



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

February 11, 2009

Tennessee Valley Authority
William R. Campbell, Jr.
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
05000327/2008005 AND 05000328/2008005 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Mr. Campbell:

On December 31, 2008, 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 January 13, 2009, with Mr. Timothy Cleary 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.

This report documents one NRC-identified finding. The finding was assessed in accordance with the NRC Enforcement Policy as having very low safety significance (Severity Level IV). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. In addition, the NRC is exercising enforcement discretion in accordance with Section VII.B.6, "Violations Involving Special Circumstances," of the NRC Enforcement Policy as discussed in Enforcement Guidance Memorandum 09-001, for a violation of Technical Specification 3.4.6.1 involving the gaseous lower containment atmosphere radioactivity monitor sensitivity. 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 Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of

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NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Heather J. Gepford, Acting Chief
Reactor Projects Branch 6
Division of Reactor Projects

Docket Nos.: 50-327, 50-328, 72-034

License Nos.: DPR-77, DPR-79

Enclosure: Inspection Report 05000327/2008005 and 05000328/2008005
w/Attachment: Supplemental Information

cc: w/encl: (See page 3)

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Letter to William R. Campbell, Jr. from Heather J. Gepford dated February 11, 2009

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ENFORCEMENT DISCRETION

Distribution w/encl:

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-327, 50-328

License Nos.: DPR-77, DPR-79

Report Nos.: 05000327/2008005 and 05000328/2008005

Licensee: Tennessee Valley Authority (TVA)

Facility: Sequoyah Nuclear Plant, Units 1 and 2

Location: Sequoyah Access Road
Soddy-Daisy, TN 37379

Dates: October 1, 2008 – December 31, 2008

Inspectors: C. Young, Senior Resident Inspector
M. Speck, Resident Inspector
R. Moore, Senior Reactor Inspector (1R17, 4OA5)
D Mas-Peñaranda, Reactor Inspector (1R17)
J. Hamman, Reactor Inspector (1R17)
P. Braxton, Reactor Inspector (1R17)
J. Eargle, Reactor Inspector (1R17)
C. Even, Reactor Inspector (4OA5)
B. Caballero, Operations Engineer (1R11.1)
R. Aiello, Senior Operations Engineer (1R11.1)

Approved by: Heather J. Gepford, Acting Chief
Reactor Projects Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000327/2008-005, 05000328/2008-005; 10/01/2008 - 12/31/2008; Sequoyah Nuclear Plant, Units 1 and 2; Licensed Operator Requalification Program.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional inspectors. One Severity Level IV finding, which was a non-cited violation (NCV), was 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 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

SL IV. The NRC identified a non-cited violation (NCV) of 10 CFR 55.25 and § 50.74 for failure to notify the Commission within 30 days after a licensed operator developed a permanent change in his physical condition. The licensee entered this finding into their corrective action program as problem evaluation report 158614.

This finding was evaluated using the traditional enforcement process because the licensee's failure to report the changes in medical condition impacted the Commission's ability to perform its regulatory function associated with operator licensing. Using Supplement I, "Reactor Operations," of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV violation because the change in the operator's physical condition did not impact his ability to perform licensed duties.

The cause of the finding was the licensee failed to understand that all permanent conditions, disabilities, and incapacities must be reported to the NRC for evaluation, regardless of whether the operator had exceeded the specific minimum requirement or the related disqualifying condition threshold in ANSI/ANS-3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants." (Section 1R11.1)

B. Licensee-Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status:

Unit 1 operated at or near 100 percent rated thermal power (RTP) the entire inspection period.

Unit 2 operated at or near 100 percent RTP until November 3, 2008, when Unit 2 was manually tripped in response to a failure of the loop 4 feedwater regulating valve (FRV) controller and imminent loss of level in the loop 4 steam generator. Shortly following the manual reactor trip, a leak developed in a pressurizer instrument sensing line. Unit 2 was shut down to Mode 5 on November 5, 2008, to facilitate repairs. Following repairs to the FRV controller and the pressurizer instrument line, as well as repairs to a pressurizer power operated relief valve control cable, Unit 2 entered Mode 3 on November 8, 2008. With shutdown control rod bank A withdrawn (prior to Mode 2 entry), Unit 2 was manually tripped on November 9, 2008, in response to indications of a dropped control rod. Following repairs to a rod position indication coil wire, Unit 2 achieved criticality on November 13, 2008, and reached 100 percent RTP on November 14, 2008. Unit 2 operated at or near 100 percent RTP until November 24, 2008, when power was reduced to 55 percent RTP to facilitate repairs to the B main feedwater pump seal water injection system. Following repairs, Unit 2 returned to 100 percent RTP on November 26, 2008, where it operated for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed design features and licensee preparations for protecting both Unit 1 and 2 refueling water storage tanks (RWSTs) and the essential raw cooling water (ERCW) intake structure from extreme cold and freezing conditions. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and Technical Specifications (TS), reviewed and observed implementation of licensee freeze protection procedures, and walked down portions of the systems to assess deficiencies and the system readiness for extreme cold weather and discussed prioritization and status of correcting deficiencies with licensee personnel. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

Enclosure

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

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 focused on identification of discrepancies that could impact the function of the system and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, walked down control system components and determined whether 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 (CAP). Documents reviewed are listed in the Attachment to this report.

- Unit 2 Component Cooling System Train A During Train B Maintenance
- Unit 2 Motor-driven Auxiliary Feedwater Trains A and B During Turbine-Driven Auxiliary Feedwater System Maintenance
- Unit 1 Motor-driven Auxiliary Feedwater Train A and Turbine-Driven Auxiliary Feedwater System During Train B Maintenance

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed a complete system walkdown of the Emergency Diesel Generators (EDGs) and support systems to verify proper equipment alignment, to identify any discrepancies that could impact the function of the system and increase risk, and to verify that the licensee properly identified and resolved equipment alignment problems that could cause events or impact the functional capability of the system.

The inspectors reviewed the UFSAR, system procedures, system drawings, and system design documents to determine the correct lineup and then examined system components and their configuration to identify any discrepancies between the existing system equipment lineup and the correct lineup. In addition, the inspectors reviewed outstanding maintenance work requests and design issues on the system to determine whether any condition described in those work requests could adversely impact current system operability. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Quarterly Fire Protection Inspection

a. Inspection Scope

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

- Control Building Elevation 749 (Reactor Motor Operated Valve Board Rooms, Transformer Rooms, Mechanical Equipment Rooms, Vital Battery Rooms)
- Auxiliary Building Elevation 669 (Safety Injection Pump, Centrifugal Charging Pump, and Turbine-Driven Auxiliary Feedwater Pump Rooms)
- Control Building Elevation 734 (480V Shutdown Board Rooms, 6.9kV Shutdown Board Rooms, Auxiliary Control room, 125V Battery Board Rooms, Control & Aux Building Ventilation Board Rooms)
- Control Building Elevation 706 (Cable Spreading Room)
- Control Building Elevation 685 (Auxiliary Instrument Rooms)
- Control Building Elevation 669 (Mechanical Equipment Room, 250 VDC Battery and Battery Board Rooms)

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

Internal Flooding

a. Inspection Scope

The inspectors reviewed the Control Building Elevation 669 internal flood design to verify that flood mitigation plans were consistent with the design requirements and risk analysis assumptions and that equipment essential for reactor shutdown was properly protected from a flood caused by pipe breaks in the building. Specifically, the inspectors reviewed the licensee's moderate energy line break flooding study to fully understand the licensee's flood mitigation strategy and then verified that the assumptions and results remained valid. The inspectors walked down the Control Building Elevation 669 to verify the assumed flooding sources, adequacy of common area drainage, and status of building compartmentalization to ensure that a flooding event would not impact reactor shutdown capabilities. The inspectors walked down the control room to ensure that if a break occurred, procedures existed to identify and isolate the leak. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program

.1 Biennial Review

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. The inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR Part 55, Operators' Licenses. The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG-1021, Operator Licensing Examination Standards for Power Reactors. The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1985, "American National Standard for Nuclear Power Plant Simulators for use in Operator Training and Examination." The documentation reviewed by the inspectors included written examinations, job performance measures (JPMs), simulator scenarios, licensee procedures, on-shift records, simulator problem report and performance test records, operator feedback records, licensed operator qualification records, remediation plans, watch standing records, and medical records. The records were inspected using the criteria listed in Inspection Procedure 71111.11. The inspectors observed the licensee administer four scenarios to one shift operating crew. The inspectors interviewed five licensed operators. Documents reviewed during the inspection are identified in the Attachment to this report.

b. Findings

Introduction: The inspectors identified a Severity Level IV, non-cited violation (NCV) of 10 CFR 55.25 and § 50.74 for the licensee's failure to notify the Commission within 30 days after a licensed operator was diagnosed with a permanent change to his physical medical condition.

Description: On December 4, 2008, while reviewing a sample of licensed operator medical records, the inspectors identified an operator with a change in his physical medical condition that had never been reported to the NRC on Form 396. The operator was issued a license in 1994 and subsequently reported to the facility licensee in 2003 that he was taking blood pressure medication. At the time of this inspection, the operator was actively involved with licensed duties. Additionally, when the operator's license renewal application was submitted in May 2006, the facility licensee used the new NRC Form 396, which included "Block 5", i. e., the physician's designator for the "must take medication as prescribed" license restriction. However, the NRC Form 396 that the licensee submitted did not identify the change in the operator's medical condition and "Block 5" was not appropriately marked to designate a conditional license even though the operator had been taking blood pressure medication since 2003.

