UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

October 29, 2010

Mr. R. M. Krich
Vice President, Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000327/2010004, 05000328/2010004

Dear Mr. Krich:

On September 30, 2010, 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 discussed on October 7, 2010 with Mr. C. Church 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 three NRC-identified findings of very low safety significance (Green), all of which involved violations of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. However, because of the very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations (NCVs) consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Sequoyah Nuclear Plant.

In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the Sequoyah Nuclear Plant. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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 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/

Eugene F. Guthrie, 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 05000327/2010004, 05000328/2010004
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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DATE	10/28/2010	10/28/2010	10/28/2010	10/29/2010	10/29/2010		
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Letter to R. M. Krich from Eugene Guthrie dated October 29, 2010

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT 05000327/2010004, 05000328/2010004

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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.:	05000327/2010004, 05000328/2010004
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Sequoyah Nuclear Plant, Units 1 and 2
Location:	Sequoyah Access Road Soddy-Daisy, TN 37379
Dates:	July 1, 2010 – September 30, 2010
Inspectors:	C. Young, Senior Resident Inspector M. Speck, Resident Inspector W. Deschaine, Project Engineer (1R05, 1R22)
Approved by:	Eugene F. Guthrie, Chief Reactor Projects Branch 6 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000327/2010004, 05000328/2010004; 07/01/2010 – 09/30/2010; Sequoyah Nuclear Plant, Units 1 and 2; Heat Sink Performance, Identification and Resolution of Problems, and Event Followup.

The report covered a three-month period of inspection by resident inspectors and announced inspections by regional inspectors. Three Green findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a non-cited violation of 10 CFR 50 Appendix B Criterion V, "Instructions, Procedures, and Drawings," for the failure to provide adequate documented instructions for inspection of the containment spray heat exchangers. Preventive maintenance (PM) procedures associated with these inspections failed to provide for an adequate inspection of the ERCW side (shell side) of these heat exchangers. Consequently, the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection. The licensee entered this issue into their corrective action program as PER 236318. Planned corrective actions include the development and implementation of a single-tube method for thermal performance testing of the heat exchangers in lieu of inspection.

  The finding was determined to be greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, since the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function. The cause of this finding was determined to have a cross-cutting aspect of Corrective Action Program Issue Identification in the area of Problem Identification and Resolution associated with the Corrective Action Program component, in that the evaluation of PERs in 2009 on the subject of CS heat exchanger inspection failed to identify the need to resolve the discrepancy between the scope of the program PMs and the implementing procedure requirement for CS heat exchanger shell side inspection. Thus, the licensee failed to completely and accurately identify issues in the corrective action program [P.1(a)]. (Section 1R07)

- Green. The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B Criterion III, “Design Control,” for the failure to provide design control measures for verifying the adequacy of the design calculation used to establish the maximum RHR operating temperature limit for maintaining ECCS operability. A design calculation yielded a non-conservative temperature limit for use in plant operations procedures. This resulted in several occasions where ECCS operability was in question due to the fluid temperature in the RHR system suction piping. The licensee entered this issue into their corrective action program as PER 215434. Corrective actions included revising operations procedures to reflect the corrected temperature limit from a revised calculation.

  The finding was determined to be greater than minor because it was similar to example 3.j. of IMC 0612 Appendix E in that the non-conservatism in the calculation resulted in a condition where reasonable doubt existed as to the operability of the ECCS system. Additionally, it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, plant procedures for RHR system operation contained non-conservative temperature limits for ensuring TS operability, and actual system temperatures exceeded the revised appropriate limit on several occasions. Using IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function. No cross-cutting aspect was identified since the issue was not reflective of current licensee performance, since the previous calculation in question was last revised and approved in 1996. (Section 4OA2.3)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Green non-cited violation of Unit 2 TS 6.8, “Procedures and Programs,” for the failure to take prompt action to maintain reactor thermal power less than the licensed power limit of 3455 megawatts thermal (MWt) in response to a transient caused by the loss of a condensate booster pump, as required by station procedures. The licensee entered this issue into their corrective action program as PER 259098. The licensee is currently evaluating for planned corrective actions.

  The finding was determined to be greater than minor because it was similar to example 8.b. of IMC 0612 Appendix E. Additionally, it was associated with the Human Performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective relative to the fuel cladding barrier since operation above the licensed power limit reduces analyzed margins to fuel cladding damage. Using IMC 0609, “Significance Determination Process,” Attachment 4, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) since only the fuel cladding barrier was affected. The cause of this finding was determined to have a cross-cutting aspect of Conservative Assumptions and Safe Actions in the area of Human Performance associated with the Decision Making component. The decision to take no operator action in response to the thermal power transient reflected a non-conservative assumption that average thermal power could be allowed to exceed the licensed limit without operator action while the feedwater control system responded to the transient associated with the condensate pump failure [H.1(b)]. (Section 4OA3.3)

REPORT DETAILS

Summary of Plant Status:

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

Unit 2 operated at or near 100 percent RTP until September 28, 2010, when power was reduced to approximately 84 percent RTP in response to the loss of one condensate booster pump. Unit 2 remained at 84 percent RTP while conducting repairs for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment

Partial System Walkdown

a. Inspection Scope

The inspectors performed four partial walkdowns of the following 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.

- Unit 1 Auxiliary Feedwater Motor-driven A-train and B-train During Turbine-driven train Unplanned Maintenance
- Emergency Diesel Generators 1A-A, 2A-A, 2B-B During 1B-B Planned Maintenance
- Unit 1 Containment Spray System Train B During Train A Maintenance
- Unit 1 Emergency Core Cooling System Train A During Emergent Train B Maintenance

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Fire Protection Tours

a. Inspection Scope

The inspectors conducted a tour of the six areas important to safety 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.

