR Part 50 design criteria, TS, UFSAR details, ODCM, and applicable procedures listed in Section 2PS1 of the attachment. Laboratory QC activities were evaluated against 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 Plant, June 1974; and RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) -

Effluent Streams and the Environment, December 1977.

Problem Identification and Resolution. Eight PERs and one audit associated with effluent processing and monitoring activities were reviewed and discussed with Chemistry personnel. The inspectors assessed the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with licensee procedure SPP-3.1, CAP, Rev. 7S1. Specific documents reviewed are listed in the report attachment.

b. Findings

No findings of significance were identified.

2PS3 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Implementation: The environmental monitoring program guidance and implementation activities were inspected. The inspection consisted of direct physical observation of sample stations, sample collection, sample preparation, review of the Annual Environmental Operating Reports for 2002 and 2003 and documentation, and interviews with licensee personnel.

The inspectors observed the routine weekly collection of five airborne particulate and iodine samples and the collection of a milk sample. The observed sample collection locations were LM-2, PM-9, PM-2, PM-3, and RM-2. The inspectors observed the material condition of one water composite sampler at the City of Dayton Municipal Water Intake, five air samplers and five co-located rainfall composite sampling devices. Milk collection from a local dairy farm, Farm HW, was observed. Environmental thermoluminescent dosimeters (TLDs), in the vicinity of the air sampling stations, were checked for material condition and appropriate identification. TLDs examined included WSW-2A, SW-2, W-3, -4, NW-2, NNW-3 and co-located TLDs: Sequoyah NNE-4 and Watts Bar SW-3.

Air flow calibration records were reviewed for sampler numbers LM-2 and PM-9. The inspectors independently determined the sampling locations using a handheld global positioning system (GPS) instrument. The inspectors compared the GPS locations with licensee measurements, the ODCM specified locations, and the Annual Radiological Environmental Operating Report.

Results of inter-laboratory comparisons for typical REMP sample types during calendar year (CY) 2002 and 2003 were reviewed and evaluated.

Licensee procedures and activities related to environmental monitoring were evaluated for consistency with the TS, USFAR, and ODCM. The licensee's environmental monitoring related procedures, reports and records reviewed during the inspection are listed in Section 2PS3 of the report Attachment.

Meteorological Monitoring Program: The inspectors walked down the meteorological tower and its supporting instrumentation and observed the physical condition of the equipment. The inspectors compared system-generated data with the data provided by the plant computer to various locations including the control room. The data were also compared with the inspectors' observations of wind direction and speed measured at the tower. The inspectors also assessed system reliability and data recovery. Meteorological tower siting was evaluated based on near field obstructions, ground cover, proximity to the plant, and distance from terrain that could affect the representativeness of the measurements. The inspectors reviewed the calibrations and trouble reports for selected meteorological tower sensors used during the previous year.

Licensee procedures and activities related to meteorological monitoring were evaluated for consistency with TS, ODCM, UFSAR Section 2.3 Meteorology, and ANS/ANSI 3.11-2000, Determining Meteorological Information at Nuclear Facilities.

Unrestricted Release of Material from the RCA: Radiation protection activities associated with radioactive material control and the unconditional release of materials from the RCA were reviewed and evaluated. The inspectors observed surveys of personnel and material being released from the RCA and evaluated licensee response to detector alarms. Functional source checks using Gamma Tool Monitor (GTM), personnel contamination monitor (PCM-1B), and gamma-sensitive portal monitor (PM-7) equipment were observed and detector sensitivity was discussed with HP supervision. To evaluate the appropriateness and accuracy of release survey instrumentation, radionuclides identified within recent waste stream analyses were compared against the radionuclides used in current performance check sources. In addition, the two most recent calibration records for selected GTMs, PCM-1Bs, and PM-7s were reviewed.

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. Licensee documents reviewed are listed in Section 2PS3 of the report attachment.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

Cornerstone: Mitigating Systems

The inspectors sampled licensee submittals for the two PIs listed below. For the high pressure injection unavailability, the inspectors looked at the period from October 1, 2003 to June 30, 2004, and for the functional failures from July 1, 2003 through June 30, 2004.

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 2, were used to verify the basis in reporting for each data element.

- Safety System Unavailability: High Pressure Injection System
- Safety System Functional Failures

The inspectors reviewed portions of the operations logs and raw PI data developed from monthly operating reports and discussed the methods for compiling and reporting the PIs with cognizant licensing, engineering, and maintenance rule personnel. The inspectors also independently screened maintenance rule cause determination and evaluation reports and calculated selected reported values to verify their accuracy. The inspectors compared graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. Licensee event reports (LERs) issued during the referenced time frame were also reviewed for safety system functional failures and are listed in the attachment.

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

The inspectors reviewed PER records generated from June 2003 through August 2004 to ensure that radiological occurrences were properly classified per NEI 99-02. The inspectors also reviewed electronic dosimeter alarm logs, radioactive material intake records, and monthly PI reports for CY 2004. In addition, licensee procedural guidance for classifying and reporting PI events was evaluated. Reviewed documents are listed in Section 4OA1 of the report attachment.

Cornerstone: Public Radiation Safety

- RETS/ODCM Radiological Effluents Occurrence

The inspectors reviewed records 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. Those records included monthly effluent dose calculations for CY 2004. 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. Reviewed documents are listed in Section 4OA1 of the report 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. Documents reviewed are listed in the attachment.