The license renewal process provides an opportunity, once every six years, for the NRC staff to review every licensed operator's medical condition and general health (including any medications that the operator is taking) to ensure they will not adversely affect the performance of assigned operator duties or cause operational errors endangering public health and safety. In this particular case, the facility licensee failed to notify the NRC within 30 days after the change to the operator's physical medical condition first occurred (2003) and also did not notify the NRC on the Form 396 submitted with the operator's license renewal application in 2006.

The NRC's medical examination requirements are contained in Subpart C, "Medical Requirements," of 10 CFR Part 55, "Operators' Licenses." Section 55.21, "Medical Examination," requires every licensed operator to be examined by a physician every two years and that the physician shall determine that the licensed operator meets the requirements of § 55.33(a) (1). Section 55.33 (b), "Disposition of an Initial Application, Conditional License," requires that if an applicant's general medical condition does not meet the minimum standards under § 55.33(a) (b), the Commission may approve the application and include conditions in the license to accommodate the medical defect.

The Commission will consider the recommendations and supporting evidence of the facility licensee and of the examining physician (provided on Form NRC-396) in arriving at its decision. For conditions for which a conditional license (as described in § 55.33(b) of this part) is requested, the facility licensee shall provide medical certification on Form NRC 396 to the Commission (as described in § 55.23). Section 55.25, "Incapacitation Because of Disability or Illness," requires the facility licensee to notify the Commission within 30 days of learning of a diagnosis of a permanent physical or mental condition that causes the licensee to fail to meet the requirements of § 55.21. Finally, 10 CFR 50.74 (c), "Notification of Change in Operator or Senior Operator Status," requires each licensee to notify the appropriate Regional Administrator within 30 days of a permanent disability or illness as described in § 55.25.

The cause of the finding was that the licensee did not understand that regardless of whether the operator had exceeded the specific minimum requirement or the related disqualifying condition threshold in ANSI/ANS-3.4, all permanent conditions, disabilities, and incapacities must be reported to the NRC for evaluation, even though the facility had implemented compensatory measures.

Analysis: Because violations of 10 CFR 50.74 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process. The finding is of very low safety significance because the change in the operator's physical condition did not impact his ability to perform licensed duties. The licensee entered this issue into their CAP as problem evaluation report (PER) 158614 and planned to conduct a review of all the operator medical records to identify other similar issues that may not have already been discovered.

Enforcement: 10 CFR 55.25 states, in part, that if during the term of the license, the licensee develops a permanent physical or mental condition that causes the licensee to fail to meet the requirements of § 55.21 of this part, the facility licensee shall notify the Commission, within 30 days of learning of the diagnosis, in accordance with § 50.74(c). Contrary to the above, the facility licensee failed to notify the Commission within 30 days of learning of a diagnosis in which an operator had developed a permanent physical condition that caused the operator to fail to meet the requirements of § 55.21, in that, the

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licensee had learned of the permanent medical condition in 2003 but had not notified the Commission as of December 4, 2008. Using Supplement I, "Reactor Operations," of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV violation because the change in the operator's physical condition did not impact his ability to perform licensed duties. Because this finding was of very low safety significance and was entered into the licensee's CAP, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000327, 328/2008005-01, Failure to Notify the Commission Within 30 Days After a Licensed Operator Was Diagnosed With a Permanent Physical Medical Condition.

.2 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors performed one licensed operator requalification program review. The inspectors observed a simulator exam session on November 24, 2008. The training scenario involved an uncontrolled depressurization of all steam generators due to a steam line break outside containment with a failure of all main steam isolation valves to close. A second scenario involved a steam generator tube rupture followed by the lifting of a steam generator safety valve on another steam generator. The operators manually tripped the reactor and initiated safety injection at the appropriate times. Additional anomalies included a failed turbine impulse pressure transmitter and a failed open pressurizer power operated relief valve (PORV). 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 Specification (TS) action; 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 to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

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

- PER 153058, Unplanned LCO – ERCW A-train Inoperable Due to TWS Failure
- Function 82-B, Emergency AC Power to Shutdown Boards

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the following four activities to determine whether appropriate risk assessments were performed prior to removing equipment from service for maintenance. The inspectors evaluated whether 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 reviewed whether plant risk was promptly reassessed and managed. The inspectors also assessed whether the licensee's risk assessment tool use and risk categories were in accordance with Standard Programs and Processes Procedure (SPP)-7.1, "On-Line Work Management," and Instruction O-TI-DSM-000-007.1, "Risk Assessment Guidelines." Documents reviewed are listed in the Attachment to this report.

- Unit 2 Yellow Risk During CCS Pump/Motor Train B Maintenance
- Unit 2 Yellow Risk During Turbine-Driven Auxiliary Feedwater (TDAFW) System Scheduled Maintenance
- Unit 1 Yellow Risk During Train B Motor-Driven Auxiliary Feedwater System Scheduled Maintenance
- Unit 2 Yellow Risk During Turbine-Driven Auxiliary Feedwater System and Essential Raw Cooling Water System Scheduled Maintenance

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the seven 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 compared the operability evaluations to UFSAR descriptions to determine if the system or component's intended function(s) were adversely impacted. In addition, the inspectors reviewed compensatory measures implemented to determine whether the compensatory measures worked as stated and the measures were adequately controlled. The inspectors also reviewed a sampling of PERs to assess whether the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment to this report.

- PER 152292, Hole in Auxiliary Building Exhaust Ductwork
- PER 152294, Use of Grade 2 Bolts Results in MOV Actuator Reduced Torque Margin
- PER 155349, Emergency Control Room Pressurization Boundary Breach
- PER 156667, Containment Gaseous Activity Radiation Monitors
- PER 158679, Vital Battery Cable Bend Radius
- PER 156389, Unit 2 RCS Leak Potential Impact on Ice Condenser Operability
- PER 159556, Unit 1 ERCW Pipe Leak

b. Findings

Technical Specification for the Containment Gaseous Radiation Monitors

Introduction: The inspectors identified a violation of Unit 1 and 2 TS 3.4.6.1, "Leakage Detection Instrumentation," for the licensee's failure to maintain the gaseous lower containment atmosphere radioactivity monitor of the RCS leakage detection instrumentation operable. The Unit 1 and 2 monitors were inoperable since June 1987 as a result of not being able to perform their safety function of detecting a reactor coolant pressure boundary leak of 1 gallon per minute in one hour due to improvements in reactor fuel quality. The NRC is exercising enforcement discretion not to issue enforcement action for this violation in accordance with Enforcement Guidance Memorandum (EGM) 09-001, "Dispositioning Violations of NRC Requirements for Operability of Gaseous Monitors for Reactor Coolant System Leakage Detection."

Description: On November 6, 2008, the inspectors, after consultation with the Office of Nuclear Reactor Regulation (NRR), informed the licensee that the gaseous lower containment atmosphere radioactivity monitor on both Units 1 and 2 were not operable. The licensee initiated PER 156667, declared the equipment inoperable, complied with the applicable actions of TS 3.4.6.1 which allowed up to 30 days of continued operation with compensatory actions in place, and submitted a license amendment request to change the TS. The TS amendment was issued on December 4, 2008, which removed the requirement to maintain the gaseous channel of the containment atmosphere radiation monitors as a method of RCS leakage detection.

NRR determined that the technical bases for the gaseous lower containment atmosphere radioactivity monitor to be operable included sufficient sensitivity to detect a reactor coolant pressure boundary leak of 1 gallon per minute (gpm) in one hour. This sensitivity was consistent with the information provided in Information Notice (IN) 2005-024, "Nonconservatism in Leak Detection Sensitivity." This IN informed licensees that the 0.1-percent failed fuel assumption (original source term for sensitivity calculations) introduced a nonconservatism into the TS. However, the licensing bases for Sequoyah Units 1 and 2 were not clear, in that, the licensing basis documents acknowledged that, for fuel with little or no defects, this sensitivity would not be expected. NRR considered that this circumstance would only occur immediately after initial plant startup. However, the licensee mistakenly concluded that these monitors would likewise be considered operable any time that fuel with little or no defects was again in use, e. g., due to improved fuel quality.

In June 1987, calculation APS3-055, "Reactor Coolant Pressure Boundary Leakage Detection with the Containment Lower Compartment Air Radiation Monitor," concluded that, for realistic RCS activity levels, the gaseous channel would not be capable of

meeting the 1 gpm in one hour sensitivity. As discussed above, the licensee failed to recognize that not meeting the required sensitivity resulted in the gaseous lower containment atmosphere radioactivity monitors being inoperable.

Analysis: The operation of Units 1 and 2 in Modes 1-4 with one of the three required methods of RCS leakage detection instrumentation required by TS 3.4.6.1 being inoperable was a performance deficiency. The finding was more than minor because it was associated with the Initiating Events Cornerstone attribute of equipment performance and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the inoperability of a TS-required RCS leakage detection method affected the likelihood of a LOCA initiator in keeping with the "leak-before-break" concept. In EGM 09-001, the NRC states that the significance associated with a longer response time (due to the lower sensitivity) is of very low safety significance. The EGM 09-001 significance conclusion was based, in part, upon the availability of multiple and diverse means for licensees to detect significant reactor coolant pressure boundary degradation and take action to ensure continued public health and safety. No cross-cutting aspect was assigned because the NRC exercised enforcement discretion for this violation.