- Emergency Diesel Generator Building
- 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)
- Auxiliary Building Elevation 690 (Corridor)
- Auxiliary Building Elevation 714 (Corridor)

b. Findings

No findings were identified.

.2 Annual Drill Observations

a. Inspection Scope

On July 21, 2010, the inspectors observed an unannounced fire drill in the Diesel Generator Building Board Room 1A-A. The inspectors assessed fire alarm effectiveness; response time for notifying and assembling the fire brigade; the selection, placement, and use of firefighting equipment; use of personnel fire protective clothing and equipment (e.g., turnout gear, self-contained breathing apparatus); communications; incident command and control; teamwork; and fire fighting strategies. The inspectors also attended the post-drill critique to assess the licensee's ability to review fire brigade performance and identify areas for improvement. Following the critique, the inspectors compared their findings with the licensee's observations and to the requirements specified in the licensee's Fire Protection report. This activity constituted one inspection sample.

b. Findings

No findings were identified.

1R06 Flood Protection Measures

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed one internal flood protection measures sample for the Turbine Building/Control Building interface flood barriers to verify that structures and penetrations were consistent with the drawings and 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 turbine building. Specifically, the inspectors reviewed the licensee's drawings and walked down the barriers separating the turbine and control buildings to verify the adequacy of common area drainage, flood detection instrumentation, and that physical barriers were intact to ensure that a flooding event would not impact reactor shutdown capabilities. Documents reviewed are listed in the Attachment. The inspectors completed one sample.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the licensee's execution and on-line monitoring of biofouling controls to verify whether the licensee had developed acceptance criteria for these controls. Specifically, the inspectors reviewed SPP-9.7, Corrosion Control Program, Revision 17, interviewed chemistry and engineering personnel, and reviewed chemistry implementing procedures to ensure that SPP-9.7 requirements were implemented. The inspectors also reviewed the licensee's Generic Letter (GL) 89-13 commitments relating to safety-related heat exchangers cooled by raw service water. The inspectors observed the inspection of the shell side (raw water side) of the 1B containment spray heat exchanger as well as documentation of the inspection of the 1A, 2A, and 2B containment spray heat exchangers in accordance with the licensee's Generic Letter 89-13 Program. Documents reviewed are listed in the Attachment. The inspectors completed one sample.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B Criterion V, "Instructions, Procedures, and Drawings," for the failure to provide adequate documented instructions for inspection of the containment spray heat exchangers. Preventive maintenance (PM) procedures associated with these inspections failed to provide for an adequate inspection of the ERCW side (shell side) of these heat exchangers. Consequently, the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection.

Description. On July 18, 1989, the NRC issued Generic Letter (GL) 89-13 "Service Water System Problems Affecting Safety-Related Equipment" which requested licensees to implement a program including testing and/or inspection in order to ensure adequate heat transfer capability of applicable safety-related heat exchangers which use raw service water for cooling. The licensee's equivalent safety-related raw service water system is the Essential Raw Cooling Water (ERCW) system. On September 22, 1995, the licensee submitted a revised GL 89-13 program response which indicated that, for the containment spray (CS) heat exchangers, "periodic maintenance and inspection is performed on the shell side (ERCW) for MIC, clams and mussels, silt, biofouling, and corrosion products."

The inspectors reviewed licensee procedure 0-TI-SXX-000-146.0, "Program For Implementing NRC Generic Letter 89-13," revision 3, which required that visual inspections of the ERCW side of the CS heat exchangers be performed via the Preventive Maintenance (PM) Program. Specifically, PM procedures 041461000, 041481000, 041472000, and 041492000 were identified as implementing procedures for the inspections of CS heat exchangers 1A, 1B, 2A, and 2B, respectively. In January and March 2010, the inspectors observed the licensee's performance of these PM activities. The inspectors noted that the scope of these PMs was limited to inspection of the interior of the ERCW inlet pipe to each heat exchanger, and that the location of the inspection precluded observation of the condition of the shell side of the heat exchanger. The inspectors concluded that this activity was not adequate to meet the program requirement for heat exchanger testing/maintenance. The licensee entered this issue into their corrective action program as PER 236318.

The inspectors also reviewed PER 165626, which documented that in March 2009, a licensee self-assessment identified that PMs 041461000, 041481000, 041472000, and 041492000 had not been performed for greater than 5 years. This PER also identified an action to evaluate the possibility of performing visual inspection on the shell side of these heat exchangers. In response, the licensee evaluated the possibility of performing boroscope inspection on the shell side, and concluded that this inspection method would not be practicable.

The inspectors also reviewed PER 177214, dated July 2009, which was issued as a follow-up to the above PER 165626 and identified the need to perform a functional evaluation (FE) to assess the current operability of the CS heat exchangers and evaluate whether the design basis required heat transfer capability was being maintained in light of the fact that thermal performance testing and shell side inspections were not being performed. The inspectors reviewed this FE and concluded that reasonable assurance exists that these heat exchangers remain capable of performing their required function based on the results of visual inspections and testing of other raw water heat exchangers in the plant versus the allowable fouling factors associated with the CS heat exchangers.

The inspectors were informed by the licensee that planned corrective actions include the development and implementation of a single-tube method for thermal performance testing of the heat exchangers in lieu of inspection.

Analysis. The licensee's failure to provide adequate instructions for inspections of the containment spray heat exchangers was a performance deficiency. The finding was determined to be greater than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, since the heat transfer capability of these heat exchangers has not been periodically verified through either testing or adequate visual inspection. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function.

The cause of this finding was determined to have a cross-cutting aspect of Corrective Action Program Issue Identification in the area of Problem Identification and Resolution associated with the Corrective Action Program component, in that the evaluation of PERs in 2009 on the subject of CS heat exchanger inspection failed to identify the need to resolve the discrepancy between the scope of the program PMs and the implementing procedure requirement for CS heat exchanger shell side inspection. Thus, the licensee failed to completely and accurately identify issues in the corrective action program [P.1(a)].

