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

May 24, 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 COMPONENT DESIGN BASIS INSPECTION REPORT 05000327/2010007, 05000328/2010007

Dear Mr. Krich:

On April 16, 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 findings which were discussed on April 16, 2010 with Mr. Ken Langdon, Plant Manager.

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

Based on the results of this inspection, the inspectors identified one finding of very low safety significance (Green), which involved a violation of NRC requirements. However, because of the very low safety significance and because it is 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's Enforcement Policy. If you contest this NCV you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the 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 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 and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Binoy B. Desai, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure: Inspection Report 05000327/2010007, 05000328/2010007 w/Attachment: Supplemental Information

cc w/encl: (See page 3)

cc w/encl:
C.R. Church
Vice President
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy-Daisy, TN 37384-2000

K. Langdon
Plant Manager
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37384-2000

B. A. Wetzel
Manager
Licensing and Industry Affairs
Sequoyah Nuclear Plant
Tennessee Valley Authority
P.O. Box 2000
Soddy Daisy, TN 37384-2000

E. J. Vigluicci
Assistant General Counsel
Tennessee Valley Authority
6A West Tower
400 West Summit Hill Drive
Knoxville, TN 37902

County Mayor
Hamilton County
Hamilton County Courthouse
Chattanooga, TN 37402-2801

Division of Radiological Health
TN Dept. of Environment & Conservation
401 Church Street
Nashville, TN 37243-1532

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, TN 37379-3624

Ann Harris
341 Swing Loop
Rockwood, TN 37854

Letter to R.M. Krich from Binoy B. Desai dated May 24, 2010.

SUBJECT: SEQUOYAH NUCLEAR PLANT - NRC COMPONENT DESIGN BASIS INSPECTION REPORT 05000327/2010007, 05000328/2010007

Distribution w/encl:
RIDSNRRDIRS
PUBLIC
RidsNrrPMSequoyah Resource

☐ PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE ☐ NON-SENSITIVE

ADAMS: ☐ Yes ACCESSION NUMBER:_____ ☐ SUNSI REVIEW COMPLETE

OFFICE	RII:DRS	RII:DRS	RII:DRS		RII:DRS	RII:DRS	RII:DRS
SIGNATURE	RBERRYMAN	RAIELLO	DMASPENERANDA		CBARON	GSKINNER	RPATTERSON
NAME	**RA**	**RA**	**RA**		**RA**	**RA**	**RA**
DATE	5/18/2010	5/3/2010	4/27/2010	1/12/2010	4/29/2010	4/26/2010	4/29/2010
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICE	RII:DRP						
SIGNATURE							
NAME	EGUTHRIE						
DATE	5/18/2010						
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\Eng Branch 1\BRANCH INSPECTION FILES\CDBI INSPECTIONS\CDBI INSPECTIONS\INSP REPORTS\CDBI Final Inspection Reports\Sequoyah CDBI 2010007 Report (rmb).doc

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-327, 50-328
License Nos.:	DPR-77, DPR-79
Report No.:	05000327/2010007, 05000328/2010007
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Sequoyah Nuclear Plant, Units 1 and 2
Location:	Sequoyah Access Road Soddy-Daisy, TN 37379
Dates:	March 15, 2010 through April 16, 2010
Inspectors:	R. Berryman, P.E., Senior Reactor Inspector (Lead) R. Aiello, Senior Operations Engineer D. Mas-Penaranda, Reactor Inspector R. Patterson, Reactor Inspector C. Baron, Contractor G. Skinner, Contractor
Approved by:	Binoy B. Desai, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000327/2010007, 05000328/2010007; 03/15/10 - 04/16/10; Sequoyah Nuclear Plant, Units 1 and 2; Component Design Basis Inspection.

This inspection was conducted by a team of four NRC inspectors and two NRC contract inspectors. One Green 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 IMC 0609, "Significance Determination Process" (SDP). Finding for which the SDP does not apply may be Green or is 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," (ROP) Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The team identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for the failure to properly maintain the vendor contact program for safety-related components. The team identified 37 examples of vendor technical manuals where the associated vendor had not been contacted in over three years. Procedure SPP-2.5, "Vendor Manual Control," required contact to be made with the vendors of safety-related components every three years to ensure that technical manuals and vendor documents contained the most current and applicable information consistent with the guidance of Generic Letter (GL) 90-03. The team identified 37 examples of vendor manuals and technical documents where the associated vendor had not been contacted in more than three years with several examples extending to almost six years. The licensee entered this issue into their corrective action program with actions to make contact with the vendors for all documents identified as having not been verified with the vendor in over the required three years. This finding was entered into the licensee's corrective action program as problem evaluation reports (PERs) 224364 and 224975. As an immediate corrective action, the licensee is ensuring that the vendor manuals and documents associated with safety-related components are being verified as most current with the respective vendors.

  This finding is more than minor because it affected the Mitigating Systems Cornerstone objective of ensuring the availability and reliability of safety systems, is related to the attribute of Procedure Quality (i.e., Maintenance and Testing (Pre-Event) Procedures) and represented a programmatic break-down which if left uncorrected, could become a more significant safety concern. The team assessed this finding using the SDP and determined that the finding was of very low safety significance (Green) because the inspectors found no documented occurrences where the lack of vendor contact ultimately resulted in the inability of a safety-related component to perform the intended safety function and will be treated as an NCV.

The inspectors determined that the thorough evaluation of problems such that the resolutions address problems and extent of conditions, as necessary was a significant cause if this performance deficiency. The plant experienced a reactor trip in 2009 which was determined to have been caused, in part, by a vendor manual associated with a feedwater regulating valve (FRV) not being updated. The FRVs are components with both safety-related and non-safety-related features. The extent of condition of the corrective actions associated with this failed to identify the programmatic breakdown of the TVA vendor contact program for safety-related components. This is directly related to the Corrective Action Program component of the cross-cutting area of Problem Identification and Resolution (P.1.(c)). (Section 1R21.2.3)

B. Licensee-Identified Violations

None.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R21 Component Design Bases Inspection (71111.21)

.1 Inspection Sample Selection Process

The team selected risk-significant components and operator actions for review using information contained in the licensee's Probabilistic Risk Assessment (PRA). In general, this included components and operator actions that had a risk achievement worth factor greater than two or Birnbaum value greater than 1 $X10^{-6}$. The components selected were located within the main steam isolation valves (MSIVs), steam generator safety relief valves (SRVs), pressurizer power-operated relief valves (PORVs), emergency diesel generator (EDG) support and electrical subsystems, 6900 VAC electrical system, common station service transformers (CSSTs), 250 VDC battery system, control air system, reactor trip breakers, anticipated transient without SCRAM (ATWS) mitigating system actuation circuitry (AMSAC), and the containment spray (CS) system. The sample selection included 15 components, five operator actions, and five operating experience items.