Enforcement. TS 3.4.6.1 required, in part, that two lower containment atmosphere radioactivity monitors (gaseous and particulate) be operable or restored to operable status within 30 days, while in Modes 1, 2, 3, and 4. Contrary to this, between June 1987 and December 4, 2008, the gaseous lower containment atmosphere radioactivity monitor was inoperable while in Modes 1, 2, 3 and 4, in that, the containment atmosphere radioactivity monitor was not capable of detecting a reactor coolant pressure boundary leak of 1 gpm in one hour when radioactive gas content in the reactor coolant was low. Because this violation was identified during the discretion period described in Enforcement Guidance Memorandum 09-001, the NRC is exercising enforcement discretion in accordance with Section VII.B.6, "Violations Involving Special Circumstances," of the NRC Enforcement Policy and is, therefore, not issuing enforcement action for this violation.

1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed selected evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, UFSAR, or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed evaluations for changes and additional information, such as drawings, calculations, supporting analyses, the UFSAR, and TS to confirm that the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The six evaluations reviewed are listed in the Attachment to this report.

The inspectors reviewed samples of changes for which the licensee had determined that evaluations were not required to confirm that the licensee's conclusions to "screen out" these changes were correct and consistent with 10 CFR 50.59. The sixteen "screened out" changes reviewed are listed in the Attachment to this report.

The inspectors evaluated engineering design change packages for eighteen material and design-based modifications to evaluate the modifications for adverse effects on system availability, reliability, and functional capability. The eighteen modifications and the associated attributes reviewed are as follows:

DCN 22167, Replacement Cables for Rod Position Indication (Mitigating Systems)

- Materials Replacement Components
- Operations
- Post Modification Testing
- Energy Needs
- Control Signals
- Structural
- Licensing Basis
- Failure Modes

DCN 22115, Part 21 Notification from Prime Measurement Products for Barton 763 and 764 Series Transmitters for Unit 1 (Mitigating Systems)

- Materials Replacement Components
- Operations
- Licensing Basis
- Post Modification Testing
- Energy Needs
- Control Signals
- Structural

DCN 22116, Part 21 Notification from Prime Measurement Products for Barton 763 and 764 Series Transmitters for Unit 2 (Mitigating Systems)

- Materials Replacement Components
- Operations
- Licensing Basis
- Post Modification Testing
- Energy Needs
- Control signals
- Structural

BTH382T, Commercial Grade Dedication of 15 Microfarad Capacitors (Mitigating Systems)

- Energy Needs
- Materials/Replacement Components
- Process Medium

643391K0, Equivalency Evaluation of SMB-000 Operator Motor (Mitigating Systems)

- Timing
- Control Signals
- Licensing Basis
- Materials/Replacement Components
- Process Medium
- Energy Needs
- Equipment Protection
- Structural

- Failure Modes

DCN D-22161, Install ERCW High Point Vent (Mitigating Systems)

- Materials Replacement Components
- Licensing Basis
- Post Modification testing
- Flowpaths
- Structural

EDC-22249, Revise ESF Airflow Values on Drawings (Mitigating Systems)

- Licensing Basis
- Ventilation Boundary

PEG 1082841C0, Equivalency Evaluation: Circuit Board, Vital Inverter (Mitigating Systems)

- Materials Replacement Components

PEG BWT822X, Solenoid Valve, Q level, Automatic Switch Company (Mitigating Systems)

- Materials Replacement Components

PEG CAE213X, Containment Sump Level Transmitter, SQN-1,20LT, et.al (Mitigating Systems)

- Materials Replacement Components

PEG 121732X0, Flowserve Check Valve Cap Screw (Mitigating Systems)

- Materials Replacement Components

PEG CKE569X, Solenoid Pilot Valve, Parker Hannefin, (Mitigating Systems)

- Materials Replacement Components

D22260, Replace SSPS Output Relay Test Panel Switch S603 (A pushbutton) Located in Rack 1-R48, Rev. A (Mitigating Systems)

- Energy needs
- Walkdowns
- Post Modification Testing
- Documentation Updated
- Replacement Component
- Control Systems

D22294, Install Appendix R Light Packs, Rev. A (Mitigating Systems)

- Document Update
- Walkdown
- Energy needs
- Timing
- Post Modification Testing

E22208, Replace Breakers with Molded Case Switches, Rev. A (Mitigating Systems, Initiating Event)

- Energy needs

- Post Modification Testing
- Walkdown
- Replacement Components
- Documentation Updated
- Vendor Information
- Design calculations

PEG PKG NO. 711503G2, Globe Valves 2" Class 600 and 1" Class 1522, SS, CAX082V and CLB636J, Rev 0. (Mitigating Systems)

- Materials Replacement Components
- Pressure Boundary
- Licensing Basis
- Failure Modes

PEG PKG NO. 1039124C0, Seat/Valve (CMN231E), Rev. 0 (Mitigating Systems)

- Materials Replacement Components
- Pressure Boundary
- Licensing Basis

DCN 22139, Allow Removal of the Internals to Valves 0-VLV-313-0985 and 1027, 12/05/06 (Mitigating Systems)

- Equipment Protection
- Pressure Boundary
- Structural
- Licensing Basis
- Failure Modes

Documents reviewed included procedures, engineering calculations, modification design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the UFSAR, supporting analyses, TS, and design basis information. The inspectors additionally reviewed test documentation to ensure adequacy in scope and conclusion. The inspectors' review was also intended to verify that all details were incorporated in licensing and design basis documents and associated plant procedures.

The inspectors also reviewed the licensee's recent self-assessment associated with modifications and screening/evaluation issues to confirm that problems were identified at an appropriate threshold, were entered into the corrective action process, and appropriate corrective actions had been initiated and tracked to completion.

b. Findings

Introduction: An unresolved item (URI) was identified for NRC review of whether the licensee's preplanned and proceduralized departures from TS requirements, without obtaining NRC approval, constituted a non-compliance with NRC regulations.

Description: The licensee implemented a new abnormal operating procedure, (AOP)-M.09, "Loss of Charging," Rev. 0, to address the loss of one or both centrifugal charging pumps (CCPs) in Modes 1-4. This procedure replaced a portion of the guidance in

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Annunciator Response Procedure 1,2-AR-M6-C Window D-3 (Charging Line Flow Abnormal alarm).

The licensee determined that a loss of both CCPs would result in the loss of RCS boration and RCS makeup (charging) capability. AOP-M.09 contains contingency actions for reducing RCS pressure and using a Safety Injection (SI) pump to inject to the RCS to borate and maintain pressurizer level. At Mode 4, AOP-M.09 requires an evaluation of 50.54(x) criteria and further directs use of the SI pumps. Injection using the SI pumps in Mode 4 would violate the requirements of TS LCO 3.4.12, Low Temperature Overpressure Protection System, which requires that the SI pumps be incapable of injection.

Summary: This issue will remain open for NRC review of whether the licensee's preplanned and proceduralized departures from TS requirements, without obtaining NRC approval, constitute a non-compliance with NRC regulations. It will be identified as URI 05000327,328/2008005-02: Acceptability of Proceduralized Departures from TS Requirements Without NRC Approval in AOP-M.09.

1R18 Plant Modifications

.1 Current Review of Permanent Modifications

a. Inspection Scope

The inspectors reviewed DCN 22183, "ERCW Modifications to Support Increased Ultimate Heat Sink Temperatures," 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 reviewed applicable sections of the UFSAR, plant modification procedures, system drawings, supporting analyses, TSs, and related PERs.

b. Findings

No findings of significance were identified.

.2 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the three 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.

- TACF 1-07-007-063, Temporary RWST Moat Pumps
- TACF 2-07-008-063, Temporary RWST Moat Pumps
- WO 08-781032-002, Repair Rod Position Indicator Cabling to Rod E-11

Due to rainwater collecting in RWST moats and the potential for any overflow to result in an unmonitored release of radioactive material to the environment during heavy rains,

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the licensee installed temporary modifications to more readily pump down the moats. The inspectors reviewed the installation, design, and operating procedures of the systems to verify that the licensee had evaluated the systems for the potential to bypass plant effluent monitors.

Due to a broken wire in the Unit 2 control rod E-11 position indicating circuit, the licensee installed a splice and reconfigured the cable routing around an insulating cable support. The inspectors reviewed the technical evaluation considerations associated with the modification, reviewed appropriate work documents, and discussed the system configuration changes with cognizant licensee engineering staff who developed the modification. Following installation and testing, the inspectors observed control room indications potentially impacted by the modification to verify that the modification did not adversely affect system functions. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

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

- WO 08-780631-000, Replace Failed Unit 2 Loop 1 Failed Steam Generator Level Transmitter
- WO 08-780580-000, Replace Failed Unit 1 Pressurizer Pressure Master Controller
- WO 08-780864-000, Replace Flex Line to Unit 2 Pressurizer Pressure Transmitter PT-68-340

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities

a. Inspection Scope

Following the manual trip of Unit 2 on November 3, 2008, the licensee entered Mode 5 and conducted a forced outage to repair the failed flexible hose in the pressurizing system sensing line. The inspectors toured the containment prior to reactor startup to identify, if any, debris that could affect the performance of the containment sump. Due to additional work performed by the licensee relating to repairs to a rod position indicator cable, the inspectors observed containment entry controls and reviewed Procedure 0-SI-OPS-000-011.0, "Containment Access Control During Modes 1-4," for the associated containment entries to ensure that all items that entered containment were removed so nothing would be left that could affect performance of the containment sump. The inspectors observed portions of the plant startup including reactor criticality and power ascension.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the three surveillance tests identified below, the inspectors assessed whether the SSCs involved in these tests satisfied the requirements described in the TS surveillance requirements, the UFSAR, applicable licensee procedures, and the tests demonstrated that the SSCs were capable of performing their intended safety functions. This was accomplished by witnessing testing and/or reviewing the test data. Documents reviewed are listed in the Attachment to the report.