.2 Annual Sample Review of Siemens 6.9-kV Breaker Problems

a. Inspection Scope

The inspectors reviewed licensee actions to resolve problems with Siemens breakers. This review began as a look at how the licensee addressed problems associated with the replacement of ABB breakers with Siemens breakers because the licensee had initiated numerous PERs since October 2001, and because the breakers had been installed in locations where common problems could affect multiple safety-related systems. However, due to a series of events where different breakers failed to close during testing and one instance of a Siemens breaker for RHR Pump 1A failing to close on demand, the inspectors focused the review on the causes of the failures themselves and corrective actions for previously identified problems.

In November 2001, the licensee began replacing the existing air circuit breakers in the safety-related 6.9-kV shutdown boards, supplied by ABB, with vacuum circuit breakers from Siemens. These breakers were an already-marketed design, but modified to fit the existing ABB cubicles and qualified by Wyle Labs using a commercial grade dedication process. Since November 2001, the licensee has initiated approximately 50 PERs concerning problems with Siemens breakers, at least three of which were deemed

significant. In two of these, PER 18572 and PER 21862, the licensee rolled several problems into one. The third, PER 60199, also a rollup PER, was written to address the following breaker failures:

On January 31, 2002, a Siemens breaker failed to close while racked to the test position during initial checks after installation.

On June 6, 2002, the Siemens breaker for ERCW Pump M-B failed to close while racked to the test position during post-maintenance testing.

On July 31, 2002, a Siemens breaker failed to close while racked to the connect position during post-maintenance testing.

On February 11, 2004, the Siemens breaker for ERCW Pump P-B failed to close while racked to the connect position during post-maintenance testing.

On February 18, 2004, the Siemens breaker for Containment Spray Pump 2A failed to close while racked to the connect position during post-maintenance testing.

On April 9, 2004, the Siemens breaker for ERCW Pump M-B failed to close while racked to the connect position during post-maintenance testing.

On April 26, 2004, the Siemens breaker for ERCW Pump P-B failed to close while racked to the connect position during post-maintenance testing.

On July 7, 2004, RHR Pump 1A, which used a Siemens breaker, failed to start on demand during surveillance testing. This was the first in-service demand failure of a Siemens breaker.

b. Findings and Observations

Introduction: The inspectors identified a URI for failure to promptly identify and correct binding problems with the Siemens breaker mechanism operated cell (MOC) slide assembly that resulted in the failure of RHR Pump 1A. This has potential safety significance greater than very low significance and will remain unresolved pending completion of the SDP.

Description: On July 7, 2004, RHR Pump 1A failed to start during routine surveillance testing because the breaker did not close and latch. The licensee immediately declared the pump inoperable and began troubleshooting. The same failure occurred a second time during troubleshooting. At that point the licensee replaced the Siemens breaker with an older style ABB breaker and declared the pump operable after end device testing on July 8, 2004. Later, the licensee, along with vendor personnel, examined the failed breaker, determined that the MOC slide assembly was binding on the mounting hardware, and attributed the failure to insufficient clearance between the assembly and the mounting hardware. They also indicated that this binding was exacerbated by bradding of the slide assembly metal at the upper end of the mounting slot that allowed

the slide assembly to become wedged between the circuit breaker side sheet and mounting hardware. The bradding was caused by the successive impacts of the slot against the mounting hardware as the breaker was cycled open. The failed breaker had been installed in the RHR Pump 1A cubicle on April 27, 2004, and was last successfully operated on June 23, 2004.

The inspectors reviewed the PER descriptions of previous problems with Siemens breakers, observed the licensee examination of the failed RHR breaker, examined the MOC slide assembly on the failed breaker, and interviewed the involved engineering and maintenance personnel. In addition, the inspectors compared digital photographs of the MOC slide assembly from the failed RHR breaker against those of a MOC slide assembly from a different breaker that failed during testing at the vendor facility. From these actions, and after reviewing the circumstances surrounding the breaker failure, the inspectors concluded that the licensee had several previous opportunities to identify and correct the problem with the RHR breaker before the failure occurred.

The vendor had made five revisions to the basic breaker design due to problems that occurred at the site. Four of these revisions involved problems with the mechanism for driving the MOC switch. The inspectors concluded that these design changes provided an opportunity for the licensee to do a broad, thorough review of the MOC design and, therefore, offered an early chance to see the potential for binding between the MOC slide and the mounting hardware.

Following the failure of the ERCW P-B Pump on April 26, 2004, the licensee sent that breaker and three others to a Siemens facility for root cause evaluation. On May 3, 2004, the licensee received a draft report from Siemens on the root cause of the failures of these breakers. This draft report indicated that one of the breakers had failed because the MOC slide assembly became stuck in the open position due to bradding caused by the impact of the assembly mounting slot against the mounting hardware as the breaker opened. The vendor recommended an inspection of all deliverable breakers to ensure that excessive bradding had not occurred. They suggested that this inspection could be visual or functional, but stated that a visual inspection was somewhat subjective and recommended that guidance for evaluation of the bradding be done by the licensee representative who witnessed the earlier testing at the vendor facility. While allowing that some minor bradding was normal, the vendor suggested that a functional test, which included disconnecting the MOC actuator at its gear drive and exercising it to prove that no binding occurs, was a less subjective and more accurate method of inspection.