Enforcement. 10 CFR 50 Appendix B, Criterion V, required that activities affecting quality shall be prescribed by documented instructions of a type appropriate to the circumstances, and that instructions shall include appropriate qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Procedure 0-TI-SXX-000-146.0, "Program For Implementing NRC Generic Letter 89-13," revision 3, required that visual inspections of the ERCW side of the containment spray heat exchangers be performed via the Preventive Maintenance (PM) Program. Contrary to this, on January 13, 2010, January 21, 2010, February 25, 2010, and March 11, 2010, the licensee failed to provide adequate documented instructions which included appropriate qualitative acceptance criteria for determining that activities affecting quality have been satisfactorily accomplished. Specifically, instructions provided in PM procedures 041461000, 041481000, 041472000, and 041492000 were not adequate to perform the inspections of the ERCW side of the containment spray heat exchangers identified in 0-TI-SXX-000-146.0. Consequently, the heat transfer capability of these heat exchangers had not been periodically verified through either testing or adequate visual inspection. Because this violation was determined to be of very low safety significance and has been entered into the licensee's corrective action program as PER 236318, it is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000327,328/2010004-01, "Inadequate Inspection of Raw Water Side of Containment Spray Heat Exchangers."

1R11 Licensed Operator Requalification Program

a. Inspection Scope

The inspectors performed one licensed operator requalification program review. The inspectors observed a simulator session on August 10, 2010. The training scenario involved a reactor coolant system leak followed by a failure of the containment spray system. Additional anomalies included a containment air return fan failure. 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. This activity constituted one inspection sample.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the maintenance activity 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.

- System 333 - Auxiliary Feedwater
- PER 241570 - Sampling System Containment Isolation Valve Failures

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the four following 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," Revision 12, and Instruction 0-TI-DSM-000-007.1, "Risk Assessment Guidelines," Revision 8. Documents reviewed are listed in the Attachment. This inspection satisfied four inspection samples for Maintenance Risk Assessment and Emergent Work Control.

- July 9, 2010, Yellow PSA Risk – Unit 1 – Turbine-driven AFW train scheduled and unscheduled maintenance
- August 3, 2010, Heavy/complex lift in vicinity of U1/U2 6.9kV Unit Boards and Condensate Demineralizer Piping
- August 26, 2010, Unplanned Unavailability of Centrifugal Charging Pump 1B
- September 30, 2010, Unit 1 start bus maintenance risk assessment

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the nine 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.

- PER 237441, EDG/ERCW cable splice submergence performance under flood conditions
- PER 234171, EGTS Cooldown Valve Failure

- PER 208228, Battery Powered Light Failed Battery Test and Not Corrected Within 14 day Allowed Outage Time
- PER 232000, ERCW Missile Shield Concrete Test Values Outside of Acceptance Range
- PER 246077, 1B Centrifugal Charging Pump Mechanical Seal Leakage
- SR 243845, Vital Battery V Discharge Test Procedure Not Followed
- PERs 238372 and 238550, Unit 1 Turbine driven auxiliary feedwater pump suction pressure switch logic relay and flow controller failure
- PER 236305, Scaffold secured to containment spray heat exchanger drain line
- SR 252775, RWST aligned to non-safety related system on recirculation

b. Findings

No findings were identified.

1R18 Plant Modifications

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the temporary modification listed below and the associated 10 CFR 50.59 screening, and compared it against the UFSAR and TS to verify whether the modification affected operability or availability of the affected system.

- TACF 0-10-0011-082, Install Diesel Generator Fuel Tank Atmospheric Vent Screens

Following installation and testing, the inspectors observed indications affected by the modification, discussed them with operators, and verified that the modification was installed properly and its operation did not adversely affect safety system functions. Documents reviewed are listed in the Attachment. The inspectors completed one sample.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the five post-maintenance tests associated with the work orders (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.

- WO 111061334, Repair EGTS B-train Cooldown Valve Function
- WO 111138619, Unit 1 Turbine-driven AFW Pump Time Delay Relay (TD-2) Replacement
- WO 111143594, Unit 1 Turbine-driven AFW Pump Flow Controller Replacement

- WO 110835968, Inspect, Clean, and Tighten 2B Diesel Generator Battery Connection
- WO 11325613, Evaluate and Repair 1B Centrifugal Charging Pump Mechanical Seal Leakage

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the four 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 whether 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. The inspectors completed four samples.

Routine Surveillance Tests:

- 0-SI-NUC-000-007.0, Measurement of the At-Power Moderator Temperature Coefficient, Revision 16
- 0-SI-EBT-082-238.2, Diesel Generator Battery Quarterly Operability, Revision 18
- 2-SI-IFT-099-90.8B, Reactor Trip Instrumentation Monthly Functional Test (SSPS) Train B, Revision 17

In-Service Tests:

- 1-SI-SXP-063-201.B, Safety Injection Pump 1B-B Performance Test, Revision 13

b. Findings

No findings were identified.

1EP6 Drill Evaluation

a. Inspection Scope

Resident inspectors evaluated the conduct of a routine licensee emergency drill on September 1, 2010 to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation (PAR) development activities. The inspectors observed emergency response operations in the simulated control room to verify that event classification and notifications were done in accordance with EPIP-1, Emergency Plan Classification Matrix, Revision 43. The inspectors also attended the licensee critique of the drill to compare any inspector-observed weakness with those identified by the licensee in order to verify whether the licensee was properly identifying deficiencies. The inspectors completed one sample.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

.1 Daily Review

a. Inspection Scope

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

b. Findings and Observations

No findings were identified.