Routine Surveillance Tests:

- 0-SI-EBT-082-238.2, "Diesel Generator Battery Quarterly Operability," Revision 15

Containment Isolation Valve Tests:

- 0-SI-SLT-030-258.1, "Containment Isolation Valve Local Leak Rate Test-Purge Air," Revision 5 (Units 1 and 2)

In-Service Tests:

- IST-2-SI-SXP-003-210.B, "Motor Drive Auxiliary Feedwater Pump (MDAFWP) 2B-B Performance Test," Revision 13

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee submittals for the six PIs listed below for the period from October 1, 2007, through September 30, 2008, for both Unit 1 and Unit 2. Definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," were used to determine the basis in reporting for each data element.

Cornerstone: Mitigating Systems

- Mitigating Systems Performance Index: Emergency AC Power
- Mitigating Systems Performance Index: High Pressure Injection System
- Mitigating Systems Performance Index: Heat Removal System (AFW)
- Mitigating Systems Performance Index: Residual Heat Removal System
- Mitigating Systems Performance Index: Cooling Water 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 engineering personnel. The inspectors also independently calculated selected reported values to verify their accuracy and compared graphical representations from the most recent PI report to the raw data to verify that the data was correctly reflected in the report. Specifically for the Mitigating Systems Performance Index (MSPI), the inspectors reviewed the basis document and derivation reports to verify that the licensee was properly entering the raw data as suggested by NEI 99-02. For Safety System Functional Failures, the inspectors also reviewed LERs issued during the referenced timeframe. Documents reviewed are listed in the Attachment to this report.

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 followup, the inspectors performed a daily screening of items entered into the licensee's CAP. This was accomplished by reviewing the description of each new PER and attending daily management review committee meetings.

.2 Annual Sample: Review of Emergency Diesel Generator Building Carbon Dioxide (CO₂) Fire Suppression System Ventilation Dampers

a. Inspection Scope

On June 6, 2008, a failure associated with a CO₂ fire suppression system intake ventilation damper in the EDG building occurred. The ventilation damper inadvertently closed, causing the 2A EDG to be inoperable until the condition could be corrected. During the preceding 12-month period, two additional similar failures of the same component associated with the 1B EDG had also occurred. The inspectors reviewed licensee actions to determine and correct the cause of these failures. The inspectors reviewed PER 146464 dealing with this event, interviewed engineering and operations personnel, and reviewed several of the corrective actions.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the root cause analysis for these failures was thorough and that immediate and long term corrective actions appeared to be adequate to address the identified cause. The root cause team performed a Kepner-Tregoe Problem Analysis which concluded that the cause of the damper failures was associated with the configuration of the assembly that held the damper open under normal conditions and released it to close when the CO₂ suppression system was actuated. The assembly consisted of a "blow off" clip (BOC) that held the damper louvers open by attaching to a nozzle. The presence of a spacer at the location of the BOC interface with the nozzle prevented full engagement of the BOC and made the assembly susceptible to inadvertent release due to inadequate frictional engagement.

Corrective actions included the removal of the spacers, following discussions with the vendor, and processing a change to the vendor manual that reflected the acceptability of the resulting configuration. The inspectors determined that the identified root cause and corrective actions were appropriate to address the equipment failures that had occurred. However, the inspectors observed that the apparent cause evaluations and corrective actions that were in response to the two initial damper failures had not been effective at identifying and correcting the condition that resulted in the equipment failures.

Specifically, on August 7, 2007, the 1B EDG room intake damper closed during an EDG surveillance test due to inadvertent release of the BOC. The 2A EDG room intake damper BOC was also found to be not fully engaged at the time. The licensee initiated PER 128514, and an apparent cause evaluation was conducted which employed a "why staircase" method. The evaluation concluded that the BOC must have backed out from full engagement prior to the failure. The cause of the degraded condition was determined to be the lack of an inspection requirement for the damper. The corrective action taken was to add a weekly inspection requirement to observe the condition of the dampers and BOCs.

On September 10, 2007, the licensee initiated PER 130109 to identify that several failures of the EDG building fire dampers had recently occurred. Previous failures of the same components at Browns Ferry (from July 2001) were considered by the licensee in their evaluation. The purposes of this PER were to ensure that the fire dampers were appropriately designed and configured, and were being adequately maintained. The

PER and apparent cause evaluation determined that the damper BOCs tend to relax over time and become more susceptible to premature release. This same conclusion had been previously documented under PER 01-006911-000 at Browns Ferry in 2001. The licensee initiated work orders to replace the damper BOCs; however, on May 17, 2008, prior to BOC replacement, the 1B EDG room intake damper again closed during an EDG surveillance test due to inadvertent release of the BOC. The licensee initiated PER 145352 and conducted an apparent cause evaluation, which concluded that BOC clip engagement with the nozzle may relax with age. Work orders were initiated, and all four EDG room intake damper BOC/nozzle assemblies were replaced by May 20, 2008.

The subsequent failure of the 2A EDG room intake damper on June 6, 2008, prompted the evaluation (PER 146464) that determined and corrected the cause as discussed above. The work to remove the nozzle assembly spacers was completed on July 14, 2008.

.3 Annual Sample: Review of Operator Workarounds

a. Inspection Scope

The inspectors reviewed the operator workaround (OWA) program to verify that OWAs were identified at an appropriate threshold, were entered into the CAP, and that corrective actions were appropriate and timely. Specifically, the inspectors reviewed the licensee's workaround lists and repair schedules, performed CAP word searches, conducted tours and interviewed operators and operations department support staff. Additionally, the inspectors checked for undocumented workarounds by observing operators perform rounds, reviewed operator deficiency lists, reviewed appropriate system health documents, and attended plant health committee meetings. The inspectors evaluated all workarounds for their aggregate impact.

b. Findings and Observations

No findings of significance were identified. The licensee had previously identified in PERs 128880 and 146591 that the station performance indicator for OWAs had remained at an unsatisfactory level (red) for an extended period of time. Corrective actions included increased management attention to monitor and provide critical and challenging feedback to ensure that the correct priority and focus is established and maintained to reduce the number and age of existing OWAs. The licensee performed industry benchmarking and made changes to administrative procedures to reduce operator burden associated with plant deficiencies. Each operating crew turnover brief included a discussion of all deficiencies requiring compensatory actions. Inspectors observed that no deficiencies were identified that require operators take additional actions during emergency operating procedures. PER 146591 identified that there may be some OWAs not captured in the work order classification process, but did not document corrective actions to address this concern. Inspector questioning on PER 146591 led the licensee to identify that they had addressed the concern; however, they had not fully documented the actions. The administrative omission was added to the licensee CAP as PER 160395. The inspectors noted an overall reduction in the number and operational impact of OWAs over the past several months. The inspectors did not identify any other deficiencies requiring classification as OWAs and all identified OWAs were scheduled to be corrected.

4. Annual Sample: Review of Mitigating System Performance Index (MSPI) Reporting Issues (PER 135288)

a. Inspection Scope

In December 2007, the licensee generated PER 135288 to document errors identified by the NRC involving the reporting of MSPI data associated with the Emergency AC Power performance indicator. These errors included the inaccurate entry of probabilistic risk assessment parameters into the consolidated data entry database and the inaccurate classification of system demand failures. The inspectors reviewed PER 135288, interviewed engineering personnel, reviewed the licensee's actions to correct the discrepancies and determine the cause of the errors, and reviewed the corrective actions that were taken.

b. Findings and Observations

No findings of significance were identified. The licensee conducted an apparent cause evaluation to determine and correct the cause of the errors. The cause was determined to be unfamiliarity with the guidance for reporting MSPI data. The inspectors determined that the analysis was thorough and that immediate and long term corrective actions appeared to be adequate to address the issues and identified cause.

5. Annual Sample: Review of ERCW Pipe Leak (PER 151576)

a. Inspection Scope

On August 29, 2008, a through-wall leak was identified in the train B ERCW header supply to the Unit 1 TDAFW pump. The licensee isolated and replaced the affected section of pipe, performed ultrasonic testing (UT) to evaluate the condition of adjacent and similar installed piping, and entered the issue into their CAP. The inspectors reviewed licensee actions to determine the cause and correct the condition of this pipe failure, and to determine the extent of the condition as it relates to other similarly installed safety-related raw service water piping. The inspectors reviewed PERs 151576 and 151591 dealing with this event, interviewed engineering and operations personnel, and reviewed several of the corrective actions. The inspectors also reviewed the licensee's implementation of commitments to Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," as well as aspects of the licensee's corrosion control program.

b. Findings and Observations

No findings of significance were identified. The inspectors determined that the apparent cause analysis was thorough and that immediate and long term corrective actions appeared to be adequate to address the identified cause. The cause of the pipe leak was determined to be microbiologically induced corrosion (MIC) in this relatively stagnant section of raw water piping. Prior to the development of the leak, the licensee had been performing periodic UT inspections of select sections of ERCW piping to monitor for degradation in accordance with their corrosion control program, which was consistent with their corresponding commitment to GL 89-13. The location where the actual leak developed was not in the immediate vicinity of any of the selected UT grid locations. However, UT evaluations of similar sections of pipe on the train A ERCW

supply to the Unit 1 TDAFW pump and the train A ERCW supply to the Unit 2 TDAFW pump, as recently as 2004, indicated a projected time to minimum pipe wall thickness (T_{min}) of at least 15 years.