The licensee elected to do visual inspections, not the functional tests. On May 4, 2004, the licensee performed visually inspected 12 breakers designated as spare and not installed in the plant. The inspection was performed by the licensee breaker specialist who had observed the root cause testing at the Siemens facility. Of the 12 breakers tested, three were considered to have slight bradding with the remaining nine considered to have no bradding. On May 28, 2004, the licensee initiated a visual inspection of six breakers installed in the A train of the emergency core cooling systems (ECCS), including RHR Pump 1A, which was inspected on June 9, 2004, and 12

breakers installed in the B train of ECCS. Because the vendor indicated that some bradding was normal and small amounts of bradding had been found on earlier inspections, the licensee chose to perform these inspections with electrical maintenance personnel using a boroscope. Each breaker was in its cubicle and connected to the bus. The inspection was recorded and engineering personnel were to determine the acceptability of the inspection data. However, engineering personnel were not present at any of the examinations of the 18 installed breakers and reviewed the video tape on only one that was questioned by the technicians, which engineering determined to be grease. The other 17 breakers were considered to have no bradding. The inspectors determined that the binding problem was actually present at the time of this inspection but was missed because the licensee chose to use the more subjective visual test instead of the functional test.

In order to verify that licensee actions had been sufficient to promptly identify and correct the problem with the MOC slide assembly, the inspectors reviewed PERs written on Siemens breakers to determine whether or not there had been any previous occurrences of similar binding problems with other breakers. This search revealed that on July 11, 2003, while doing receipt inspection of a Siemens breaker, maintenance personnel identified a problem with the MOC slide assembly not being able to move freely in the elongated slot. At that time the licensee loosened the shoulder bolt holding the MOC slide assembly for the affected breaker and entered the problem into PER 26065. The inspectors concluded that this problem, if not identical to, was at least a precursor to the binding problems seen on the RHR pump breaker.

From this information, the inspectors determined that the problem that led to the failure of RHR Pump 1A on July 7, 2004, was actually present when the licensee performed visual inspections on June 9, 2004, but was missed. Also a similar binding problem on a different breaker had been discovered on July 11, 2003. The inspectors concluded that the licensee's actions upon discovery of binding in the breaker at the Siemens facility in April of 2004 did not improve the possibility of identifying and correcting the problem with the RHR breaker. The licensee chose not to perform a thorough search for previous occurrences of similar binding problems and a functional inspection of the breakers for bradding. Because the binding problem existed at the time of inspection on the RHR breaker, a similar binding problem had occurred earlier on a different breaker, and the licensee chose not to perform the more rigorous functional inspection recommended by Siemens, the inspectors concluded that the licensee failed to identify and correct a known problem that resulted in the failure of RHR Pump 1A to start on demand.

Analysis: This finding was considered more than minor because, given that Siemens breakers were used in both trains of several ECCS subsystems, the failure to identify and correct a problem that resulted in a pump failure to start on demand could reasonably be viewed as a precursor to a significant event. This finding was also determined to potentially have greater significance because the loss of one train of RHR

would result in reduced sump recirculation capability following a small or medium break size loss-of-coolant accident and no recirculation capability following the loss of 125-VDC Battery Board 2.

Enforcement: 10 CFR 50, Appendix B, Criterion XVI, requires that measures be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to this, on June 9, 2004, the licensee failed to identify and correct a problem with binding on the MOC slide assembly of the breaker for RHR Pump 1A that subsequently resulted in the failure of that pump to start on demand. Pending determination of safety significance, this finding is identified as Unresolved Item (URI) 05000327/2004004-02, Failure to Identify and Correct MOC Binding Problems on Siemens Breakers.

4OA3 Event Followup

a. Inspection Scope

Inspectors evaluated operator actions following a report of an 800-gallon loss of RCS inventory during maintenance activity. Inspectors observed licensee management fact-finding activities, compared requirements of procedures to actions taken, and evaluated the event for reportability requirements. Documents reviewed are listed in the attachment.

b. Findings.

Introduction: A Green self-revealing NCV was identified for licensed operators failing to appropriately monitor the status of plant systems and equipment, which resulted in a loss of 800 gallons of RCS inventory over a 2-hour period at a rate in excess of TS limits.

Description: On September 1, 2004, at approximately 1535, operators started placing a valve clearance on the 1B Mixed Bed Demineralizer. Based on recorded level trends, at about 1600, Volume Control Tank (VCT) level started dropping from an initial level of about 65% full. At approximately 1730, a 200-gallon RCS dilution was conducted to maintain primary temperature on program. VCT level was about 34% full at the start of the dilution, ending at about 42% full. VCT level continued to drop until 1810 when operators observed the VCT level downward trend and took actions for excessive RCS leakage. Based on an estimated 4.75 to 6.50 gallons per minute (gpm) leak rate, the unit entered TS 3.4.6.2 for unidentified leakage in excess of 1 gpm. Work was stopped on the chemical and volume control system, the clearance was released after operators verified that no maintenance had been initiated, and boundary valves were realigned to their previous positions. Operators closed manual valve 1-62-909, Mixed Bed Demineralizer B Outlet Isolation, and VCT level finally stabilized at approximately 25% full. The unit then exited TS 3.4.6.2. There was no effect on pressurizer level or charging flow, and auxiliary building radiation levels were normal with no upward trends. Operators evaluated the site emergency plan for required declarations and determined that criteria were not met.