The team performed a margin assessment and detailed review of the selected risk-significant components to verify that the design bases had been correctly implemented and maintained. This design margin assessment considered original design issues, margin reductions due to modification, or margin reductions identified as a result of material condition issues. Equipment reliability issues were also considered in the selection of components for detailed review. These included items such as failed performance test results, significant corrective action, repeated maintenance, maintenance rule (a)1 status, Regulatory Issue Summary (RIS) 05-020 (formerly Generic Letter (GL) 91-18) conditions, NRC resident inspector input of problem equipment, system health reports, industry operating experience and licensee problem equipment lists. Consideration was also given to the uniqueness and complexity of the design, operating experience, and the available defense in depth margins. An overall summary of the reviews performed and the specific inspection findings identified are included in the following sections of the report.

.2 Results of Detailed Reviews

.2.1 <u>6900 VAC Shutdown Board 1A-A</u>

a. <u>Inspection Scope</u>

The team reviewed bus loading calculations to determine whether the 6900 VAC system had sufficient capacity to support its required loads under worst case accident loading and grid voltage conditions. The team reviewed the design of the 6900 VAC bus degraded voltage protection scheme to verify that it could provide adequate voltage to

safety-related devices at all voltage distribution levels. This included a review of the degraded voltage relay setpoint calculations, motor starting and running voltage calculations, and motor control center (MCC) control circuit voltage-drop calculations. The team reviewed procedures and completed surveillance tests for calibration of the degraded voltage relays to determine whether acceptance criteria was consistent with the design calculations, and to determine whether the relays were capable of performing the intended safety functions. The team reviewed operating procedures to determine whether the limits and protocols for maintaining offsite voltage were consistent with design calculations. The team reviewed the Sequoyah Nuclear Plant response to NRC GL 2006-02 to determine whether current procedures for maintaining the availability of offsite power were consistent with the licensee's response to the GL. The team reviewed corrective action documents and maintenance records to determine whether there were any adverse operating trends. In addition, the team performed a visual inspection of the 6900 VAC safety buses to assess the material condition and the presence of hazards.

b. Findings

Introduction. The team indentified an Unresolved Item (URI) regarding calculations that supported the degraded voltage protection scheme. The calculations that analyzed the Class 1E 6900 VAC and 480 VAC motor loads took credit for using administrative controls for limiting the minimum 161kV offsite power supply bus voltage and credited performance of the non-safety-related automatic load tap changers on the CSSTs to limit the minimum voltage on the Class 1E 6900 VAC and 480 VAC buses. The calculations did not evaluate the Class 1E 6900 VAC and 480 VAC motor loads at the worst case possible low voltages which could drop as low as the bottom end of the acceptable tolerance band of the degraded voltage relays.

Description. Offsite power is normally provided to the Class 1E 6900 VAC buses from the 161kV offsite power system through the CSSTs. The CSSTs have automatic load tap changers which are designed to maintain approximately 6900 VAC on the Class 1E buses through a dynamic range of 161kV offsite power supply voltages. The Class 1E 480 VAC buses are then powered from fixed-tap 6900/480VAC transformers powered from the respective Class 1E 6900 VAC buses.

NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," Appendix 8-A, "Branch Technical Position PSB-1: Adequacy of Station Electric Distribution System Voltages," Rev. 2 (07/1981) is part of the licensing basis for the Sequoyah Nuclear Plant. This document states, in part, that the selection of under-voltage and time-delay setpoints shall be determined from an analysis of the voltage requirements of the Class 1E loads at all onsite distribution levels. Calculation SQNETAPAC, "AC Auxiliary Power System Analysis," Rev. 36 evaluated transient motor starting voltages at the beginning of a design basis loss of coolant accident (LOCA) and was based on the voltages where the minimum 161kV offsite power supply bus voltage was limited by taking credit for administrative controls rather than assuming a worst-case 161kV offsite power supply voltage drop which would still allow voltage recovery to the degraded voltage relay reset setpoint (minus setpoint tolerance) before the expiration of the degraded voltage relay nominal 9.5 second time delay and thereby leave the Class

1E 6900 VAC buses connected to the offsite power supply. In addition, calculations for motor starting during steady-state conditions credited voltage improvement based on performance of the non-safety related CSST automatic load tap changers instead of being based on worst-case conditions.

Summary. This issue is unresolved pending further inspection to determine (1) the actual worst-case voltage required to be analyzed on the Class 1E 6900 VAC and 480 VAC buses for safety-related loads in accordance with the facility licensing basis; and (2) the impact of not using the worst-case bus voltage afforded by the degraded voltage protection scheme in safety-related 6900 VAC and 480 VAC motor starting studies. (URI 05000327, 328/2010007-01, Worst Case 6900 VAC Bus Voltage in Design Calculations)

.2.2 Common Station Service Transformers (CSSTs)

a. Inspection Scope

The team reviewed load-flow calculations to determine whether the capacity of the CSSTs was adequate to supply the worst-case accident loads. The team reviewed calculations and operating procedures to determine whether bus voltages maintained by the automatic load tap changer were adequate to assure the availability of offsite power during low-voltage conditions. The team reviewed the sources of power for automatic control equipment to determine whether the automatic load tap changer would operate properly during low-voltage conditions. The team reviewed maintenance schedules, procedures, and completed work records to determine whether the transformer was being properly maintained. The team reviewed corrective action histories to determine whether there had been any adverse operating trends. In addition, the team performed a visual inspection of the CSSTs to assess the material condition and the presence of hazards.

b. Findings

No findings of significance were identified.

.2.3 Reactor Trip Breakers

a. Inspection Scope

The team reviewed the maintenance manual and vendor technical update information for the Westinghouse DB-50 reactor trip breakers to determine whether vendor requirements have been incorporated into station maintenance and surveillance procedures. The inspectors reviewed station procedures and records to determine whether periodic vendor contacts were performed as required to ensure up-to-date vendor information was being maintained in station technical files. The inspectors reviewed completed maintenance documentation to verify that anomalies were properly documented and resolved. Maintenance and surveillance schedules were reviewed to verify that vendor and Technical Specification (TS) periodicity requirements were being

satisified. Maintenance and corrective action documentation was reviewed to verify that adverse conditions were being appropriately corrected.

b. Findings

Introduction. The team identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, for the failure to properly maintain the vendor contact program for safety-related components. The team identified 37 examples of vendor technical manuals where the associated vendor had not been contacted in over three years.

Description. Procedure SPP-2.5, "Vendor Manual Control," required contact to be made with the vendors of safety-related components every three years to ensure that technical manuals and vendor documents contained the most current and applicable information consistent with the guidance of GL 90-03. The team identified 37 examples of vendor manuals and technical documents where the associated vendor had not been contacted in more than three years with several examples extending to almost six years. The licensee entered this issue into their corrective action program with actions to make contact with the vendors for all documents identified as having not been verified with the vendor in over the required three years.