Immediate corrective actions included isolating the affected supply line, followed by UT inspections of adjacent piping and corresponding sections of piping on other trains. The affected section of piping was replaced. Long term corrective actions included revision of the MIC corrosion control program procedure to include more comprehensive monitoring of systems susceptible to MIC, evaluation of technology for better inspection methods and techniques, and the development of a prioritized replacement plan for raw water system piping.

The inspectors determined that the identified apparent cause and corrective actions were appropriate to address the corrosion-related pipe failure that occurred. The inspectors determined that the scope and performance of extent of condition UT evaluations of other applicable sections of ERCW piping (similar locations on Unit 1 train A, as well as, Unit 2 trains A and B) were adequate, and that the results were appropriately used to evaluate the acceptability of two additional locations found to be less than T_{min} . The acceptance criteria of Code Case N-513-2 for ASME Class 3 pipe were determined to be met in both cases.

The licensee also determined that evidence of leakage from this pipe had been identified one week earlier, and that this had been documented in a work order (WO) on August 22, 2008. The WO was coded as minor maintenance, and the action to investigate the leakage occurred on August 29, 2008. A prompt determination of operability was not conducted because the work order review group, as well as Operations personnel, did not consider the potential functional impact of the identified condition. The affected system was declared inoperable on August 29, 2008, when it was isolated after the location of the leak was identified. The licensee initiated PER 151591 to investigate the delay in performing an operability determination. The identified cause was determined to be lack of awareness of the specific requirements of operational leakage from Code Class 1, 2, and 3 components. Corrective actions included the conduct of training on this operability guidance, as well as revision of SPP-7.1, "On Line Work Management," to incorporate enhanced guidance for the work order review group to enable better processing and tracking of WOs that require further evaluation.

Following questioning by the inspectors, the licensee utilized UT inspection data obtained during the initial degradation investigation to conclude that the Code Case N-513-2 acceptability criteria for structural integrity was met for the degraded train. Therefore, the system was determined to be operable up until the time it was isolated for replacement.

.6 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, the inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also included licensee trending efforts and licensee human performance results. The inspectors' review nominally considered the six-month

period of July 2008 through December 2008, 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 in order to determine the existence of any adverse trends that the licensee may not have previously identified. The inspectors also independently reviewed RCS leakage data for the six-month period of July 2008 through December 2008.

b. Findings and Observations

No findings of significance were identified. In general, the licensee had identified trends and appropriately addressed them in their CAP. 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 their data. The inspectors compared the licensee process results with the results of the inspectors' daily screening and did not identify any discrepancies or potential trends that the licensee had failed to identify. There were two trends that had potential significance, both of which were tracked in the licensees' CAP.

- In July 2008, Unit 1 RCS activity, as measured by noble gas activity, exhibited a step increase. Subsequently, dose equivalent iodine increased to approximately $6.6\text{E-}4$ microcuries/gram. While this was well below the TS limit of 0.35 microcuries/gram, the licensee determined that two small fuel leaks had developed. The licensee implemented appropriate procedures and developed an Operational Decision Making Issue evaluation and has been monitoring the concentration of various iodine and xenon isotopes in order to detect any changes that would indicate a worsening fuel leak. In response to this information, the licensee decided to continue plant operation with restrictions on power ramp rates. A preliminary root cause analysis was performed and concluded that the leaks were caused by debris induced failure or grid-to-rod fretting. Final root cause determination will be performed following core offload.
- The Inspectors noted two instances where the licensee misinterpreted their TS. The past practice of performing plant startup with one main feedwater (MFW) pump trip channel for the AFW automatic start function inoperable was contrary to the requirements of TS 3.3.2. This was documented as a licensee-identified violation in IR 05000327,328/2008004. The inspectors also identified that the lower containment gaseous radiation monitors were unable to detect a 1 gpm RCS leak within one hour, resulting in non-compliance with TS 3.4.6.1. Details of this issue are documented in Section 1R15 of this report. Both of these issues required license amendments to restore compliance with license technical specifications.

4OA3 Event Followup

.1 Unit 2 Manual Trip

a. Inspection Scope

On November 3, 2008, the inspectors responded to a manual trip of Unit 2 due to the failure of the Loop 4 feedwater regulating valve (FRV) controller. The inspectors

discussed the trip with operations, engineering, and licensee management personnel to gain an understanding of the event and assess followup actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and TS, and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors also reviewed the initial licensee notification to verify that it met the requirements specified in NUREG-1022, "Event Reporting Guidelines." The event was reported to the NRC as event notification (EN) 44627 and documented in the licensee CAP as PER 156301.

Shortly following the trip, a reactor coolant system leak of approximately 2 gpm developed inside containment. The source was determined to be from a pressurizer instrument sensing line. The inspectors evaluated the actions taken by operators in response to the leak, and determined that the licensee's actions were appropriate and in accordance with plant procedures and TS. The unit was subsequently shut down, and repairs were conducted to both the instrument sensing line and the FRV controller.

b. Findings

No findings of significance were identified.

.2 (Closed) Licensee Event Report (LER) 05000327/2008-002-00: Loss of a Main Control Room Air Handling Unit In Conjunction With an Emergency Power Source Out of Service

On September 25, 2008, while EDG 1A was inoperable for scheduled maintenance, the train A main control room (MCR) chiller was in service. The emergency power supply to the train A MCR chiller is EDG 1A. During an attempted start, the train B MCR chiller air handling unit (AHU) motor failed, resulting in the train B of the control room air conditioning system (CRACS) being inoperable. With the train A of the CRACS also being inoperable due to its emergency power supply being inoperable, operators entered TS LCO 3.0.5 which required the licensee to shut down both units within 6 hours. The licensee entered this issue into their CAP as PER 153304. The inspectors performed a followup inspection and verified that the licensee fully complied with the specified conditions of the notice of enforcement discretion (NOED) request. As part of this followup inspection, the inspectors discussed the event with licensee management, Operations, work scheduling staff, and maintenance personnel to gain an understanding of the conditions leading up to the event and actions taken immediately following to assess licensee actions. Additionally, the inspectors reviewed the root cause report to assess the detail and thoroughness of the evaluation and proposed corrective actions. No findings of significance were identified and no violation of NRC requirements occurred. This LER is closed. Additional details of this event were discussed in NRC Inspection Report 05000327,328/2008004.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee

security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

.2 Review of the Operation of an Independent Spent Fuel Storage Installation (ISFSI) (60855.1)

a. Inspection Scope

The inspectors reviewed the fourth dry-cask-loading campaign of the ISFSI to verify that operations were conducted in a safe manner in accordance with approved procedures and without undue risk to the health and safety of the public. The inspectors observed fuel loading operations and other processes on several multi-purpose canisters (MPC) to verify that the specified fuel assemblies were placed in the correct locations and that other MPC processes were implemented in accordance with approved procedures. The inspectors also reviewed ISFSI document control practices to verify that changes to the required ISFSI procedures and equipment were performed in accordance with guidelines established in local procedures and 10 CFR 72.48. Documents reviewed are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.3 (Closed) Unresolved Item (URI) 05000327,328/2008004-01, Notice of Enforcement Discretion 08-2-001 for Both Control Room Air Conditioning System Trains Inoperable

This URI was opened as the results of a NOED being granted for the events described in NRC Inspection Report 05000327,328/2008004 section 4OA3, and in this inspection report section 4OA3.2. The licensee entered this issue into their CAP as PER 153304. The disposition of this issue is discussed in section 4OA3.2. This URI is closed.

.4 (Discussed) TI 2515/176, Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing

a. Inspection Scope

The objective of this TI was to gather information to assess the adequacy of nuclear power plant EDG endurance and margin testing as prescribed by plant-specific TS. The inspector interfaced with the appropriate station staff to obtain the information specified in Attachment 1 of the TI, Worksheet. The TI applies to all operating nuclear power reactor licensees that use EDGs as the onsite standby power supply. The inspector verified the accuracy of the information by review of TS, EDG Design Basis Event (DBE) loading calculations, EDG endurance run test procedures, test data from the last three

endurance tests performed on each EDG, EDG manufacturer ratings, and EDG operating history. The information gathered was forwarded to Nuclear Reactor Regulation/Division of Engineering/Electrical Engineering Branch (NRR/DE/EEEB) for further review to assess the adequacy and consistency of EDG testing at nuclear stations.

b. Findings and Observations

The TI scheduled to be open until August 31, 2009, pending completion of the NRR/DE/EEEB review.