Subsequent investigation revealed that maintenance boundary valve leakage through a drain path to the Tritiated Drain Collecting Tank caused the leakage.

Licensee Procedure OPDP-1, Conduct of Operations, Revision 4, Section 3.3, states, "The status of plant systems shall be appropriately monitored..." and Procedure SPP-10.0, Plant Operations, Revision 3, Section 3.1 states, "The operator at the controls, and his immediate supervisor, shall be continuously alert to plant conditions and ongoing activities affecting plant operations." The inspectors determined that failure to observe VCT level decreasing at a rate greater than the TS limit for unidentified leakage during a two-hour period which included an evolution also affecting VCT level (a 200-gallon RCS dilution) was not in compliance with these procedures. The cause of this finding was related to the cross-cutting area of human performance.

Analysis: This finding is more than minor because it was a post-event human error in that operators failed to adequately monitor appropriate parameters and respond to RCS leakage greater than TS limits for a two-hour period which included another activity affecting RCS inventory. Responding to leakage is considered to be a mitigating action. However, once identified, the leak was readily isolated and no loss of safety function occurred. Therefore, this finding is considered to be of very low safety significance (Green).

Enforcement: TS 6.8.1 required that written procedures be established, implemented, and maintained covering activities recommended by Reg Guide 1.33, Appendix A, which included responsibilities for safe operation. Licensee Procedures SPP-10.0 and OPDP-1 required that the status of plant systems and equipment be appropriately monitored. Contrary to this, on September 1, 2004, operators failed to detect RCS leakage at a rate in excess of TS limits for a period of approximately two hours. Because this violation was determined to be of very low safety significance, it is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000327/2004004-03, Operator Inattentiveness Resulted in an 800-Gallon Loss of RCS Inventory Over a Two-Hour Period. This violation is in the licensee's corrective action program as PER 68218.

4OA4 Cross Cutting Aspects of Findings

The finding in Section 4OA3 describes human performance errors where licensee operators failed to adequately monitor appropriate parameters and respond to RCS leakage greater than TS limits for a two-hour period which included another activity affecting RCS inventory. The inspectors considered this to be a post-event human error.

4OA5 Other Activities**.1 Independent Spent Fuel Storage Installation (ISFSI) Radiological Controls****a. Inspection Scope**

The inspectors conducted independent gamma and neutron surveys of the ISFSI facility and compared the results to previous quarterly surveys. The inspectors also observed and evaluated implementation of radiological controls, including RWPs and postings, and discussed the controls with a HPT and HP 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 Part(s) 20 and 50, NRC Certificate of Compliance (COC) #1014, and applicable licensee procedures. Documents reviewed are listed in section 4OA5 of the report attachment.

b. Findings

No findings of significance were identified.

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

During the previous reporting period, the inspectors completed Phase I and Phase II of Temporary Instruction 2515/154, Spent Fuel Material Control and Accounting at Nuclear Power Plants. Appropriate documentation of the results was provided to NRC management, as required by the TI. This completes the Region II inspection requirements for this TI.

.3 (Closed) NRC TI 2515/156, Offsite Power System Operational Readiness

During the previous reporting period, inspectors collected data from licensee maintenance records, event reports, corrective action documents and procedures, and through interviews of station engineering, maintenance, and operations staff, as required by TI 2515/156. Appropriate documentation of the results was provided to headquarters staff for further analysis, as required by the TI. This completes the Region II inspection requirements for this TI.

4OA6 Meetings, including Exit

Exit Meeting Summary

On October 1, 2004, the resident inspectors presented the inspection results to 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee personnel:

J. Bajraszewski, Licensing Engineer
G. Buchanan, System Engineer Supervisor
R. Douet, Site Vice President
M. Gillman, Operations Manager
K. Jones, System Engineer Manager
D. Kulisek, Plant Manager
J. Laughlin, Assistant Plant Manager
P. Pace, Licensing and Industry Affairs Manager
K. Parker, Maintenance and Modifications Manager
J. Reynolds, Operations Superintendent
R. Rogers, Engineering and Site Support Manager (Acting)
P. Salas, Licensing and Industry Affairs Manager
J. Smith, Site Licensing Supervisor
K. Smith, Assistant Plant Manager
J. Traister, Security Manager

NRC personnel:

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000327/2004004-02	URI	Failure to Identify and Correct MOC Binding Problems on Siemens Breakers (Section 4OA2.2).
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Opened and Closed

05000328/2004004-01	NCV	Failure to Comply with TS 3.3.1 to Trip RPS Bistables (Section 1R15).
05000327/2004004-03	NCV	Operator Inattentiveness Resulted in an 800-Gallon Loss of RCS Inventory over a Two-Hour Period (Section 4OA3).