.2 Selected Issue Follow-up: Maintenance Rule scoping of SSCs used in EOPs

a. Inspection Scope

In August 2008, the NRC issued a Green NCV of 10 CFR 50.65(b)(2)(i) for the failure to include a component within the scope of the maintenance rule monitoring program on the basis that the use of the component was prescribed in emergency operating procedures (EOPs) (this was issued in IR 05000327,328/2008003). The licensee issued PER 142050 in response to this identified violation. In August 2009, the NRC identified that the licensee had not taken action to determine the extent of additional components not being monitored within the maintenance rule program which would fall under the same scoping criteria. The NRC opened Unresolved Item (URI) 05000327,328/2009006-02, Inadequate Scoping of SSCs Used in EOPs into the Maintenance Rule Program, in IR 05000327,328/2009006 to determine whether additional scoping violations existed based on the licensee's evaluation to be conducted. The licensee issued PER 177211 to address this issue. The inspectors reviewed the licensee's actions, which included chartering a comprehensive evaluation study to identify plant components used in EOPs and evaluate each for scoping into the maintenance rule monitoring program. This effort is ongoing as of the time of this inspection report.

b. Findings and Observations

No findings were identified. The inspectors have reviewed the scope and status of the ongoing evaluation and determined that the licensee is taking appropriate action to address the issue. To date, the licensee has scoped into the maintenance rule monitoring program the steam dump valves, which were identified by the NRC as not being previously scoped. It is not expected that any additional previously unscoped components which may be identified as a result of this evaluation would constitute violations of 10 CFR 50.65(b)(2)(i) of more than minor significance.

.3 Selected Issue Follow-up: Potential for RHR system suction line voiding when aligned for ECCS injection

a. Inspection Scope

The inspectors reviewed the licensee's actions to address the potential for voiding in the RHR system suction piping whenever the fluid temperature exceeds the saturation temperature associated with ECCS injection alignment. The inspectors reviewed the licensee's evaluation of Westinghouse Nuclear Safety Advisory Letter (NSAL) 09-8, "Presence of Vapor in Emergency Core Cooling System/Residual Heat Removal System in Modes 3/4 Loss-of-Coolant Accident Conditions," which was issued in November 2009. The licensee issued PERs 203852 and 155933 to evaluate the concern. The inspectors also reviewed NRC Information Notice (IN) 2010-11, Potential For Steam Voiding Causing Residual Heat Removal System Inoperability, and verified that the licensee had incorporated a review of this IN in their evaluation.

b. Findings and Observations

Introduction. The inspectors identified a Green non-cited violation of 10 CFR 50 Appendix B Criterion III, "Design Control," for the failure to provide design control measures for verifying the adequacy of the design calculation used to establish the maximum RHR operating temperature limit for maintaining ECCS operability. A design calculation yielded a non-conservative temperature limit for use in plant operations procedures. This resulted in several occasions where ECCS operability was in question due to the fluid temperature exceeding temperature limits in the RHR system suction piping.

Description. The inspectors reviewed the licensee's evaluation of Westinghouse Nuclear Safety Advisory Letter (NSAL) 09-8, "Presence of Vapor in Emergency Core Cooling System/Residual Heat Removal System in Modes 3/4 Loss-of-Coolant Accident Conditions," which was issued in November 2009. The licensee issued PERs 203852 and 155933 to evaluate the concern. The licensee's evaluation documented that an operability limit of 235F for RHR suction line temperature had been previously determined, and was reflected in current operations procedures. The inspectors reviewed operations procedure 0-GO-1, "Unit Startup From Cold Shutdown to Hot Standby," revision 54, which required that RHR shall be removed from service prior to exceeding 235F to avoid operability issues. This procedure, as well as 0-GO-7, "Unit Shutdown From Hot Standby to Cold Shutdown," revision 59, and 0-SO-74-1, "Residual

Heat Removal System," revision 69, stated that RHR must be considered inoperable for ECCS if shutdown cooling is in service with RCS greater than 235F.

The inspectors reviewed the engineering design calculation which had been performed to establish the RHR system temperature limit to maintain ECCS operability. Calculation SQN-SQS2-0155, "Safety limit and setpoint for the maximum RHR pump temperature to avoid flashing at the pump suction when aligned to the RWST," revision 1, established the RHR temperature limit of 235F which was then incorporated into operations procedures as being a system operability limit. The inspectors noted that this calculation was last reviewed and approved in November 1996. The inspectors identified that some of the parameters used in this calculation were derived from another calculation which had been superseded in 1999 by another calculation which had since been revised there times. The inspectors also identified that the calculation was non-conservative in that it failed to account for maintaining the minimum net positive suction head (NPSH) required for the RHR pumps to operate. The licensee generated PER 215434 to evaluate these concerns. The calculation was revised and resulted in a new operability limit of 200F. Operations procedures were revised to reflect the new operability limit.

The inspectors identified that on a number of occasions the RHR system had been operated at temperatures exceeding the newly determined operability limit, and that the licensee had not evaluated this condition for potential reportability based on periods of potential past inoperability. The inspectors identified examples of when both trains of RHR were in service above the limit in Mode 4 and 1 train of ECCS was required by TS LCO 3.5.3 to be operable. The inspectors also identified examples of when the in-service train of RHR was secured above the temperature limit in Mode 4, with subsequent Mode 3 entry, where 2 trains of ECCS were required by TS LCO 3.5.2 to be operable. The licensee entered this concern into their corrective actions program as PER 234373. The inspectors reviewed the licensee's past operability evaluation, which concluded that, for the most limiting example of operation of both trains above the limit in Mode 4, reasonable assurance of system operability was demonstrated to be maintained based on proceduralized operator actions to cool the RHR suction lines in the event of a design basis event. For the most limiting case of securing one RHR train above the temperature limit in Mode 4 prior to Mode 3 entry, the actual system temperature was evaluated to have been below the maximum limit for operability at the time of the Mode change.