4OA6 Meetings, Including Exit

On January 13, 2009, the resident inspectors presented the inspection results to Mr. Timothy Cleary 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

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

D. Bodine, Chemistry/Environmental Manager
D. Boone, Radiation Protection Manager
S. Bowman, Licensing Engineer
C. Church, Plant Manager
T. Cleary, Site Vice President
D. Clift, Site Support Manager
L. Cross, Maintenance Manager
J. Dvorak, Outage and Site Scheduling Manager
N. Eggemeyer, Site Security Manager
K. Jones, Engineering Manager
Z. Kitts, Licensing Engineer
M. Kerwin, Nuclear Assurance Manager
T. Marshall, Maintenance and Modifications Manager
S. Meiklejohn, Operations Training manager
T. Noe, Design Manager
B. Picchiotino, Training Manager
D. Portter, Operations
J. Proffitt, Licensing Engineer
P. Simmons, Operations Manager
J. Smith, Licensing and Industry Affairs Manager
B. Sowter, Site Physician
N. Thomas, Licensing Engineer
R. Thompson, Emergency Preparedness Manager
B. Wetzel, Licensing Manager
J. Whitaker, Inspection Services
K. Wilkes, Operations Support Superintendent

NRC personnel:

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

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000327,328/2008005-02	URI	Acceptability of Proceduralized Departures from TS Requirements Without NRC Approval in AOP-M.09 (Section 1R17)
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Opened and Closed

05000327,328/2008005-01	NCV	Failure to Notify the Commission Within 30 Days After a Licensed Operator Was Diagnosed With a Permanent Physical Medical Condition (Section 1R11.1)
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Closed

05000327/2008-002-00	LER	Loss of a Main Control Room Air Handling Unit In Conjunction With an Emergency Power Source Out of Service (Section 4OA3.2)
05000327,328/2008004-01	URI	Notice of Enforcement Discretion 08-2-001 For Both Control Room Air Conditioning System Trains Inoperable (Section 4OA5.3)

Discussed

05000327,328/2515/176	TI	Emergency Diesel Generator Technical Specification Surveillance Requirements Regarding Endurance and Margin Testing (Section 4OA5.4)
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LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**

0-PI-OPS-000-006.0, Freeze Protection, Revision 47
 WO 07-779550-000, Implement Heating Measures for 2008/2009 Season
 1-PI-EFT-234-706.0, Freeze Protection Heat Trace Functional Test, Revision 35
 2-PI-EFT-234-706.0, Freeze Protection Heat Trace Functional Test, Revision 20

Section 1R04: Equipment Alignment

1,2-47W859-1, Mechanical Flow Diagram-Component Cooling System, Revision 52
 1,2-47W859-2, Mechanical Flow Diagram-Component Cooling System, Revision 31
 2-47W859-3, Mechanical Flow Diagram-Component Cooling System, Revision 31
 1,2-47W839-1, Flow Diagram Diesel Starting Air System, Revision 54
 1,2-17W586-1H, Diesel Generator Building Hanger ID and Location, Revision 4
 1,2-47W816-2, Flow Diagram Diesel Generator Lube Oil System, Revision 0
 1,2-17W586-1, Mechanical Exposed Oil, Air, Water and Miscellaneous Piping, Revision 4
 1,2-17W586-2, Mechanical Exposed Oil, Air, Water and Miscellaneous Piping, Revision 7
 1,2-17W586-4, Mechanical Exposed Oil, Air, Water and Miscellaneous Piping, Revision 0
 1,2-17W586-5, Mechanical Exposed Oil, Air, Water and Miscellaneous Piping, Revision 1
 1,2-17W586-6, Mechanical Exposed Oil, Air, Water and Miscellaneous Piping, Revision 0

Section 1R05: Fire Protection

SPP-10.9, Control of Fire Protection Impairments, Revision 2
 SPP-10.10, Control of Transient Combustibles, Revision 4
 Sequoyah Nuclear Plant Fire Protection Report, Revision 22
 Calculation 26D54EPMABBIMPFA, "Sequoyah Nuclear Plant – Fire Hazards Analysis Calculation," Revision 47
 Regulatory Guide 1.189, Fire Protection for Nuclear Power Plants, Revision 1
 MMTP-102, "Erection of Scaffolds/Temporary Work Platforms and Ladders," Revision 1

Section 1R06: Flooding

Sequoyah Probabilistic Safety Assessment, Individual Plant Examination, Volume 3, Revision 1
 SQN-SQS40056, Moderate Energy Line Break Flooding Study, Revision 12
 1,2-47W200-6, Equipment Plan EL669.0 & EL 662.5

Section 1R11: Licensed Operator Regualification

TRN-11.10, Annual Regualification Examination Development and Implementation, Revision 13
 S-13 Simulator Exam Guide, "Uncontrolled Depressurization of All Steam Generators," Revision 13
 S-31, "Faulted and Ruptured Steam Generators," Revision 8

Procedures:

TRN-12, Simulator Regulatory Requirements, Rev. 8
 TRN-11.10, Annual Examination Development and Administration, Rev. 13
 TRN-11.4.Continuing Training for Licensed Individuals, Rev. 14
 TRN-11.11 Regualification Periodic Written Exam Development & Implementation, Rev. 6
 TRN-11.7 Simulator Exercise Guide Development and Revision, Rev. 3

Written Examinations Reviewed:

All 2008 Biennial Written Examinations

Simulator Documents:

TVA Simulator Services Group Directive, Core Model Evaluations, 11/19/08
 TVA Simulator Services Group Directive, Simulator Testing Program, 06/17/08
 Closed Simulator Problem Reports since 2006
 Outstanding Simulator Problem Report List as of 01/01/2008

Transient Tests

Transient #1: Manual Reactor Trip, (2006)
 Transient #6: Main Turbine Trip Below P-9 (no reactor trip), (2006)
 Transient #10: Slow Close RCS Depressurization to Saturation – CCP's failed, (2006)

Malfunction Tests:

EG02A/B: Diesel Generator Trip, (2003, 2008)
 ED01: Loss of Offsite Power, (2003, 2004, 2008)
 ED06: Loss of 6.9 KV Shutdown Board, (2003, 2004, 2008)
 ED08: Loss of 480 V Shutdown Board, (2003, 2004, 2008)
 TH09: Increase in Activity Released By Core, (2007)

RH01: RHR Pump Trip or Fail to Start (Loss of Shutdown Cooling), (2006)

Normal Evolutions Tests:

U1C15 Core Update Testing, (PR-4494, Unit 1 Cycle 15)

U1C16 Core Update Testing, (PR-4725 Unit 1 Cycle 16)

Job Performance Measures (JPMs)

JPM138, Transfer Annunciator System to Alternate Power Supply, Rev. 7

JPM46, Shutdown the Diesel Generators, Rev. 13

JPM13AP, Transfer to Hot Leg Recirculation, Rev. 10

Simulator Scenarios

S-18, Steam Generator Tube Rupture – Failure of Normal PZR Sprays, Rev. 145

S-23, Loss of Secondary Heat Sink, Rev. 17

Condition Reports & LERs

PER 158616, Documentation Supporting NRC 71111.11B Discarded

PER 158614, Medical Restrictions Not Reported to NRC w/I Required Time

PER 158617, Biennial Simulator/JPM Improvement Opportunities

PER 158618, Awareness of Control Room Binder Chronicling NRC License Restrictions

PER 114160, TRB Overturns Ops Crew Failure to meet a WOG Critical Task

PER 152715, Reactor Operator failed S3/S4 evaluation and could not hold his licensed duties

PER 155885, License Reactivation Documentation Not Inputted to ATIS system

PER 122415, Licensed Operator Found With Unresolved Medical Condition

PER 114206, Simulator Fidelity Problem Causing Week 6 Exam Failure

PER 134801, LOR Crew Failed Simulator Scenario During Annual Exam Eval

LER 50-327-2008-001, Manual Reactor Trip From a Failure to Follow Procedures

LER 50-328-2007-002 Manual Reactor Trip Following Partial Loss of Main Feedwater Flow

LER 50-328 2007-001 Reactor Trip Following Main Feed Reg Valve due to Air Line Failure

Other:

Reactivation Records (4)

Medical Records (10)

Feedback Summary Comments from Licensed Operator Requal 2006 thru 2008

Remedial Training Plans-Written Exam Failures (1)

Remedial Training Plans-Operating Test Failure (6)

Section 1R12: Maintenance Rule Implementation

FSAR Section 9.2.2, Essential Raw Cooling Water

SPP-6.6, Maintenance Rule Performance Indicator Monitoring, Trending and Reporting-

10CFR50.65, Revision 9

TI-4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting-

10CFR50.65, Revision 21

Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation

ORAM-Sentinel Run for September 29 to October 8, 2008 dated October 2, 2008

ORAM-Sentinel Run for October 13 to November 2, 2008 dated October 17, 2008

Attachment

SPP-7.1, On Line Work Management, Revision 11
 OPDP-1, Conduct of Operations, Revision 9
 Operations Directive Manual Appendix D, Protected Equipment, Revision 4