Closed

05000327,328/2515/154	TI	Spent Fuel Material Control and Accounting at Nuclear Power Plants
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Attachment

(Section 4OA5.2)

05000327,328/2515/156

TI

Offsite Power System Operational
Readiness (Section 4OA5.3)

LIST OF DOCUMENTS REVIEWED

Section 1R04: Equipment Alignment

2-SO-63-5, Emergency Core Cooling System, Revision 35
0-SO-65-1, Emergency Gas Treatment System Air Cleanup and Annulus Vacuum, Revision 13
1,2-47W810-1, Residual Heat Removal System Flow Diagram, Revision 43

Section 1R05: Fire Protection

1,2-47W494-4, Fire Protection - Plan Elevation 734.0, Revision 7
SPP-10-10, Control of Transient Combustibles, Revision 3S1

Section 1R06: Flood Protection Measures

UFSAR Sections 2.3 and 2.4, including Appendix 2.4A, Flood Protection Plan
PER 24226, Switches 0-LS-18-3 and 0-LS-18-6 Under Water due to High Level in the FOST Moat
PER 24739, CCW Building Penetration for the Old Fire Header Strainer Discharge not Sealed
PER 33672, Flood Mode Spool Piece 1-SPPC-067-0687 Did not Fit to Valves 1-70-662 or 1-67-678
PER 61940, While Releasing Clearance, Drain Valves for Fire Protection Deluge Valve Left Open
PER 62252, Leak Determined to be Present on the HPFP System
PER 63385, Two "Turb Aux or Reac Bldg Flooded" Alarms Received Five Minutes Apart
PER 65647, Scheduled Maintenance Activity for the HPFP System Removes Numerous Hose Stations and Sprinkler systems From Service
PER 65838, Leak in HPFP System
PER 66671, Fire Pump Start Signal on the Main Fire Protection Console
Calculation SQS40056, Moderate Energy Line Break Flooding Study, Revision 10
Letter from R C Williams to J H Rinne, Sequoyah Nuclear Plant Cable Splices in Underground Ductbanks, dated July 26, 2000
PER 22700, ERCW Pump P-B Tripped on Overcurrent
WO 03-018293-000, Check Standing Water in Manholes/Handholes
10N213, Grading Plan - Intake Channel, Revision 9
17W304-1, ERCW Supply Piping, Revision 13
17W304-2, ERCW Supply Piping, Revision 9
17W304-3, ERCW Supply Piping, Revision 5
17W304-4, ERCW Supply Piping, Revision 5
17W304-5, ERCW Supply Piping, Revision 5
1,2-47W845-2, Mechanical Flow Diagram-Essential Raw Cooling Water System, Revision 82
1,2-47W859-1, Mechanical Flow Diagram-Component Cooling System, Revision 49
1-47W859-2, Mechanical Flow Diagram-Component Cooling System, Revision 30
2-47W859-3, Mechanical Flow Diagram-Component Cooling System, Revision 30
1,2-47W850-2, Mechanical Flow Diagram-Fire Protection, Revision 26
1,2-47W850-24, Mechanical Flow Diagram-Fire Protection, Revision 20
1,2-47W803-2, Mechanical Flow Diagram-Auxiliary Feedwater, Revision 59
1,2-47W809-7, Mechanical Flow Diagram-Flood Mode Boration Makeup System, Revision 20

AOP-N.03, Flooding, Revision 21
 0-SO-84-1, Flood Mode Boration Makeup System, Revision 7
 0-PI-FPU-026-073.A, Fire/Flood Mode Pump A-A Flow Test, Revision 0
 0-PI-FPU-026-073.B, Fire/Flood Mode Pump B-B Flow Test, Revision 1
 1-PI-SFT-084-001.0, Functional Test of Flood Mode Boration Makeup System, Revision 5
 2-PI-SFT-084-001.0, Functional Test of Flood Mode Boration Makeup System, Revision 6

Section 1R12: Maintenance Effectiveness

1-SI-IFT-068-322.4 Functional Test of Pressurizer Pressure Channel IV, Rack 13, Loop P-68-322, Revision 7
 WO 04-779355-000, Repair/Adjust Containment Spray Pump 2B-B Shelf Switch

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

Online Sentinel Run for July 6, 2004, through July 23, 2004
 Online Sentinel Run for July 26, 2004, through August 12 , 2004
 Online Sentinel Run for August 23, 2004, through August 27, 2004
 0-TI-DSM-000-007.1, TVA Risk Assessment Guidelines, Revision 8
 SPP-7.1, TVAN On-line Work Management, Revision 5
 Online Sentinel Run for September 13, 2004 through October 3, 2004

Section 1R15: Operability Evaluations

PER 64454, Air Flow Bypass of Auxiliary Building Room Coolers with Access Panels Removed
 AOP-I-11, Eagle 21 Malfunction, Revision 5
 AOP-I.02, RCS Loop RTD Instrument Malfunction, Revision 1
 AOP-I.04, Pressurizer Instrument Malfunction, Revision 6
 2-2000E54-1,2, and 3, Revision 1, Rack 13 Protection Set IV Wiring Diagrams
 Sequoyah White Paper, Reactor Protection System Soft Trip vs. Hard Trip
 PER 62486, 2B-B Emergency Diesel Generator Damper Discovered Shut
 WO 04-772018-000, Repair/Replace the Northwest Intake Damper Actuator on the 2B-B Diesel Generator
 UFSAR Section 9.4.5, Diesel Generator Building
 1,2-47W866-9, Heating Ventilating Air Flow Diagram for Diesel Generator Building
 PER 61789, Upper Detector Ammeter Channel N41 Out of Tolerance
 1-SI-IFT-092-N41.1, Functional Test of Power Range Nuclear Instrumentation System, Channel N41
 FSAR Section 7.2, Reactor Trip System