Analysis. The failure to follow procedure for the vendor contact program for safety-related components is a performance deficiency. This finding is more than minor because it affected the Mitigating Systems Cornerstone objective of ensuring the availability and reliability of safety systems, is related to the attribute of Procedure Quality (i.e., Maintenance and Testing (Pre-Event) Procedures) and represented a programmatic break-down which if left uncorrected, could become a more significant safety concern. The team assessed this finding using the SDP and determined that the finding was of very low safety significance (Green) because the inspectors found no documented occurrences where the lack of vendor contact ultimately resulted in the inability of a safety-related component to perform the intended safety function and will be treated as an NCV.

The inspectors determined that the thorough evaluation of problems such that the resolutions address problems and extent of conditions, as necessary was a significant cause if this performance deficiency. The plant experienced a reactor trip in 2009 which was determined to have been caused, in part, by a vendor manual associated with a feedwater regulating valve (FRV) not being updated. The FRVs are components with both safety-related and non-safety-related features. The extent of condition of the corrective actions associated with this failed to identify the programmatic breakdown of the TVA vendor contact program for safety-related components. This is directly related to the Corrective Action Program component of the cross-cutting area of Problem Identification and Resolution (P.1.(c)).

Enforcement. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. Contrary to the above, the licensee did not adequately follow the vendor

manual control program to ensure that instructions, procedures, and drawings for safety-related components were the most current and applicable information. This condition had existed since at least 2007. Because this finding was of very low safety significance and was entered into the TVA corrective action program as problem evaluation reports (PERs) 224364 and 224975, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy. (NCV 05000327, 328/2009007-01, Violation of 10CFR50, Appendix B, Criterion V for Failure to Follow Procedure for Vendor Contact Program)

.2.4 Emergency Diesel Generator 1A-A (Electrical)

a. Inspection Scope

The team performed a limited review of EDG1A-A. The team reviewed battery sizing and voltage drop calculations for diesel generator battery DGS 1A-A to determine whether it had sufficient capacity and capability to perform its required functions during both accident and Station Blackout scenarios. The team also reviewed maintenance and corrective action documents to determine whether there were any adverse operating trends. In addition, the team performed a visual inspection of EDG1A-A to assess material conditions and the presence of hazards

b. Findings

No findings of significance were identified.

.2.5 Station Batteries I, II, III, and IV

a. Inspection Scope

The team reviewed electrical documents for station batteries I,II,III and IV including battery duty-cycle and voltage-drop calculations, overall battery capacity, five-year performance discharge test results, and quarterly battery surveillance test results. In addition, the voltage-drop calculations for safety-related DC loads and DC control power to 480V and 6900V switchgear was evaluated to determine if adequate voltage was available at these loads during station blackout (SBO) and LOCA events. The team performed walk-downs of the station batteries to assess the material condition. The team also reviewed the system health reports and selected PERs initiated over the past two years to verify that the licensee was adequately identifying, evaluating, and addressing adverse conditions

b. Findings

No findings of significance were identified.

.2.6 Anticipated Transient Without Scram (ATWS) Mitigating System Actuation Circuitry (AMSAC)

a. Inspection Scope

The team reviewed system instrumentation and control drawings; electrical elementary and schematic diagrams; and calibration procedures and test records to verify that the instrumentation and controls for the AMSAC system were consistent with the design basis requirements. The team also reviewed instrument setpoint calculations to verify that the calculations included appropriate instrument uncertainties. The last two completed calibration tests results were reviewed to verify that instrument setpoints were consistent with setpoint calculations and to verify that equipment performance was appropriately monitored and maintained consistent with the design and licensing basis. In addition, the team reviewed the system health reports and selected PERs initiated over the past two years to confirm that the licensee was adequately identifying, evaluating, and addressing any adverse conditions.

b. Findings

No findings of significance were identified.

.2.7 EDGs - Mechanical

a. Inspection Scope

The team inspected the mechanical aspects of the EDGs to verify the capability to perform the required design functions. This inspection included a review of the design and capacity of the fuel oil tanks and fuel oil transfer pumps. Applicable calculations and tests were reviewed to verify the capability of the EDGs to operate for the required mission time. The team reviewed station applicable procedures associated with the use of ultra-low sulfur diesel (ULSD) and bio-diesel fuels to ensure that the correct fuel was being used. This review included an evaluation of ULSD and procedures to prevent the acceptance of bio-diesel fuels for use in the EDGs. The team reviewed the design and supporting calculations of the EDG air start system to verify that the required capability to start the EDGs under design basis conditions could be satisfied.

The team inspected the EDG area ventilation system to verify that the system was capable of providing the EDGs with adequate cooling and that any vulnerabilities during a design basis tornado event were appropriately addressed. This review included applicable design calculations and walk-downs of the system components. The team also reviewed the capability of the block walls in the EDG area to withstand the pressure differentials associated with a tornado depressurization event.

In addition, the team performed interviews with the EDG system engineer, reviewed applicable corrective action documents, and performed an extensive walk-down of the EDGs and associated equipment. The walk-down included verification of the material condition of equipment and verification that the vents associated with the EDG fuel tanks were adequately protected from intrusion of foreign materials

b. Findings

No findings of significance were identified.

.2.8 Pressurizer Power Operated Relief Valves (PORVs)

a. Inspection Scope

The team inspected the pressurizer PORVs to verify the capability to perform the required design functions. This inspection included an interview with the system engineer; a review of applicable PERs; and a review of the valve test procedures and a summary of recent test results to identify any adverse trends. The team also reviewed operating procedures associated with the use of the PORVs under design basis conditions and the isolation of a stuck open PORV to verify that the operating procedures adequately addressed these conditions.

b. Findings

No findings of significance were identified.

.2.9 Steam Generator (SG) Safety Relief Valves (SRVs)

a. Inspection Scope

The team inspected the SG SRVs to verify the capability to perform the required design functions. This inspection included interviews with the system engineer and operations personnel; a review of applicable PERs; and a review of the valve test procedures and a summary of recent test results to identify any adverse trends. The team reviewed operating procedures associated with postulated SG tube rupture (SGTR) events to verify that the operating procedures adequately addressed these conditions and to verify the capability of the plant to mitigate this event in accordance with the licensing and design basis. The team also observed a SGTR event with a loss of a train of the instrument air system in the simulator to verify that sufficient time would be available to perform required manual operator actions.

In addition, the team performed walk-downs of the SG SRV areas to assess the material condition of the equipment and the capability of operators to access the areas if required.

b. Findings

No findings of significance were identified.

.2.10 Containment Spray (CS) Pumps

a. Inspection Scope

The team inspected the CS pumps to verify their capability to perform the required design functions. This inspection included interviews with the system engineer; a review of applicable PERs; and a review of the pump surveillance test procedures and a summary of recent test results to identify any adverse trends. The team reviewed operating procedures associated with CS pump operation for both testing and accident conditions to verify that the operating procedures adequately addressed these conditions and to verify that CS system was capable of mitigating required postulated accidents in accordance with the licensing and design basis. The team reviewed CS flow and net positive suction head (NPSH) calculations to verify that the CS pumps could perform the required functions under the most limiting postulated accident conditions. The team also reviewed the bases for the CS pump surveillance test acceptance criteria to verify that appropriate margins were included.