Analysis. The licensee's failure to provide adequate design control measures for verifying the adequacy of the design calculation used to establish the maximum RHR operating temperature limit for maintaining ECCS operability was a performance deficiency. The finding was determined to be greater than minor because it was similar to example 3.j. of IMC 0612 Appendix E in that the non-conservatism in the calculation resulted in a condition where reasonable doubt existed as to the operability of the ECCS system. Additionally, it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, plant procedures for RHR system operation contained non-conservative temperature limits for ensuring TS operability, and actual system temperatures exceeded the revised appropriate limit on several occasions. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) since the finding did not represent an actual loss of safety function.

No cross-cutting aspect was identified since the issue was not reflective of current licensee performance, since the previous calculation in question was last revised and approved in 1996.

Enforcement. 10 CFR 50 Appendix B Criterion III required, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the use of calculational methods. Contrary to this, on November 4, 1996, the licensee failed to provide adequate design control measures for verifying the adequacy of design calculation SQN-SQS2-0155, revision 1, to meet its intended purpose of determining a limiting parameter for maintaining the operability of a safety system. Consequently, several instances occurred where actual system temperatures exceeded the design temperature limit during system operating conditions. Corrective actions have been taken to revise operations procedures to reflect the corrected temperature limit from a revised calculation. Because this violation was determined to be of very low safety significance and has been entered into the licensee's corrective action program as PER 215434, it is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000327,328/2010004-02, "Non-conservative Design Calculation for RHR Suction Temperature Limit."

4OA3 Event Follow-up

.1 Inadvertent transfer of inventory from the spent fuel pit (SFP) to the Unit 1 refueling water storage tank (RWST)

a. Inspection Scope

On June 8, 2010, the inspectors responded to a high level condition in the Unit 1 RWST that resulted from an inadvertent transfer of water inventory from the SFP to the Unit 1 RWST. The SFP filter was being replaced while the Unit 1 RWST was on purification recirculation and purification filters bypassed. This resulted in a system alignment of the SFP cooling/purification system which established an unintended flowpath from the SFP to the Unit 1 RWST. Operators responded to "RWST Make-Up Shutoff" and "Spent Fuel Pit Level High-Low" alarms by promptly recognizing and correcting the condition. Operators referenced TS LCO 3.5.5 which required that an inoperable RWST (due to high level) be restored to operable within 1 hour, or the Unit would have to be shut down within the next 6 hours. The RWST level was restored within the operable band within approximately 2 hours 10 minutes. Approximately 2,800 gallons of inventory was transferred.

The inspectors discussed the event with operations, engineering, and licensee management personnel to gain an understanding of the event and assess follow-up actions. The inspectors reviewed operator actions taken to determine whether they were in accordance with licensee procedures and TS, and reviewed unit and system indications to verify whether actions and system responses were as expected and designed. The event was reported to the NRC as EN 45520, and documented in the licensee's CAP as PER 233652. Planned corrective actions included a revision to the SFP cooling system operating procedure to preclude the establishment of the abnormal system alignment that resulted in this event.

b. Findings

No findings were identified.

.2 Fire in 'A' Intertie Transformer

a. Inspection Scope

On September 22, 2010, the inspectors responded to a fire in the 'A' phase intertie transformer in the switchyard, which serves as a connection between the 161-kV and 500-kV switchyards inside the site's protected area. Operators responded by dispatching fire operations personnel to extinguish the fire. Both operating Units were unaffected by the loss of the transformer. The inspectors discussed the event with operations, engineering, and licensee management personnel to gain an understanding of the event and assess follow-up actions. The inspectors reviewed operator actions taken to determine whether they were in accordance with licensee procedures and TS, and reviewed unit and system indications to verify whether actions and system responses were as expected and designed. The inspectors verified that required redundant and independent offsite power supplies to both Units remained operable, and that no safety-related equipment was affected by the fire. The inspectors also independently verified that the licensee had appropriately classified the event in accordance with EPIP-1, "Emergency Plan Classification Matrix," revision 44. The event was appropriately classified as a Notice of Unusual Event for a fire within the protected area lasting more than 15 minutes. The inspectors verified that the licensee's event classification and notifications to local authorities and NRC were performed timely. The inspectors also reviewed the initial licensee notifications to verify that they met the requirements specified in NUREG-1022, "Event Reporting Guidelines." The event was reported to the NRC as EN 46270, and documented in the licensee's CAP as PERs 257350.

b. Findings

No findings were identified.

.3 Unit 2 Condensate Booster Pump Trip and Thermal Power Transient

a. Inspection Scope

On September 28, 2010, Unit 2 experienced a loss of one condensate booster pump. The inspectors discussed the event with operations, engineering, and licensee management personnel to gain an understanding of the event and assess follow-up actions. The inspectors reviewed operator actions taken to determine whether they were in accordance with licensee procedures and TS, and reviewed unit and system indications to verify whether actions and system responses were as expected and designed. The event was documented in the licensee's CAP as PER 259098.

b. Findings

Introduction. The inspectors identified a Green non-cited violation of Unit 2 TS 6.8, "Procedures and Programs," for the failure to take prompt action to maintain 10-minute average reactor thermal power less than the licensed power limit of 3455 megawatts thermal (MWt) in response to a transient caused by the loss of a condensate booster pump, as required by station procedures.