Section 1R16: Operator Work-Arounds

Operations Directive Manual - 3.7, "Operator Work-Around Program," Revision 8
 Sequoyah Select Focus Area Report, dated August 27, 2004
 ARD 1, Unit 1 Auxiliary Building
 ARD 2, Unit 2 Auxiliary Building
 ARD 3, Unit 1 Turbine Building
 ARD 4, Unit 2 Turbine Building

ARD 5, Control Building
 ARD 6, Radwaste
 ARD 7, Outside
 ARD 8, Con DI

Section 1R19: Post-Maintenance Testing

0-PI-SFT-067-002.0, ERCW Pump Power Draw Measurement, Revision 2
 0-SI-SXP-067-201.R, Essential Raw Cooling Water Pump R-A Performance Test, Revision 4
 0-SI-SXP-067-201.Q, Essential Raw Cooling Water Pump Q-A Performance Test, Revision 6
 1,2-45N767-1, 6900V Diesel Generator Schematic Diagrams Sheet 1, Revision 26
 1,2-45N767-3, 6900V Diesel Generator Schematic Diagrams Sheet 3, Revision 24
 WO 04-779355-000, Repair/Adjust Containment Spray Pump 2B-B Shelf Switch
 0-SI-SXV-074-266.0, ASME Section XI Valve Testing - 1B RHR Mini-Flow Valve

Section 1R22: Surveillance Testing

0-SO-30-3, Containment Purge System Operation, Revision 30
 0-SI-SFT-065-001.B, Emergency Gas Treatment System Filter Train B, Revision 11
 US NRC Regulatory Guide 1.52, Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units

Section 2OS1: Access Control To Radiologically Significant Areas

Procedures

RCI-1, Radiological Control Program, Revision 62
 RCI-10, ALARA Program, Revision 28
 RCI-14, Radiation Work Permit (RWP) Program, Revision 31
 RCI-15, Establishing and Updating Radiological Sign Postings, Revision 13
 RCI-24, Control of Very High Radiation Areas, Revision 4
 RCI-28, Control of Locked High Radiation Areas, Revision 2
 RCI-29, Control of RADCON Keys, Revision 2

Audits and Assessments.

Assessment Number: SQN-RP-03-001, Steam Generator Replacement Radiological Control Program Readiness Review, October 16 - 25, 2002
 Audit Report No. SSA0302 - Radiological Protection and Control Audit, December 31, 2003

Corrective Actions Program Documents

PER - 18255, Failure to notify SM [Shift Manager] of removal of LHRA postings as required in RCI-29.
 PER - 26782, Several discrepancies, inconsistencies and improvement areas in radiological postings, tags and barriers were identified by the Nuclear Assurance Audit Team reviewing the Radiological Control Program.
 PER - 27503, Two Operations Individuals (ID numbers omitted) received unanticipated Dose Rate alarms on their Electronic Dosimeter when they entered an area other than what they had informed RADCON.

PER - 64828, A previous PER identified the need for posting of survey maps of the work area for the Dry Cask Work. Upon receipt of a survey, it was evident that the general area had neutron and gamma dose rates that should be avoided or mitigated.

Section 2OS3: Radiation Monitoring Instrumentation and Protective Equipment

Procedures

RCI-04, Respiratory Protection Program, Revision 44

RCI-05, Radiological Control Instrumentation Program, Revision 39

0-PI-FPU-049-401.M, Self-Contained Breathing Apparatus, Revision 18

HPT063.002, SCBA Training, Revision 7

SPP-3.1, Corrective Action Program, Revision 7S1

Records

Waste Package Area ARM 90-3, Calibrations, 06/16/99 and 05/08/01

Containment Post-Accident Hi Range ARM Nos. 2-R-90-271, 2-R-90-272, 2-R-90-273, 2-R-90-274, Calibrations, April 2002 and November 2003

AMS-4 No. 1603, Calibrations, 01/26/04 and 06/22/04

10 CFR Part 61 Analysis, Dry Active Waste, 05/08/03

SCBA Breathing Air Quality Analysis, 07/08/04

Air Cylinder Nos. 45-40 and 45-43, Hydrostatic Testing History, August 1999 - August 2004

SCBA Unit Nos. 45-4 and 45-51, Maintenance History, August 1999 - August 2004

Respiratory Qualification Records, 12 Operations and 3 Fire Brigade Personnel, Randomly Chosen.

Corrective Action Program Documents

Self-Assessment No. SQN-RP-03-003, Respiratory Protection Program, 08/25/03 - 08/29/03

PER - 63987, Internal check sources for some abandoned ARMs not properly inventoried, 06/29/04

PER - 66203, Breathing air cylinders have wrong valve thread, 07/30/04

PER - 66496, Licensed operator did not have corrective lenses available for SCBA use, 08/04/04

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

Procedures

0-TI-CEM-260-049.3, Gamma Spectroscopy Sample Changing System Operation, Revision 1

0-TI-CEM-260-049.1, Gamma Spectroscopy Systems Periodic Performance Checks, Revision 0

0-TI-CEM-260-049.2, Liquid Scintillation System Calibration Check, Revision 1

Surveillances

0-SI-CEM-040-421.0, Turbine Building Sump Discharge Radioactivity Determination and TBS or ERCW Inoperable Radiation Monitors, Rev.9 (Including calibration work performed on 5/3/04 and 5/23/04)