In addition, the team performed walk-downs of the CS pump areas to assess the material condition of the equipment and the capability of operators to access the areas if required.

b. Findings

No findings of significance were identified.

.2.11 Main Steam Isolation Valves (MSIVs)

a. Inspection Scope

The team reviewed applicable portions of the UFSAR, TS, calculations, and drawings to verify the capability of the MSIVs to perform the required functions during design basis events. The inspectors interviewed the system engineer to discuss the overall health of the MSIVs and associated PERs to assess the material conditions of the valves. The inspectors also reviewed design change notice (DCN) M-11705A “Removal of Check Valve Internals Downstream of the MSIV” to verify that the MSIVs were not adversely affected. MSIV stroke-timing test results were also reviewed to verify that any degradation was being appropriately monitored and addressed.

b. Findings

No findings of significance were identified.

.2.12 Control Air System Supply Valves (32-450, 451, 544, 545, and 546)

a. Inspection Scope

The team reviewed the system design criteria documents (DCDs), related design basis support documentation, drawings, TS, and the UFSAR to identify design, maintenance,

and operational requirements for the Control Air System. The team reviewed selected preventative work orders to verify that degraded conditions were being appropriately monitored and addressed. A field walk-down was performed with the system engineer to assess observable material conditions and verify that the system configuration was consistent with the design basis assumptions, system operating procedures, and plant drawings

b. Findings

No findings of significance were identified.

.2.13 Auxiliary Control Air Receiver Relief Valve (32-319 and 259)

a. Inspection Scope

The team reviewed the system DCD, related design basis support documentation, drawings, TS, and the UFSAR to identify design, maintenance, and operational requirements for the auxiliary control air safety relief valves. Maintenance history and associated PERs were reviewed to verify that potential degradation was being monitored and appropriately addressed. Setpoint procedures were reviewed to verify that appropriate design inputs and vendor tolerances were appropriately incorporated into testing acceptance criteria. The team conducted a field walk-down of the relief valves to verify that the installed configuration was consistent with the design basis and plant drawings and to assess any observable material conditions.

b. Findings

No findings of significance were identified.

.2.14 Reactor Coolant System (RCS) Safety Injection (SI) Cold Leg Injection Inlet Check Valve 63-561

a. Inspection Scope

The team reviewed the system DCD, related design basis support documentation, drawings, TS, and the UFSAR to identify design, maintenance, and operational requirements for selected SI cold leg injection check valves. Maintenance history, as demonstrated by system health reports, preventative and corrective maintenance, and PERs, were reviewed to assess material conditions. The team conducted interviews with the system engineer to obtain additional information regarding the sites response to GL 2008-01 and to verify that the implementation and analysis of industry operating experience related to check valves was appropriate.

b. Findings

No findings of significance were identified.

.2.15 Boric Acid Transfer Pumps

a. Inspection Scope

The team reviewed portions of the DCD, TS, and UFSAR to verify the capability of the pumps to perform the required function under required conditions. Calculations establishing pump performance requirements were reviewed to verify that the assumptions and conclusions were appropriate. In-service testing (IST) results were reviewed to assess the potential pump degradation and to verify that pump performance was sufficient to satisfy pump requirements. In addition, the team reviewed the system health reports and corrective action documentation to assess material conditions. Additionally, the inspectors interviewed the system engineer to assess the overall health and performance history of the system. The inspectors also conducted a walk-down of the pumps and associated piping and valves to verify that any adverse material conditions were being appropriately addressed.

b. Findings

No findings of significance were identified.

.3 Review of Low Margin Operator Actions

a. Inspection Scope

The team performed a margin assessment and detailed review of five risk-significant and time-critical operator actions. Where possible, margins were determined by the review of the assumed design basis and UFSAR response times and performance times documented by job performance measures (JPMs). For the selected components and operator actions, the team performed an assessment of the Emergency Operating Procedures (EOPs), Abnormal Operating Procedures (AOPs), Annunciator Response Procedures (APPs), and other operations procedures to determine the adequacy of the procedures and availability of equipment required to complete the actions. Operator actions were observed on the plant simulator and during plant walk downs using JPMs.

The following operator actions were observed on the licensee's operator training simulator:

- Actions to address an anticipated transient without SCRAM including in-plant walkdown of JPM to remotely open reactor trip breakers per FR-S.1, "Nuclear Power Generation/ATWS," Rev. 23.
- Actions to address a stuck open PORV after SI per E-1, "Loss of Reactor or Secondary Coolant," Rev. 24.
- Actions to address a LOOP concurrent with the failure of all EDGs leading to SBO per ECA 0.0, "Loss of All AC Power," Rev. 23.
- Actions to verify the ability to transfer containment spray suction to the containment sump (within 13 minutes) given a failure of the auto-swap of the RHR suction fails per ECA 1.1, "Loss of RHR Sump Recirculation," Rev. 11

- Actions to address a steam generator tube rupture given failure of three of four SG atmospheric relief valves to open remotely from the control room per E-3, “Steam Generator Tube Rupture,” Rev. 17.

b. Findings

No findings of significance were identified.

.4 Review of Industry Operating Experience

a. Inspection Scope

The team reviewed selected operating experience issues that had occurred at domestic and foreign nuclear facilities for applicability at the Sequoyah Nuclear Plant. The issues that received a detailed review by the team included:

- IN 95-037, Inadequate Offsite Power System Voltages During Design-Basis Events
- GL 2006-02, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power
- IN 2007-014, Loss of Offsite Power and Dual-Unit Trip at Catawba Nuclear Generating Station
- IN 92-06 and 92-06 Supplement 1, Reliability of ATWS Mitigation System and Other NRC Required Equipment Not Controlled by Plant Technical Specifications
- RIS 06-023, Post-tornado Operability of Ventilating and Air-conditioning Systems Housed in Emergency Diesel Generator Rooms

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings, Including Exit

Exit Meeting Summary

On April 16, 2010, the team presented the inspection results to Mr. Ken Langdon, Sequoyah Nuclear Plant Manager, and other members of the licensee staff. The team returned all proprietary information examined to the licensee. No proprietary information is documented in the report.