Description. Facility operating license DRP-79 condition 2.(C).1 stated that TVA is authorized to operate the [Unit 2] facility at reactor core power levels not in excess of 3455 MWt. On September 28, 2010, Unit 2 operators responded to a condensate booster pump trip by implementing the applicable portion of AOP-S.04, "Condensate or Heater Drains Malfunction," revision 15, section 2.5, "Condensate Booster Pump Trip." Step 3 of this section of the procedure required operators to monitor reactor power, and reduce turbine load as necessary to maintain 10-minute average power less than the 3455 MWt limit. Operators noted that average power was above the licensed limit during the transient and allowed the automatic response of the feedwater control system to restore reactor power with no operator actions. The 10-min average of thermal power was above the licensed limit for 8 minutes beginning 10 minutes after the pump trip, and again for an additional 5-minute period beginning 32 minutes after the pump trip, with no operator action taken to reduce power. Peak 10-minute average power was 3481 MWt, and peak instantaneous power was 3515 MWt.

The inspectors reviewed Regulatory Issue Summary 2007-21, Rev. 1, "Adherence To Licensed Power Limits," which endorsed an NEI Position Statement "Guidance To Licensees on Complying with the Licensed Power Limit." This included guidance that "licensees are expected to take prompt action to reduce thermal power whenever it is found above the licensed limit." The inspectors found the following licensee proceduralized operating requirements:

OPDP-1, "Conduct of Operations," revision 18, stated that "if the unit is determined to be operating above its licensed core thermal power limit take prompt (typically no more than 10 minutes from the time of determination) action to reduce power below the core thermal power limit."

0-GO-5, "Normal Power Operation," revision 67, stated that "every effort should be made to maintain core thermal power 10 minute average less than 3455 MWt." This procedure further required that the 10 minute average power be trended and monitored for increasing power trends above 3455 MWt, and if such an increasing trend is observed, "ensure prompt action is taken to decrease reactor power as necessary."

2-PI-OPS-000-022.1, "Operator At The Controls Duty Station Checklists Modes 1-4," revision 44, stated that "every effort to maintain core thermal power 10 minute average less than 3455 MWt should be made." It further required that the 10 minute average power be monitored, and "if core thermal power 10 minute average exceeds 3455 MWt or an increasing trend which will exceed 3455 MWt is observed, then ensure prompt action is taken to decrease reactor power as necessary."

The inspectors determined that the licensee did not meet procedural requirements to promptly take action to decrease reactor power as necessary to maintain reactor power below the licensed core thermal power limit.

Analysis. The licensee's failure to follow procedural requirements to maintain 10-minute average thermal power less than the licensed limit was a performance deficiency. The finding was determined to be greater than minor because it was similar to example 8.b. of IMC 0612 Appendix E. Additionally, it was associated with the human performance attribute of the barrier integrity cornerstone and affected the cornerstone objective relative to the fuel cladding barrier since operation above the licensed power limit reduces analyzed margins to fuel cladding damage. Using IMC 0609, "Significance Determination Process," Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance (Green) since only the fuel cladding barrier was affected.

The cause of this finding was determined to have a cross-cutting aspect of Conservative Assumptions and Safe Actions in the area of Human Performance associated with the Decision Making component. The decision to take no operator action in response to the thermal power transient reflected a non-conservative assumption that average thermal power could be allowed to exceed the licensed limit without operator action while the feedwater control system responded to the transient associated with the condensate pump failure [H.1(b)].

Enforcement. Unit 2 TS 6.8.1.a required, in part, that written procedures be established, implemented, and maintained covering the activities specified in Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operations)," Revision 2, dated February 1978. RG 1.33 Appendix A, Section 6.r, required procedures for combating expected transients. Station procedure AOP-S.04, "Condensate or Heater Drains Malfunction," revision 15, was required to be implemented in response to the loss of a condensate booster pump. Contrary to the above, on September 28, 2010, the licensee failed to take prompt action to maintain 10-minute average thermal power less than the applicable limit (3455 MWt) as required by AOP-S.04 section 2.5 step 3.b. Consequently, 10-minute average thermal power was above 3455 MWt on two occasions for a total duration of 13 minutes. Because this violation was determined to be of very low safety significance and has been entered into the licensee's corrective action program as PER 259098, it is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy: NCV 05000328/2010004-03, "Failure to Maintain Thermal Power Less Than Licensed Limit."

.4 (Closed) LER 05000327,328/2010-001-00, Inoperability of shutdown board because of spent fuel pool back-up pump breaker inoperability

a. Inspection Scope

On April 5, 2010, licensee maintenance personnel identified that a breaker had been installed in the 2A1-A 480-V shutdown board without arc chutes and phase barriers approximately 10 hours prior to discovery of the condition. This resulted in the shutdown board being declared inoperable until action could be completed to remove the affected breaker. The licensee documented the issue in PER 224150, which included a root cause analysis.

The inspectors discussed the event with operations, maintenance, engineering, and licensee management personnel to gain an understanding of the conditions leading up to the event and assess licensee actions taken following the event. Additionally, the inspectors reviewed the root cause report to assess the detail and thoroughness of the evaluation and the adequacy of the proposed corrective actions.

The inspectors reviewed the LER and PER 224150 to verify that the cause of the improper breaker installation was identified and whether corrective actions were appropriate. The cause of the event was determined to be an inadequate technical review process which failed to identify that steps required to assemble the breaker in an operable condition were omitted from the applicable work order. The inspectors concluded that the licensee's corrective actions to this event were appropriate. Immediate actions included removal of the affected breaker in order to restore the shutdown board to an operable status, and a stand-down briefing of the event to maintenance personnel. Additional corrective actions included revision of the licensee's procedure for technical review of work order content to strengthen and clarify requirements for technical review.

This LER is closed.

b. Findings

One licensee-identified violation was identified and is documented in section 4OA7 of this report.

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 were identified.

.2 (Closed) Unresolved Item (URI) 05000327,328/2009006-02, Inadequate Scoping of SSCs Used in EOPs into the Maintenance Rule Program

This URI was opened on August 28, 2009 in IR 05000327,328/2009-006 based on the need to evaluate the potential existence of violations of 10 CFR 50.65(b)(2)(i) for plant components which are used in EOPs not being scoped in the maintenance rule monitoring program. The inspectors have reviewed the licensee's actions to address this issue as discussed in section 4OA2.2 of this report. This URI is closed.