2-SI-ICC-090-400.0, Calibration of Shield Building Radiation Monitor 2-RM-90-400, Revision 3 (Includes documentation for calibration performed 2/14/03)

2-SI-ICC-090-400.0, Calibration of Shield Building Radiation Monitor 2-RM-90-400, Revision 4 (Includes documentation for calibration performed 6/1/04)
 SI-401, Steam Generator Blowdown Continuous Release, Revision 27 (Includes documentation for release permits generated on 4/22/04 and 6/4/04)
 0-SI-CEM-030-410.2, Containment Upper and Lower Compartment Purge Sampling, Revision 17 (Includes documentation for release permit generated 7/30/04 and 8/3/04)
 0-SI-ICC-090-101.B, Calibration of Auxiliary Building Gaseous Radiation Monitor 0-R-090-101B, Revision 6 (Includes documentation for calibration performed 8/2/02 and 8/24/04)
 0-SI-ICC-090-122.0, Channel Calibration of Waste Disposal System Liquid Effluent Radiation Monitor 0-R-90-122, Revision 16 (Includes documentation for calibration performed 12/20/01)
 0-SI-ICC-090-122.0, Channel Calibration of Waste Disposal System Liquid Effluent Radiation Monitor 0-R-90-122, Revision 19 (Includes documentation for calibration performed 5/14/03)
 0-SI-CEM-077-400.1, Liquid Waste Effluent Batch Release, Revision 16 (Release Permit data)
 Sequoyah Nuclear Plant - Annual Radioactive Effluent Release Reports for 2002 and 2003
 Sequoyah Nuclear Plant - Offsite Dose Calculation Manual, Revision 47
 Sequoyah/Analytics Cross-Comparison Report, 3d quarter 2003, 4th quarter 2003, 1st quarter 2004
 HPGe Efficiency Calibration Certificate, SQN Detector #3, 6/11/02
 Analytics Certificate of Calibration - Standard Radionuclide Source 60943 - 3/1/01
 Analytics Certificate of Calibration - Standard Radionuclide Source 63574-160, 4/19/02
 Detector Control Charts for HPGe and Liquid Scintillation Detectors covering May-August 2004

Corrective Action Program Documents

PER - 21376, During the performance of SI-244 (Periodic Functional Test of Radioactive Effluent Monitoring Instruments), 0-FI-77-42 and 0-FR-77-42 (Waste Condensate Flow) were found out of tolerance.

PER - 22390, 0-RM-90-101 came into alarm with an Instrument Malfunction. The monitor was blocked and the appropriate ODCM entered.

PER - 24617, During the performance of 0-SI-IFT-090-212.0 (Functional Test of Station Sump Discharge Effluent Radiation Monitor) the Trip 2 function was found at 7.40E+4 which is incorrect.

PER - 26052, A Maintenance Rule functional failure of 2-RM-90-400A, Shield Building Exhaust low range noble gas detector, occurred on September 9, 2003, due to a failed 120-VAC to 24-VDC power supply.

PER - 31624, During performance of 0-SI-IFT-090-140.0 (Functional Test of Essential Raw Cooling Water Effluent Liquid Radiation Monitor), the rotameter was found to have a clamshell lodged in the tube causing the float to be stuck.

PER - 34195, Liquid effluent radwaste discharge radiation monitor, 0-RM-90-122 has recently been exceeding the high radiation setpoint and stopping the discharge during Cask Decon Collector Tank (CDCT) releases due to interaction with radwaste system contamination

PER - 60955, While Operations were pumping down the Turbine building sump to a lower level than normal, 0-RM-90-212 indicated a low flow condition. The flow switch was cleaned on a special performance of 0-SI-IFT-090-212.0 (Station Sump Discharge Effluent Monitor) and we found what appeared to be algae on the flow element.

PER - 66519, A statement in Sequoyah's Annual Effluent Report for AVERAGE ENERGY refers to Sequoyah's ODCM limiting the dose rates for noble gas there, the average energies (E) for gaseous effluents as described in Regulatory Guide 1.21 are not applicable. The basis for this statement needs to be evaluated.

Section: 2PS3 Radiological Environmental Monitoring Program

Reports, Procedures, Instructions, Lesson Plans and Manuals

Sequoyah Nuclear Plant - Offsite Dose Calculation Manual, Revision 47
 Sequoyah Nuclear Plant - Annual Radiological Environmental Operating Report - 2002
 Sequoyah Nuclear Plant - Annual Radiological Environmental Operating Report - 2003
 Radiological Control Instruction, RCI-1, Radiological Control Program, Revision 62
 RCI-05, Radiological Control Instrumentation Program, Revision 39
 Environmental Radiological Monitoring Program (EMSTD-01), Revision 21
 Collection Of Environmental Monitoring Samples SC-01, Revision 18
 Calibration Procedure for Radiological Environmental Monitoring Air Sampler System Gas Meter SC-03, Revision 4
 Sequoyah Nuclear Plant Environmental Data Station Manual, Revision 2
 TVAN Emergency Preparedness Field Support Servicing of Meteorology Equipment at Environmental Data Stations (EPFS-3) Revision 10
 TVAN Emergency Preparedness Field Support Environmental Data Station Meteorological Sensor Exchange - EPFS-4, Revision 12
 TVAN Emergency Preparedness Field Support Calibration of Environmental Data Station Data Logger and Sonic Channels- EPFS-6, Revision 10
 TVAN Standard Programs and Processes Meteorological Monitoring Program SPP-5.12, Revision 0