ATTACHMENTS: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Baese, Electrical Engineering Design (contractor)
G. Bell, I&C Engineering Design
E. Craig, Mechanical Engineering Design
D. Hawes, Operations Training Supervisor
D. Porter, Operations Supervisor
R. Proffitt, Licensing Manager
K. Pulliam, Mechanical Engineering Design
M. Shlyamberg, Consultant
D. Sutton, Licensing Engineer
N. Thomas, Licensing Engineer
J. Wilson, Systems Engineer
B. Zeik, Engineering Design Manager

NRC

C. Young, Senior Resident Inspector, Sequoyah Nuclear Plant

LIST OF ITEMS OPENED, CLOSED, AND REVIEWED

Opened

05000327, 328/2010007-01	NCV	Violation of 10 CFR 50, Appendix B, Criterion V for Failure to Follow Procedure for Vendor Contact Program (Section 1R21.2.3)
05000327, 328/2010007-01	URI	Degraded Voltage Relay Issue (Section 1R21.2.1)

LIST OF DOCUMENTS REVIEWED

Design Basis Documents and System Descriptions

SQN-DC-V.11.2, 125 Volt Vital Battery System, Rev. 10
SQN-DC-V.11.2.1, Sequoyah Nuclear Plant Units 1 and 2, 125 Volt Fifth Vital Battery System, Rev. 6
SQN-DC-V-11.8, Diesel Generator and Auxiliary Systems, Rev. 8
SQN-DC-V-4.1.1, Main Steam System, Rev. 13
SQN-DC-V-27.4, Reactor Coolant System, Rev. 18
SQN-DC-V-27.5, Containment Spray System, Rev. 14

Procedures

AOP-1.04, Pressurizer Instrument and Control Malfunctions, Rev. 9
AOP-C.01, Rod Control System Malfunctions, Rev. 20
AOP-N.02, Tornado Watch/Warning, Rev. 24
AOP-P.01, Loss of Offsite Power, Rev. 25
AOP-S.05, Steam or Feedwater Leak, Rev. 9
AOP-S.06, Turbine Trip Below P-9 (50% Power), Rev. 12
DBS0010 100550089, Preventative Maintenance Aux. Air Reliefs, Rev. 9
E-0, Reactor Trip or Safety Injection, Rev. 31
E-1, Loss of Reactor or Secondary Coolant, Rev. 24
E-3, Steam Generator Tube Rupture, Rev. 17
ES-0.5, Equipment Verifications, Rev. 3
EA-1-2, Local Control of S/G PORVs, Rev. 4
EA-202-1, Restoring Offsite Power to 6900V Shutdown Boards, Rev. 10
ECA 0.0, Loss of All AC Power, Rev. 23
FR-S.1, Nuclear Power Generation/ATWS, Rev. 23
FR-Z.1, High Containment Pressure, Rev. 19
IGA-6, Power Systems Operation, Rev. 11
MI-10.4, 6900V Breaker Inspection ABB Type, Rev. 65
PM# 053960011, CSST A indicator and Relay Calibration and Functional, Rev. 08
PM# 058640000, CSST A Tap Changer Relay Calibration, Rev. 18
PM# 08-777228-000, 5 year PM to swapout breaker with a refurbished BKR, Rev. 0
PM# 08-777229-000, 5 yr Repetitive PM to inspect Breaker, Rev. 00
PM# 08-777230-000, 10 yr Repetitive PM to refurbish Breaker, Rev. 00
PM# 08-778519-000, CSST A Tap Changer Inspection, Rev. 4
SPP-2.5, Vendor Manual Control, Rev. 0006
SPP-3.9, Operating Experience Program, Rev. 0003
TI-4, Maintenance Rule Performance Indicator and Monitoring, Rev. 0022
0-MI-CHV-000-001.0, Minimizing Check Valve Degradation, Rev. 0005
0-MI-EBI-099-109.1, Reactor Trip Breaker Type DB50 Inspection Associated With System 99, Rev. 5
0-MI-EBI-099-109.2, Bypass Trip Breaker Type DB50 Inspection Associated With System 99, Rev. 6
0-MI-MVV-000-029 Att C.7, AD SIS Swing Check Valve Maintenance Rev.6

0-PI-EBT-082-238.4, Modified Performance Testing of 125VDC Diesel Generator Batteries, Rev. 16
0-PI-SXV-082-201.B, Diesel Starting Air Valve Test for DG Set 1A-A, Time Frame B, Rev. 15
MMTP-102, Erection of Scaffolds/Temporary Work Platforms and Ladders, Rev. 3
0-PI-SXV-082-201.B, Diesel Starting Air Valve Test for DG Set 1A-A, Time Frame B, Rev. 15
0-SI-OPS-082-007.W, AC Electrical Power Source Operability Verification, Revision 0017
0-SI-SXV-000-209, Disassembly and Inspection of ASME Check Valves, Rev. 0001
0-TI-SXI-000-200.P, ASME OM CODE PUMP TESTING, Rev. 1
TI-4, Maintenance Rule Performance Indicator and Monitoring, Rev. 0022
1-PI-ICC-062-238.0, Calibration of Boric Acid Tank A, Rev. 5, dated August 16, 2004
1-PI-ICC-063-106.0, Channel Calibration of SIS Acc. P-63-106, dated April 5, 2009
1-PI-ICC-063-108.0, Channel Calibration of SIS Acc. P-63-108, dated April 5, 2009
1-PI-ICC-063-109.0, Channel Calibration of SIS Acc. L-63-109, dated April 18, 2009
1-PI-ICC-063-099.0, Channel Calibration of SIS Acc. L-63-099, dated July 6, 2009
1-SI-IRT-099-500.0, Response Time Test of Reactor Trip (RTA and RTB) Train A and Train B, Rev. 6
1-SI-OPS-063-129.A, SI Pump Casing and Discharge Piping Vent, Rev. 0017
1-SI-SIX-000-203.0 032909A-D, MSIV Surveillance Testing Procedures, Rev. 0004
1-SI-SXP-062-202.A, Boric Acid Pump Performance Test, Rev. 0018, dated December 16, 2009
1-SI-SXP-062-202.b, Boric Acid Pump Performance Test, Rev. 0018, dated December 7, 2009
1-SI-SXP-072-201.A, Containment Spray Pump 1A-A Performance Test, Rev. 16
1/2-SI-SXV-063-206.0, RHR Cold Leg Check Valve Integrity Test, Rev. 0009
1-SI-TDC-202-235.A, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train A (18 Months), Rev. 14
1-SI-TDC-202-235.B, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train B (18 Months), Rev. 14
2-SI-IRT-099-500.0, Response Time Test of Reactor Trip (RTA and RTB) Train A and Train B, Rev. 8
2-SI-SXP-062-202.B, Boric Acid Pump Performance Test, Rev. 0018, dated February 8, 2010
2-SI-SXP-062-202.A, Boric Acid Pump Performance Test, Rev. 0018, dated February 2, 2010

<u>Completed Test Procedures</u>

0-PI-EBT-082-238.4, Modified Performance Testing of 125VDC Diesel Generator Batteries, completed May 27, 2009
0-SI-EBT-250-100.1, 125VDC Vital Battery Quarterly weekly Inspection, Rev. 12, completed February 15, 2010
0-SI-EBT-250-100.1, 125VDC Vital Battery Quarterly weekly Inspection, Rev. 12, completed February 21, 2010
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery I, Rev. 13, completed June 19, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery I, Rev. 13, completed August 26, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery I, Rev. 14, completed November 17, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery I, Rev. 15, completed February 20, 2010