Section 1R15: Operability Evaluations

NEDP-22, Functional Evaluations, Revision 5
 SQN ODCM, Offsite Dose Calculation Manual, Revision 53
 WO 08-779534-000, Repair Hole in Auxiliary Building General Exhaust Ductwork
 1-SI-OPS-000-002.0, Shift Log, Appendix E, Revision 91
 1-2-47W866-10, Flow Diagram-Auxiliary Building Heating and Ventilating Air Flow, Revision 19
 FSAR Section 6.2.4, Containment Isolation Systems
 Functional Evaluation 42853, Pratt Butterfly Valve Trunnion to Limitorque Operator Bolting
 Functional Evaluation 42978, High Moisture/Humidity Inside Containment Due to RCS Leak
 PERs 151576, 159556, 156667
 Past Operability Evaluation PER159556, Unit 1 ERCW Pipe Leak
 TVAN Calculation N2-3-1A, 2A-STUDY01, "PER 151576 Study Calculation – Structural Evaluation of Pipe Leak in ERCW Supply to TDAFW Pump," Revision 0
 FSAR Section 5.2.7, RSPB Leakage Detection Systems
 Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973
 DCN M13987-A
 NRC Information Notice 2005-24, "Nonconservatism in Leakage Detection Sensitivity"
 Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," November 2000
 Calculation APS3-055, "Reactor Coolant Pressure Boundary Leakage Detection with the Containment Lower Compartment Air Radiation Monitor," Revision 5
 Calculation APS3047, "Reactor Coolant and Secondary Side Activities in Accordance With ANSI/ANS-18.1-1984," Revision 5
 WO 05-774174-001
 M&AI-7.1, "Cable Terminations and Repairing Damaged Cables," Revision 27
 PER 158679

Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

Full Evaluations

DCN 22238A, Analog Feed Water Control System to be replaced with digital Distributed Control System, 8/28/08
 0-SO-202-1, CSST A, B and C Alignment During CSST C Outage, 5/6/08
 EDC E-22316, Issue EDC to Specify Owner-Established ASME Section XI Acceptance Criteria (CVCS and SIS Relief Valve Setpoint Tolerance Change), 5/8/08
 WO 99-007763-00-0, ERCW Travel Screen Disassembly Load Lift with Barge, 9/14/07
 USFAR Section 9.4.2.2.6, Amendment 21, 9/25/08
 0-SO-250-5 R23, 250Volt DC Power System, Sec 8.5, 5/8/08

Screened Out Items

DCN 22115, Part 21 Notification from Prime Measurement Products for Barton 763 and 764 Series Transmitters for Unit 1, 2/20/07
 DCN 22116, Part 21 Notification from Prime Measurement Products for Barton 763 and 764

Series Transmitters for Unit 2, 2/20/07
 AOP-P.02, Loss of 125 VDC Vital Battery Board, Rev 11, 11/1/07
 AOP-P.03, Loss of U1 Vital Instrument Power, Rev 19, 12/6/05
 DCN-22228, Hardline Jumper on Foxboro Controllers Unit 1, 7/20/07
 DCN-22251, Hardline Jumper on Foxboro Controllers Unit 2, 8/23/07
 DCN D- 22161, Install ERCW High Point Vents, 3/9/07
 EDC E-22249, Revise Airflow for SFPT/TBBD and Pipe Chase Air Cooler on 1,2-47W866-8, 9/28/07
 DCN D-21984, Units 1 and 2 ERCW Header 16" Cross Tie Connections and 8" Flush Connections, 7/20/07
 Proposed TS Bases 3 /4 6.5.9, Change, Divider Barrier Seal, 8/28/08
 D22260, Replace SSPS Output Relay Test Panel switch S603 (A pushbutton) located in rack 1-R48, Rev. A
 D22294, Install Appendix R Light packs, Rev. A
 E22208, Replace breakers with molded case switches, Rev. A
 DCN 22139, Allow removal of the internals to valves 0-VLV-313-0985 and 1027, 12/05/06
 EDC 22286A, Replace Existing Target Rock Solenoid Model #83NN-004-1-SQN with Target Rock Solenoid Model #77DD040-BB, 12/05/06
 Screening Review, AOP-M.09 Rev. 0, 08/07/08

Modifications

DCN 22115, Part 21 Notification from Prime Measurement Products for Barton 763 and 764 Series Transmitters for Unit 1, 2/20/07
 DCN 22116, Part 21 Notification from Prime Measurement Products for Barton 763 and 764 Series Transmitters for Unit 2, 2/20/07
 DCN 22167, Replacement Cables for Rod Position Indication, 1/16/07
 BTH382T, Commercial Grade Dedication of 15 Microfarad Capacitors, 6/19/07
 643391K0, Equivalency Evaluation of SMB-000 Operator Motor, 11/30/06
 DCN D-22161, Install Emergency Raw Cooling Water (ERCW) High Point Vent, Rev. 0
 EDC-22249, Revise ESF Airflow Values on Drawings, Rev. 0
 PEG 1082841C0, Equivalency Evaluation: Circuit Board, Vital Inverter, 11/7/07
 PEG BWT822X, Solenoid Valve, Q level, Automatic Switch Company, 10/4/08
 PEG CAE213X, Containment Sump Level Transmitter, SQN-1,20LT, et.al., 11/9/07
 PEG 121732X0, Flowserve Check Valve Cap Screw, 9/26/07
 PEG CKE569X, Solenoid Pilot Valve, Parker Hannefin, 12/25/06
 D22260, Replace SSPS Output Relay Test Panel switch S603 (A pushbutton) located in rack 1-R48, Rev. A
 D22294, Install Appendix R Light packs, Rev. A
 E22208, Replace breakers with molded case switches, Rev. A
 PEG 711503G2, Globe Valves 2" Class 600 and 1" Class 1522, SS, CAX082V and CLB636J, Rev 0.
 PEG 2944, Review of Flowserve Quote, Rev. 0
 PEG 1039124C0, Seat/Valve (CMN231E), Rev. 0
 PEG 1039124G0, Seat Assembly, 3/8" Check Valve (CMN231E), Rev. 0
 DCN 22139, Allow removal of the internals to valves 0-VLV-313-0985 and 1027, 12/05/06
 EDC 22286A, Replace Existing Target Rock Solenoid Model #83NN-004-1-SQN with Target Rock Solenoid Model #77DD040-BB, 12/05/06

Basis Documents

Technical Specifications, Current
 Updated Final Safety Analysis Report, Current
 Technical Requirements Manual, Current

Problem Evaluation Reports (PER)

PER 111770, Part 21 Notification from Prime Measurement Products regarding Barton 763, 763A and 764 gage and differential pressure transmitters
 PER 96236, Ultrasonic Inspection of ERCW Discharge Lines Identified Air Void in Train A Discharge Header
 PER 136199, Discrepancy between FSAR Section 9.4.2.2.6 and design criteria SQN-DC-V-210, relative to ambient temperature for 480 V shutdown transformer room
 PER 128408, different air flow rates in flow diagram for heating and ventilation air flow
 PER 129611, App. R lighting deficiencies
 PER 115073, 6.9KV Shutdown Bd Rm Chiller inop.
 PER 141042, Guidance For Loss Of Both CCPs

Procedures

0-SO-30-11, Onsite Electrical Board Rooms, Rev. 33
 0-SI-MIN-302-239.0, Testing of the Divider Barrier Seal, Rev. 6
 TVA Safety Procedure 802, requirements for Safe Operation of Cranes, Rev. 5
 TVA Safety Procedure 721B, Rigging (Nuclear Power Group), Rev. 6
 Maintenance Instruction (MI) O-MI-MXX-000-026.0, Control of Heavy Loads in Critical Lifting Zones, NUREG-0612, Rev. 20
 0-PI-SFT-030-755.0, Equipment Coolers Operability Test, Rev. 6
 0-SO-250-5 R23, 250Volt DC Power System, Sec 8.5, Rev. 24
 1-45B655-01C-D, Annunciator I/O list 1-XA-55-01C, Rev. 9
 2-AR-M6-D, Auxiliary Systems 2-XA-55-6D, Rev.25
 1-AR-M6-D, Auxiliary Systems 1-XA-55-6D, Rev.35
 1-AR-M1-C, AC/DC Control Power 1-XA-55-1C, Rev.39
 2-AR-M1-C, AC/DC Control Power 2-XA-55-1C, Rev.46
 NEPD-8, Technical Evaluations For Procurement Of Materials And Services, Rev. 12
 0-SI-SXP-313-201.A, Shutdown Board Room Chilled Water Circulation Pump A-A Performance Test, Rev. 7
 0-SI-SXP-313-201.B, Shutdown Board Room Chilled Water Circulation Pump B-B Performance Test, Rev. 8
 0-TI-SXI-000-200.V, ASME OM Code Valve Testing, Rev. 0
 0-TI-SXI-000-200.V, ASME OM Code Valve Testing, Rev. 1
 0-TI-SXI-000-200.V, ASME OM Code Valve Testing, Rev. 2
 0-SI-SXV-000-266.0, Summary of Pump and Valve Tests for ASME Code, Rev. 13
 0-SI-SXV-000-266.0, Summary of Pump and Valve Tests for ASME Code, Rev. 14
 0-SI-SXV-000-266.0, Summary of Pump and Valve Tests for ASME Code, Rev. 15
 0-SI-SXV-000-266.CV, Summary of Check Valve Tests for ASME Code, Rev. 0
 0-SI-SXV-000-266.CV, Summary of Check Valve Tests for ASME Code, Rev. 1
 0-SI-SXV-31C-215.0, Closure Test for Shutdown Board Room Chiller Pump Discharge Check Valves 0-31C-985 and 0-31C-1027, Rev. 0
 0-SI-SXV-31C-215.0, Closure Test for Shutdown Board Room Chiller Pump Discharge Check Valves 0-31C-985 and 0-31C-1027, Rev. 1
 AOP-M.09, Loss Of Charging, Rev. 0
 AOP-M.01, Loss of Essential Raw Cooling Water, Rev. 19