Plant Records

PM-7 Nos. 252, 254, 255, Calibrations, 01/15/04 and 06/29/04
 PCM-1B No. 576450, Calibrations, 01/21/04 and 07/20/04
 GTM No. 860182, Calibrations, 10/4/03, 03/08/04, and 06/10/04
 10 CFR Part 61 Analysis, Dry Active Waste, 05/08/03

Corrective Action Program Documents

PER - 20568, Unexpected Entry into LCO 3.3..3.4 ICS Met Tower out of Service
 PER - 21680, Met Tower Lightning Strike
 PER - 22745, Met Tower data display unreliable
 PER - 25945, Incorrect Rainfall calculation
 PER - 26656, Indication of 'Bad Met Data'
 PER - 33529, Met Tower stopped updating data
 PER - 1454, Trouble with air sampling pump
 PER - 1207, Questionable air temperature readings
 PER - 66581, 5000 DPM check source did not alarm GTM when four people were standing in close proximity to detector, 08/05/04

Audits and Self-Assessments

Radiological Protection and Control Audit Audit Report NO. SSA 0302 dated 12/31/03
 Self-Assessment No. CRP-ERMI-01-004, Environmental Radiological Monitoring and Instrumentation

Section 4OA1: Performance Indicator Verification

LERs

LER 050000327/2003001, Manual Reactor Trip as a Result of Main Generator Trip and Loss of Load
 LER 050000327/2004001, Automatic Reactor Trip From Inadvertent Relay Operation on a Main Transformer

Procedures

SPP-3.4, Performance Indicator for NRC Reactor Oversight Process, Revision 0, 04/03/2002
 SNP Desktop Guideline for Identification and Reporting of NEI 99-02 Performance Indicators for Occupational Exposure Control Effectiveness
 Common Technical Instruction Chemistry (0-TI-CEM)-000-001.3, Primary Chemistry Specifications, Revision 16

Plant Records

Individual RCA exit doses exceeding 100 mrem between 10/01/2002 and 04/16/2003
 2002 Annual Radioactive Effluent Release Report
 Monthly 10 CFR 50, Appendix I, Dose Calculations for Liquid and Gaseous Effluents for the Months of October 2002 through March 2003

Corrective Action Program Documents

PER - 02-013539-000, Individual Entered RCA Without TLD badge, 10/27/2002
 PER - 02-014509-000, Emergent Activities Are Not Being Reviewed and Appropriately Reported/Communicated to the RADCON Staff, 11/26/2002
 PER - 03-001633-000, Valid ED Dose Alarms and Dose Rate Alarms Not Being Reported via PER Initiation, 02/18/2003
 PER - 02-013073, Effluent Monitor 0-RM-90-134/141 Inoperable, 10/11/02
 PER - 02-013472, High Radiation Alarm on Effluent Monitor 0-RM-90-212, 10/25/03
 PER - 02-014224, Increase in Gaseous Effluent during October 2002 due to Unit 2 Fuel Leak, 1/19/02
 PER - 02-015201, Instrument Malfunction on Monitor 1-RM-90-120/121, 12/17/02
 PER - 03-002082, Incorrect Value for Instrument Background Count on Effluent Monitor 0-RM-90-122 Used in Liquid Effluent Batch Release Permit, 03/04/03

Section 4OA2: Identification and Resolution of Problems

SPP-3.1, Corrective Action Program, Revision 6
 PER 04-000556-000, 2A CS Pump Failed to Start During Section XI Test
 PER 04-00750-000, Perform an Extent of Condition to Determine if End Device Testing Has Been Waived
 PER 04-000475-000, ERCW Pump P-B Breaker Failure to Close for PMT
 PER 01-009568-000, Consolidation of Siemens Breaker Issues
 PER 03-008296-000, Consolidation of Additional Siemens Breaker Issues
 PER 03-010054-000, Problems Found During Performance of SI-266 Package P6451
 PER 60199, Siemens Breaker Problems
 PER 64674, RHR Pump 1A Did Not Start
 WO 04-776671-005, Visual Inspection of "A" Train Breaker for Bradding Issues, RHR Pump 1A

WO 04-775027-000, Inspect Population of Spare Breakers for MOC Slide Problems Seen at Siemens

SI-266.1.1, Inspection of ITE 7.5HK-500 6900-V Breakers and Siemens 6900-V Vacuum Breakers, Revision 26, performed July to October 2003, P6451

Section 4OA3: Event Followup

TVA-NP Radiological Emergency Plan, Revision 74

VCT Level Trend Printout for September 1-2, 2004

AOP-R.05, RCS Leak and Leak Source Identification, Revision 8

1,2-47W809-2, CVCS Chemical Control Flow Diagram, Revision 28

Section 4OA5: Independent Spent Fuel Storage Installation

Procedures

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

O-SF-DCS-079-001.0 HI-Storm System Site Transportation, Revision 0007

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

One Liner Survey Report Survey Nos. 071204-8, 071304-5, 071104-2, 071204-11, and 071204-9