4OA6 Meetings

Exit Meeting Summary

On October 7, 2010, the resident inspectors presented the inspection results to Mr. Chris Church 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.

4OA7 Licensee-identified Violations

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

Unit 2 TS 6.8.1.a required, in part, that written procedures be established, implemented, and maintained covering the activities specified in Appendix A, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," of Regulatory Guide (RG) 1.33, "Quality Assurance Program Requirements (Operations)," Revision 2, dated February 1978. RG 1.33 Appendix A Section 9.a required that maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to the above, on April 5, 2010, written procedures appropriate to the circumstances were not established which adequately prescribed the performance of maintenance that could affect the performance of safety-related equipment. Specifically, the maintenance instructions for reassembly of the SFP pump C-S backup breaker failed to include instructions for proper reassembly, which resulted in the breaker being installed in the 2A1 shutdown board and restored to service without arc chutes, causing the shutdown board to be inoperable for greater than its TS allowed outage time. The licensee entered the issue into the corrective action program as PERs 228519 and 228818. The finding was determined to have very low safety significance (Green) because there was no actual loss of safety system function, and there was no significant increase in the likelihood of a fire.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

S. Bowman, Licensing Engineer
C. Church, Site Vice President
R. Detwiler, Director Safety and Licensing
J. Dvorak, Outage and Site Scheduling Manager
D. Foster, Performance Improvement Manager
J. Furr, Quality Assurance Manager
Z. Kitts, Licensing
R. Krich, Licensing Vice President
K. Langdon, Plant Manager
T. Marshall, Maintenance and Modifications Manager
S. McCamy, Radiation Protection Manager
M. McDowell, Corporate Project Manager
W. Nurnberger, Chemistry/Environmental Manager
D. Porter, Operations Procedures
R. Proffitt, Licensing Engineer
P. Simmons, Operations Manager
R. Thompson, Emergency Preparedness Manager
B. Wetzel, Director, Safety and Licensing
K. Wilkes, Operations Superintendent
J. Williams, Site Engineering Director
S. Young, Site Security Manager

NRC personnel

W. Rogers, Region II, Senior Reactor Analyst
S. Lingam, Project Manager, Office of Nuclear Reactor Regulation

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000327,328/2010004-01	NCV	Inadequate Inspection of Raw Water Side of Containment Spray Heat Exchangers (Section 1R07)
05000327,328/2010004-02	NCV	Non-conservative Design Calculation for RHR Suction Temperature Limit (Section 4OA2.3)
05000328/2010004-03	NCV	Failure to Maintain Thermal Power Less Than Licensed Limit (Section 4OA3.3)

Closed

05000327,328/2010-001-00	LER	Inoperability of shutdown board because of spent fuel pool back-up pump breaker inoperability (Section 4OA3.4)
05000327,328/2009006-02	URI	Inadequate Scoping of SSCs Used in EOPs into the Maintenance Rule Program (Section 4OA5.2)

LIST OF DOCUMENTS REVIEWED

Section R04: Equipment Alignment
1,2-47W803-2, Flow Diagram-Auxiliary Feedwater, Revision 64

Section R05: Fire Protection
General Engineering Specification G-73, Installation, Modifications, and Maintenance of Fire Protection Systems and Features, Revision 5
Sequoyah Fire Drill Critique Form, Revision 5
MMTP-102, Erection of Scaffolds/Temporary Work Platforms and Ladders, Revision 4
0-SI-FPU-247-001.0, Appendix R Emergency Lighting Auxiliary Building Quarterly test, Revision 18
FPDP-1, Conduct of Fire Protection, Revision 1
0-PI-FPU-317-299.W, Fire Protection Miscellaneous Inspections, Revision 30

Section R06: Flood Protection Measures
1,2-47W853-1, Flow Diagram Station Drainage-Control/Turbine/Service Building, Revision 17
1,2-47W853-3, Flow Diagram Station Drainage-Control/Turbine Building, Revision 6
1,2-47W853-4, Flow Diagram Station Drainage-Control/Turbine Building, Revision 11
1,2-47W853-5, Flow Diagram Station Drainage-Control/Turbine Building, Revision 7

Section R07: Heat Sink Performance
SPP-9.7, Corrosion Control Program, revision 17

0-TI-SXX-000-146.0, Program for implementing NRC Generic Letter 89-13, revision 3
SPP-9.14, Generic Letter (GL) 89-13 Implementation, revision 2
WO 09-777986-000, Cntmt spray heat exch 1A clam inspection
WO 09-782086-000, Cntmt spray heat exch 2A clam inspection
WO 09-782087-000, Cntmt spray heat exch 2B clam inspection
WO 09-777985-000, Cntmt spray heat exch 1B clam inspection

Section R12: Maintenance Rule Implementation
TI-4, Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting – 10CFR50.65, Revision 22
PERs 177904, 204589, 227496

CDEs 2286, 2296, 2516
CDEs – System 43 and 88

Section R13: Maintenance Risk Assessments and Emergent Work Evaluation
Sentinel Risk Model runs dated July 7 and 8, 2010
0-TI-DSM-000-007.1, Risk Assessment Guidelines, Revision 9
SPP-7.3, Work Activity Risk Management Process, Revision 5
MSS Daily Schedule Report-24 hour look-ahead, dated July 7, 2010
SPP-7.2.4, Forced Outage or Short Duration Planned Outage Management, Revision 1
SPP-7.2, Outage Management, Revision 18
GOI-6, Apparatus Operations, Revision 134
0-GO-16, System Operability Checklists, Revision 9
MMTP-103A, NPG Lifting and Rigging Manual, Revision 1
MMTP-103, Nuclear Power Group Movement of Items Using Overhead Handling Equipment, Revision 2
Sentinel Risk Model run dated July 29, 2010
PSO-SPP-10.303, System Alerts, Revision 3
PRA Evaluation Response SQN-0-10-099
NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Section 11, Assessment of Risk Resulting From Performance of maintenance Activities
0-SI-OPS-082-007.W, AC Electrical Power Source Operability Verification, revision 17