0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery II, Rev. 14, completed October 28, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery II, Rev. 14, completed January 26, 2010
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery III, Rev. 13, completed June 4, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery III, Rev. 14, completed September 18, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery III, Rev. 14, completed November 30, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery III, Rev. 16, completed March 4, 2010
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery IV, Rev. 14, completed October 7, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery IV, Rev. 15, completed February 22, 2010
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V, Rev. 13, completed September 8, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V, Rev. 14, completed December 8, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and IV, Rev. 13, completed March 19, 2008
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and IV, Rev. 13, completed April 24, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and II, Rev. 13, completed April 29, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and IV, Rev. 13, completed June 11, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and IV, Rev. 13, completed June 26, 2009
0-SI-EBT-250-100.2, 125Vdc Vital Battery Quarterly Operability, Battery V and II, Rev. 13, completed July 29, 2009
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery I and Charger I), Rev. 17, completed December 14, 2007
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery I and Charger I), Rev. 19, completed September 15, 2009
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery II and Charger II), Rev. 17, completed February 20, 2008
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery II and Charger II), Rev. 19, completed July 24, 2009
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery III and Charger III), Rev. 17, completed April 29, 2008
0-SI-EBT-250-100.4, Modified Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery IV and Charger IV), Rev. 19, completed February 27, 2010
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery I and Charger I), Rev. 11, completed May 7. 2004
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery II and Charger II), Rev. 11, completed September 29, 2003

0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery II and Charger II), Rev. 16, completed September 24, 2010
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery III and Charger III), Rev. 13, completed January 15, 2005
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery III and Charger III), Rev. 7, completed June 28, 2000
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery IV and Charger IV), Rev. 7, completed September 12, 2000
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery V), Rev.11, completed March 12, 2004
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery V), Rev.15, completed March 19, 2007
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery V), Rev.19, completed February 3, 2009
0-SI-EBT-250-100.5, Performance of 125VDC Vital Battery and 125VDC Vital Battery Charger Test (Vital Battery V), Rev.16, completed January 13, 2010
0-PI-OPS-018-001.0, Diesel Generator 1A-A Fuel Oil Consumption Test, completed May 18, 2007
0-PI-OPS-018-002.0, Diesel Generator 1B-B Fuel Oil Consumption Test, completed May 20, 2007
0-PI-OPS-018-003.0, Diesel Generator 2A-A Fuel Oil Consumption Test, completed May 31, 2007
0-PI-OPS-018-004.0, Diesel Generator 2B-B Fuel Oil Consumption Test, completed June 4, 2007
0-PI-SXP-018-007.3, Diesel Generator 1A-A, completed March 1, 2010
0-PI-SXP-018-007.4, Diesel Generator 1B-B, completed October 1, 2009
0-PI-SXP-018-007.5, Diesel Generator 2A-A, completed February 12, 2010
0-PI-SXP-018-007.6, Diesel Generator 2B-B, completed January 7, 2010
0-SI-SXV-068-201.0, Pressurizer PORV Operability Test, completed April 4, 2009
0-SI-SXV-001-859.0, Testing and Setting of Main Steam Safety Valves, completed April 20, 2009
1-PI-OPS-003-001.0, AMSAC Functional Test, Rev. 15, completed April 22, 2009
1-PI-OPS-003-001.0, AMSAC Functional Test, Rev. 15, completed November 12, 2007
1-SI-ICC-003-148.B, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-148, Rev.29, completed October 29, 2007
1-SI-ICC-003-148.B, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-148, Rev.30, completed April 17, 2009
1-SI-ICC-003-156.A, Channel Calibration of Steam Generator 2 Motor Driven Auxiliary Feedwater Train A Level Loop 1-L-3-156, Rev. 30, completed October 17, 2007
1-SI-ICC-003-156.A, Channel Calibration of Steam Generator 2 Motor Driven Auxiliary Feedwater Train A Level Loop 1-L-3-156, Rev. 30, completed April 21, 2009
1-SI-ICC-003-164.A, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train A Level Loop 1-L-3-164, Rev. 28, completed October 29, 2007
1-SI-ICC-003-164.A, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train A Level Loop 1-L-3-164, Rev. 29, completed April 7, 2009

1-SI-ICC-003-172.0, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-172, Rev.15, completed April 3, 2009

1-SI-ICC-003-172.0, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-172, Rev.15, completed October 9, 2007
1-SI-ICC-003-173.B, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-173, Rev.15, completed May 2, 2006
1-SI-ICC-003-173.B, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-173, Rev.17, completed March 4, 2009
1-SI-ICC-003-174.B, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-174, Rev.16, completed October 9, 2007
1-SI-ICC-003-174.B, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-174, Rev.16, completed April 3, 2009
1-SI-ICC-003-175.0, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 1-L-3-175, Rev.14, completed October 9, 2007
1-SI-SXP-072-201.B, Containment Spray Pump 1B-B Performance Test, completed August 28, 2009
1-SI-SXP-072-201.A, Containment Spray Pump 1A-A Performance Test, completed November 27, 2009
1-SI-TDC-202-235.A, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train A (18 Months), completed September 24, 2007
1-SI-TDC-202-235.A, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train A (18 Months), completed January 12, 2009
1-SI-TDC-202-235.B, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train B (18 Months), completed November 26, 2007
1-SI-TDC-202-235.B, 6.9kV Shutdown Board Loss of Voltage and Degraded Voltage Relay Calibration Train B (18 Months), completed February 17, 2009
2-PI-OPS-003-001.0, AMSAC Functional Test, Rev. 15, completed December 27, 2006
2-PI-OPS-003-001.0, AMSAC Functional Test, Rev. 16, completed June 1, 2008
2-SI-ICC-003-148.B, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-148, Rev.25, completed December 10, 2006
2-SI-ICC-003-148.B, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-148, Rev.27, completed May 22, 2008
2-SI-ICC-003-156.A, Channel Calibration of Steam Generator 2 Motor Driven Auxiliary Feedwater Train A Level Loop 2-L-3-156, Rev. 28, completed May 21, 2008
2-SI-ICC-003-156.A, Channel Calibration of Steam Generator 2 Motor Driven Auxiliary Feedwater Train A Level Loop 2-L-3-156, Rev. 30, completed October 30, 2009
2-SI-ICC-003-164.A, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train A Level Loop 2-L-3-164, Rev. 28, completed May 21, 2008
2-SI-ICC-003-164.A, Channel Calibration of Steam Generator 1 Motor Driven Auxiliary Feedwater Train A Level Loop 2-L-3-164, Rev. 30, completed November 18, 2009
2-SI-ICC-003-172.0, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-172, Rev.14, completed May 5, 2008
2-SI-ICC-003-172.0, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-172, Rev.15, completed November 13, 2009
2-SI-ICC-003-173.B, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-173, Rev.14, completed May 14, 2008
2-SI-ICC-003-173.B, Channel Calibration of Steam Generator 3 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-173, Rev.15A, completed November 13, 2009
2-SI-ICC-003-174.B, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-174, Rev.15, completed May 5, 2008