E-0, Reactor Trip or Safety Injection, Rev. 30
 ES-0.1, Reactor Trip Response, Rev. 31
 OPDP-1, Conduct of Operations, Rev. 0011
 E-1, Loss of Reactor or Secondary Coolant, Rev. 23
 ES-1.1, SI Termination, Rev. 10
 ES-1.2, Post LOCA Cooldown and Depressurization, Rev. 17
 1-AR-M6-C, CVCS-Heat Trace-UHI, Rev. 33
 1-AR-M6-C, CVCS-Heat Trace-UHI, Rev. 34
 M&AI-24 Installation, Inspection, and Documentation of Instrumentation Features, 04/13/08
 0-FP-MXX-043-001.0, Flood Preparation-Sampling Valves, Rev. 6
 0-PI-OPS-510-001.0, Flood Preparation Equipment Inventory, Rev. 7

Work Orders

WO 07-782657-000, Replace the 125V dc vital battery Board IV circuit breaker 328 by implementing EDC-E22208A, 05/01/08
 WO 07-777881-000, Replace the 125V dc vital battery Board III circuit breaker 327 by implementing EDC-E22208A, 05/14/08
 WO 08-770137-001, Install App. R Lighting pack in U1 hot sample room and lighting head in U2 hot sample room, 6/25/08
 WO 06-777441-000, Replace the slave relay test push button "A", 09/15/06
 WO 07-771180-000, Glycol exp bypass check valve inspection, 02/02/07
 WO 07-771181-000, Glycol bypass check valve inspection, 02/02/07
 WO 06-780751-002, CW A-A CWR Pump Discharge, 10/24/07
 WO 06-780751-003, CW B-B CWR Pump Discharge, 12/14/06
 WO 07-780674-000, Implement EDC E22286A, 10/13/07
 WO 08-773246-000, SQN-2-FSV-043-0058-A, 03/27/08
 WO 07-780674-002, SQN-2-FSV-043-0061-B, 01/10/08
 0-TI-GXX-000-630.0, Maintenance Management System Generic Substitution Work Order Package, 04/18/08
 0-TI-GXX-000-630.0, Maintenance Management System Generic Substitution Work Order Package, 01/15/08

Calculations

MDQ00006720070172, ERCW Discharge Header Vents, Rev. 1
 SQN-CPS-051, Circuit Protection Device evaluation, Rev. 39
 SQN-COS-057, Vital Control Power System Loading Channel I, and Continuous Loading Evaluation of Protective Devices in the 120V AC Vital Instrument Power boards, Rev. 67
 SQN-APPR-1, Analysis of AC/DC Control (I&C) Power Systems to identify Associated Circuits -10CFR50, App. R
 SQN-DC-V.11.2, 125V Vital Battery System, Rev. 10
 SQN-DC-V.11.2.1, 125V fifth Vital Battery System, Rev. 6
 30-D053-EPM-BVC-052788, ERCW River Water Temperature Effect on ESF Coolers, Rev. 7
 MDQ00099920080188, Determinations of Owner-Established Acceptance Criteria for Relief Valve Setpoint Testing, 5/9/08
 N2-31-A-315A, Alternate Analysis, Rev. 5
 N2-31-A-316A, Alternate Analysis, Rev. 7
 31CD53EPMTEC2010487, A/C System Shutdown Board EL 734, Equip. Selection & Specification, Rev. 2
 31CD53EPMTEC2010487, A/C System Shutdown Board EL 734, Equip. Selection & Specification, Rev. 3

SQTP-003-03, Mini-Calc for SQTP-003, ASME Section XI Inservice Valve and Augmented Valve Identification for the Second and Third Ten Year Interval, Rev. 0

Drawings

1-1296H46-27C, Solid State Protection System Schematic Output Relays, Rev.1
 1-2374A57-5, Solid State Protection System wire list output relay test panel, Rev. 1
 1-2374A57-4, Solid State Protection System wire list output relay test panel, Rev. 1
 1-45N704-1, Wiring Diagrams 250V Battery System Single line- Sheet 1, Rev. 16
 1,2-45N705, Wiring Diagrams 250V Dc Turb Bldg Dist BD Single Line, Rev. 7
 1,2-45N703-1, Wiring Diagram 125 Vital battery Board I Single Line Sheet-1, Rev. 54
 1,2-45N703-2, Wiring Diagram 125 Vital battery Board II Single Line Sheet-2, Rev. 30
 1,2-45N703-3, Wiring Diagram 125 Vital battery Board III Single Line Sheet-3, Rev. 27
 1,2-45N703-4, Wiring Diagram 125 Vital battery Board IV Single Line Sheet-4, Rev. 28
 Figure 8.3.2-1, Wiring Diagram 125V Vital Battery Board I Single line sheet-1
 1-45N1410-1, Lighting Plan and detail EL 653.0, Rev.1
 TVS2-20516- (3), 2" Class 600 Stainless Steel Packed Y Globe Valve, Rev. A
 72597081, 2" Class 600 Stainless Steel Packed Y Globe Valve, Rev. D
 TVN-D-9915- (1), 1" Series 1522 Y-Type Globe Valve, Rev. A
 7500003852, 1" Series
 1522 Y-Type Globe Valve, Rev. C
 1,2-TVN-D-9915-1, Kerotest 1" Series 1522 Y-Type Globe Valve, Rev. 1
 1,2-47W812-1A, Containment Spray System, Rev. 1
 1,2-47W437-6, Containment Spray System Piping, Rev. 3
 1-47W437-1, Containment Spray System Piping, Rev. 6
 72562283, 3/8 Series 600 Check Valve with Soft Seat, Rev. A
 72562283, T-Piston Check Valve with Soft Seat, Rev. B
 1,2-47W814-1, Flow Diagram Ice Condenser System, Rev. 19
 1,2-47W814-2, Flow Diagram Ice Condenser System, Rev. 22
 SMO 150GO, Wafer Check Valve, Rev. 1
 1,2-47W920-32, Heating, Ventilation, and Air Conditioning, Rev. 4
 1,2-47W920-32, Heating, Ventilation, and Air Conditioning, Rev. 6
 1,2-47W865-8, Flow Diagram Air Conditioning Chilled Water, Rev. 12
 1,2-47W865-8, Flow Diagram Air Conditioning Chilled Water, Rev. 14
 1,2-47W865-8, Flow Diagram Air Conditioning Chilled Water, Rev. 15
 1,2-47W845-2, Essential Raw Cooling Water System, Rev. 98
 77DD-010BB, Solenoid Operated Valve Energize to Open Size: 3/8" Tube, Rev. C
 83NN-004-1, Upgraded Solenoid Operated Valve Energize to Open Size: 3/8" Tube, Rev. C

Other Documents

SQN-VTM-S993-0010, Scientech Safety Related Components, Amendment 20, 10/2/07
 SQN-VTD-S993-0020, Scientech, LLC NUSI/EGS Division EGS Quick Disconnect Electrical Connector 1/2", 3/4" and 1 1/2", Rev 0, 1/12/07
 SQN-VTD-S993-0030, Scientech, LLC EGS Division Instructions for Installation of EGS/Patel 880701-B, 913601-B, and 013602-B Bayonet Connectors, Rev 0, 1/12/07
 SQN-VTD-S993-0040, Scientech, Inc. EGS Division Instruction for Using Patel Thread Sealant P-1, Rev 0, 10/2/07
 Functional Evaluation (FE) 42408, for PER 136199, Discrepancy between FSAR Section 9.4.2.2.6 and design criteria SQN-DC-V-210, Rev. 0
 Design Criteria SQN-DC-V-139.3, Auxiliary Bldg. Ventilation and Cooling, 7/11/86
 FE 42251, for PER 131183, Divider Barrier Seal, 10/16/07

Attachment

TRMWO 07-777881-000, Replace MCCB with new molded case switch, 05/13/08
 Loading Evaluation of Protective Devices in the 120V AC Vital Instrument Power boards, Rev. 67
 SQN-VTD-C770-0240, Vendor Technical document for Cutler-Hammer for Westinghouse Series C, K-frame molded case circuit breakers, Rev. 0
 1C83349, Solid State Protection System output test switch replacement, Rev. 2
 1C83349, Westinghouse Electric Comp., Rev. 0
 1046F40, Panel Assembly slave relay Test, Rev. N
 SQN-DC-V-21.0, Environmental Design, Rev. 20
 SQN-DC-V-13.9.3, Auxiliary Building Ventilation and Cooling, Rev. 4
 47BM436-4, Piping Bill of Material (Valves), 05/10/74
 B25 070705 201, Letter Acknowledging Receipt of Documents, 06/23/07
 RAL-20013, Design Report, Rev. 0
 00020077, 3 VESPEL SP 21 Valve Seats, Rev. 2
 00093665, Seat, Valve, QA 1, Seat/Seal, Seat Holder, 09/30/07
 BBNNT-74481A, Valve Contract, 04/21/88
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 PER 158654, EDC E22208A replacement of 125V Vital battery Board breakers, it was identified that drawing 1-45B655-01C-0 was incorrectly revised.
 PER 158664, EDC E22208A for replacement of Vital Battery Board breaker, it was identify that Annunciator Response procedures were not revised as required by the changes of this EDC.
 PER 159015, Not testing relief valves to the requirement of 0-SI-SXV-000-264.0.
 PER 158461, Equivalency evaluation OE review not documented
 PER 158658, Superseded valve label not removed
 PER 158842, Equivalency evaluation OE Review not documented
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 PER 158953, AOP-M.01 contains actions which violate Tech Specs
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 FSAR Section 3.8.1.4, Refueling Water Storage Tank
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