Section R15: Operability Evaluations
FSAR Section 6.2.3, Containment Air Purification and Cleanup System
FSAR Figure 9.4.7-1, Reactor Building Air Flow
FSAR Section 3.5.5, Missile Barrier Features, Buried Piping
FSAR Section 6.3.2.2, Emergency Core Cooling System
WO 09-777416-002, Reinstall Missile Shield Concrete – Diesel Generator Building
General Engineering Specification G-2, Plain and Reinforced Concrete, Revision 8
0-SI-OPS-065-017.A, Containment Shield Building Emergency Gas Treatment System Flow Train A, Revision 14
0-SI-OPS-065-017.B, Containment Shield Building Emergency Gas Treatment System Flow Train B, Revision 13
0-SI-OPS-065-135.0, EGTS Cleanup Subsystem Automatic Start, Revision 17
0-SO-65-1, Emergency Gas Treatment System Air Cleanup and Annulus Vacuum, Revision 19
1-SI-SLR-062-632.B, Auxiliary Building Chemical and Volume Control System Unit 1 Train "B" External Leakage, Revision 4
0-MI-MRR-062-001.0, Inspection/Repair of CVCS Centrifugal Charging Pump Seals, Revision 12
NEDP-22, Functional Evaluations, Revision 8
IEEE 450-2002, IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications
IEEE Std 404-2006, IEEE Standard for Extruded and Laminated Dielectric Shielded Cable Joints Rated 2500V to 500,000 V
Drawing 1,2-47W454-1, Mechanical Fuel Pool Cooling and Cleaning System, revision 2
Drawing 1,2-47W454-4, Mechanical Fuel Pool Cooling and Cleaning System, revision 6

Design Criteria Document SQN-DC-V-3.0, The Classification of Piping, Pumps, Valves, and Vessels, revision 17
Calculation SCG4M01131, Scaffold wired to 1B CS Heat Exchanger Vent/Drain Line, revision 0
Drawing 1, 2-45N657-5. Wiring Diagrams Separation & Misc Aux Rlys, revision 19

Section R18: Plant Modifications
SPP-9.5, Temporary Alterations, Revision 10
1,2-47W840-1, Flow Diagram-Fuel Oil, Atomizing Air and Steam, Revision 44
WO 110842725, TACF implementation for EDG 1A
WO 110842737, TACF implementation for EDG 2A
WO 110842731, TACF implementation for EDG 1B
WO 110842751, TACF implementation for EDG 2B

Section R19: Post Maintenance Testing
0-MI-IEQ-000-001.0, EQ Maintenance for 10CFR50.49 Equipment Fluid Components, (EQ Binder SQNEQ-IFS-001), Revision 11
MMDP-3, Guidelines for Planning and Execution of Troubleshooting Activities, Revision 5
SPP-6.5, Foreign Material Control, Revision 14
MMDP-1, Maintenance Management System, Revision 18
MMDP-3, Guidelines for Planning and Execution of Troubleshooting Activities, Revision 6
SPP-6.1, Work Order Process Initiation, Revision 8
SPP-8.1, Conduct of Testing, Revision 6
1-SI-EDC-003-180.0, Setpoint Verification and Calibration of Aux Feedwater Suction Transfer System 3 Time Delay Relays, Revision 8
1-45W1614-12, Wiring Diagram Aux Feedwater Pump and Turbine Connection Diagrams, Revision 1
1, 2-45N657-5, Wiring Diagrams Separation and Misc Aux Relays Schematic Diagrams, Revision 19
MI-10.54, Diesel Generator Battery Replacement and/or Battery Bank Bus Rework, Revision 20
1-SO-3-2, Auxiliary Feedwater System, revision 44
WO 111143594, Auxiliary Feedwater Pump Flow Controller

Section R22: Surveillance Testing
SPP-8.1, Conduct of Testing, Revision 5
0-SI-NUC-000-007.0, Measurement of the At-Power Moderator Temperature Coefficient, Revision 16
1-47W811-1, Flow Diagram Safety Injection System, Revision72

Section 4OA2: Identification and Resolution of Problems
SPP-3.9, Operating Experience Program, revision 3
Calculation MDQ0072-980034, CCP, SIP, CSP, and RHR Pump NPSH Evaluation, revision 3
NRC Information Notice 2010-11, Potential For Steam Voiding Causing Residual Heat Removal System Inoperability
Westinghouse Nuclear Safety Advisory Letter (NSAL) 09-8, Presence of Vapor in Emergency Core Cooling System/Residual Heat Removal System in Modes 3/4 Loss-of-Coolant Accident Conditions
0-GO-1, “Unit Startup From Cold Shutdown to Hot Standby,” revision 54
0-GO-7, “Unit Shutdown From Hot Standby to Cold Shutdown,” revision 59

0-SO-74-1, "Residual Heat Removal System," revision 69
Calculation SQN-SQS2-0155, "Safety limit and setpoint for the maximum RHR pump temperature to avoid flashing at the pump suction when aligned to the RWST," revision 1
Calculation SQN-SQS2-0155, "Shutdown LOCA Analysis for the ECSC System, Core Cooling, and Containment Including RHR Pump NPSH Considerations," revision 2

Section 4OA3: Event Followup
AOP-P.06, Loss of Unit 2 Electrical Shutdown Boards, revision 15
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2-AR-M1-B, Electrical Control Board 2-XA-55-1B, revision 19
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