2-SI-ICC-003-174.B, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-174, Rev.16, completed November 13, 2009
2-SI-ICC-003-175.0, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-175, Rev.17, completed May 15, 2008
2-SI-ICC-003-175.0, Channel Calibration of Steam Generator 4 Motor Driven Auxiliary Feedwater Train B Level Loop 2-L-3-175, Rev.18A, completed October 26, 2009
2-SI-SXP-072-201.A, Containment Spray Pump 2A-A Performance Test, completed September 14, 2009
2-SI-SXP-072-201.B, Containment Spray Pump 2B-B Performance Test, completed September 14, 2009

Drawings

10N320-5, Concrete Floors and Walls Outline, Rev. 4
10N331-1, Concrete Floors El 723.2 Outline, Rev. 7
17W585-4, Mechanical Drains & Embedded Piping, Rev. 6
1, 2-15E500-1, Key Diagram Station Aux Power System, Rev. 29
1, 2-15E500-2, Key Diagram Station Aux Power System, Rev. 12
1, 2-33-47035-E62, Wiring Diagram Start Board A Internal Connection Diagram, Rev. 3
1, 2-45N531-3, Wiring Diagram AC Schematic Sh 1 CSST A, B & C Clg Sys & LTC X Cont, Rev. 5
1, 2-45N540-7, Wiring Diagram 161kV AC Schematic Sheet 7 Bay 19, Rev. 6
1-45N603-2, Wiring Diagrams Main & Aux Feedwater System Schematic Diagrams Sheet 2, Rev. 4
1-45N603-3, Wiring Diagrams Main & Aux Feedwater System Schematic Diagrams Sheet 3, Rev. 5
1-45N603-4, Wiring Diagrams Main & Aux Feedwater System Schematic Diagrams Sheet 4, Rev. 9
1-45N646-6, Wiring Diagrams Feedwater Pump & Turbines Schematic Diagrams, Rev. 16
1-45N646-9, Wiring Diagrams Feedwater Pump & Turbines Schematic Diagrams, Rev. 2
1, 2 -45N647-2, Wiring Diagrams Turbo-Gen Auxiliaries Schematic Diagrams Sheet 2, Rev. 34
1, 2- 45N700-2, Key Diagram 250V DC, 120V AC PFD, 48V DC, & 120V AC MISC PLT PWR SYS, Rev. 28
1, 2-45N703-1, Wiring Diagrams 125V Vital Battery Board I Single Line Sheet-1, Rev. 55
1, 2-45N703-2, Wiring Diagram 125V Vital Battery Board II Single Line Sheet 2, Rev. 30
1, 2- 45N703-3, Wiring Diagrams 125V Vital Battery Board III Single Line Sheet 3, Rev. 29
1, 2- 45N703-3, Wiring Diagrams 125V Vital Battery Board IV Single Line Sheet 4, Rev. 29
1, 2- 45N703-5, Wiring Diagrams 125V Vital Battery Board I Panel 4 Connection Diagram Sheet 5, Rev. 21
1, 2- 45N703-6, Wiring Diagrams 125V Vital Battery Board II Panel 4 Connection Diagram Sheet 6, Rev. 23
1, 2- 45N703-7, Wiring Diagrams 125V Vital Battery Board III Panel 4 Connection Diagram Sheet 7, Rev. 19
1, 2- 45N703-8, Wiring Diagrams 125V Vital Battery Board IV Panel 4 Connection Diagram Sheet 8, Rev. 19
1-45N724-1, Wiring Diagrams 6900V Shutdown Board 1A-A Single line, Rev. 21
1-45N724-2, Wiring Diagrams 6900V Shutdown Board 1B-B Single line, Rev. 22
1, 2-45N727, Wiring Diagram 6900V Diesel Generators Single Line, Rev. 24

1, 2-45N732-1, Wiring Diagrams 480V Diesel Aux Bd 1A1-A Single Line, Rev. 29
1, 2-45N749-1, Wiring Diagrams 480V SD Board 1A1-A Single Line, Rev. 46
1, 2-45N749-2, Wiring Diagrams 480V SD Board 1A1-A Single Line, Rev. 35
1, 2-45N765-1, Wiring Diagram 6900V Shutdown Aux Power Schematic Diagram Sh-1, Rev. 18
1, 2-45N765-2, Wiring Diagram 6900V Shutdown Aux Power Schematic Diagram Sh-2, Rev. 20
1, 2-45N765-3, Wiring Diagram 6900 Volt Shutdown Aux Power Schematic Diagram Sh-3, Rev. 22
1, 2-45N765-4, Wiring Diagram 6900V Shutdown Aux Power Schematic Diagrams Sh-4, Rev. 3
1, 2-45N765-5, Wiring Diagram 6900V SD Auxiliary Power Schematic Diagram Sh-5, Rev. 14
1, 2-45N765-6, Wiring Diagram 6900V Shutdown Aux Power Schematic Diagrams Sh-6, Rev. 3
1, 2 -45N765-6, Wiring Diagrams 6900V Shutdown Aux Power Schematic Diagrams Sheet 6, Rev. 35
1, 2-45N765-8, Wiring Diagram 6900V Shutdown Aux Power Schematic Diagram Sh-8, Rev. 6
1, 2-45W540-A4A, Wiring Diagram 161kV AC Schematic Sheet 4A CSST C&D, Rev. 1
1-47K406-58, Isometric Static, Thermal & Seismic Analysis Of CVCS Piping, dated May 26, 1998
1-47K435-53, Isometric Safety Injection Piping, dated May 27, 1999
1-47W600-28, Mechanical Instrument and Controls, Rev. 7
1-47W600-151, Mechanical Instruments and Controls, Rev. 4
1-47W600-200, Mechanical Instruments and Controls, Rev. 5
1-47W600-294, Mechanical Instruments and Controls, Rev. 3
1-47W600-294, Mechanical Instruments and Controls, Rev. 4
1-47W610-3-3, Mechanical Control Diagram Auxiliary Feedwater System, Rev. 21
1-47W610-1-3, Mechanical Control Diagram Main Steam System, Rev. 5
1, 2-47W611-3-5, Mechanical Logic Diagram Auxiliary Feedwater System, Rev.7
1, 2-47W611-3-4, Mechanical Logic Diagram Auxiliary Feedwater System, Rev.21
1, 2-47W611-3-3, Mechanical Logic Diagram Auxiliary Feedwater System, Rev.34
1, 2-45W646,-8, Wiring Diagrams Feedwater Pump & Turbine Schematic Diagrams, Rev. 12
1,2-47W801-1, Flow Diagram Main & Reheat Steam, dated January 13, 1988
1,2-47W809-5, Flow Diagram CVCS Chemical Control, dated January 19, 1990
1-47W811-1, Flow Diagram – Safety Injection System, Rev. 72
1,2-47W812-1, Flow Diagram – Containment Spray System, Rev. 45
1,2-47W816-1, Flow Diagram – Lubricating Oil Systems, Rev. 29
1,2-47W816-2, Flow Diagram – Diesel Generator Lube Oil System, Rev. 0
1,2-47W846-1, Flow Diagram Control & Service Air System, dated November 15, 1989
1,2-47W848-1, Compressed Air System Flow Diagram, dated January 13, 1989
1,2-47W848-12, Compressed Air System Flow Diagram, dated February 16, 1988
2-45N700-1, Key Diagram 120V AC & 125V DC Vital Plant Control Power System, Rev. 40
2-45N724-2, Wiring Diagrams 6900V Shutdown Board 2B-B Single line, Rev. 30
2-45N724-3, Wiring Diagrams 6900V Shutdown Board 2A-A Single line, Rev. 23

Calculations

0-RLY-245-0-1, Common Station Service Transformer Auto Tap Changer Controller, Rev. 5
1-L-3-148, Setpoint and Scaling Document 1-L-3-148, Rev. 9
1-L-3-156, Setpoint and Scaling Document 1-L-3-156, Rev. 8
1-L-3-164, Setpoint and Scaling Document 1-L-3-164, Rev. 8
1-L-3-172, Setpoint and Scaling Document 1-L-3-172, Rev. 4

1-L-3-173, Setpoint and Scaling Document 1-L-3-173, Rev. 5
1-L-3-174, Setpoint and Scaling Document 1-L-3-174, Rev. 5
1-L-3-175, Setpoint and Scaling Document 1-L-3-175, Rev. 5
1-P-1-81, Setpoint and Scaling Document 1-P-1-81, Rev. 2
18DO53EPMCWP121586, 7-Day Fuel Oil Tank Volume and Setpoints Calculation – Diesel Generators, Rev. 3
18D053EPMDDP072189, SQN Diesel Generator Fuel Oil Consumption 7 Day Supply Calculation, Rev. 2
2-L-3-156, Setpoint and Scaling Document 2-L-3-156, Rev. 6
2-L-3-164, Setpoint and Scaling Document 1-L-3-164, Rev. 6
2-L-3-172, Setpoint and Scaling Document 1-L-3-172, Rev. 5
2-L-3-175, Setpoint and Scaling Document 1-L-3-175, Rev. 5
5064476-00, SI Line Non-Condensable Gas Evaluation, dated May 6, 2005
82D53EPMCC021291, Low Pressure Setpoint for DG Starting Air Tanks, Rev. 2
B87 900328 031, Instrument Accuracy Calculation for BA Tank, dated September 25, 2003
E31 910426 201, Common Station Service Transformers LTC Setting Calculation, Rev. 0
EEB-SQN-MS-T105-001, TELAS (TVA Electrical Auxiliary System), Rev. 81
EPM-DLM-061987, HVAC Calculation of Cooling Load of Diesel Generator Room, Rev. 1
GEN-EEB-MS-TI28-0001, Generic Accuracy Calculation for Non-Safety Related Instrumentation, Rev. 0
MDQ00001820080001, Ultra Low Sulfur Diesel Fuel (ULSD) Evaluation, Rev. 0
MDQ0072980034, CCP, SIP, CSP, and RHR Pump NPSH Evaluation, Rev. 4
MDQ1072980024, Unit 1 Containment Spray System Hydraulic Analysis, Rev. 3
MDQ2072980032, Unit 2 Containment Spray System Hydraulic Analysis, Rev. 4
SCG-1-86, Diesel Generator Building Structure and Slabs, Rev. 4
SCG1S30XRM1, Reinforced Masonry Walls, Rev. 10
SCG-DC-V-4.0, Structural And Seismic Calculation for MSIVs, Rev. 003
SQN-32-D053, Auxiliary Control Air System Pressure Drop, Rev. 5
SQN-62-D053, Boric Acid Transfer Pump-NPSH Available, Rev. 1
SQN-APS-010, Class 1E Motor Control Center Circuit Under-voltage Calculation, Rev. 20
SQN-CPS-007, Diesel Generator (DG) Battery Capacity Evaluation, Rev. 5
SQN-CPS-057, Vital Power Control System Loading Channel I and Continuous Loading Evaluation Protective Devices in the 120V AC Vital Instrument Power Boards, Rev. 72
SQN-CPS-058, Vital Power Control System Loading Channel II and Continuous Loading Evaluation Protective Devices in the 120V AC Vital Instrument Power Boards, Rev. 84
SQN-CPS-059, Vital Power Control System Loading Channel III and Continuous Loading Evaluation Protective Devices in the 120V AC Vital Instrument Power Boards, Rev. 59
SQN-CPS-060, Vital Power Control System Loading Channel IV and Continuous Loading Evaluation Protective Devices in the 120V AC Vital Instrument Power Boards, Rev. 69
SQN-EEB-MS-TI-0007, CSST Auto Load Tap Changer Study, Rev. 8
SQN-EEB-MS-TI-0008 Degraded Voltage Analysis, Rev. 4
SQN-EEB-MS-TI06-002, Auxiliary Power System, Rev. 71
SQN-EEB-MS-TI28-0029, Instrument Accuracy calculation 1-LT-3-148, 156, 164, 171, 172, 173, 174 & 175, Rev. 21
SQN-EEB-MS-TI28-0042, Boric Acid Tank Instrument Accuracy, Rev. 11
SQNETAPAC, Auxiliary Power System, Rev. 38
SQN-IC-005, Demonstrated Accuracy Calculation Agastat Timers for AMSAC, Rev. 3
SQN-RSS-010, Common Station Service Transformers – LTC, Rev. 0

SQN-SBO-001, Station Blackout Coping and Recovery Evaluation, Rev. 5
SQN-VD-VDC-1, 125VDC Vital Instrument Power System Design Verification, Rev. 38
SQS20138, Basis for TI-28 Curves, Rev. 9
TI-ECS-40, Diesel Generator Buildings Tornado Depressurization, Rev. 3
WCAP-12455, Containment Integrity Reanalysis, Rev. 1, Supplement 1R
WCAP-10698-P-A, SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill, 8/87

Corrective Action Documents

PER 80602, SIS Pump 2A Discharge Pipe Not Water Solid Page
PER 99854, DG Fuel Oil Consumption Value Greater then FSAR Value
PER 103724, Catawba Nuclear Station on May 20, 2006 experienced a reactor trip of both units due to a loss of all offsite power
PER 120682, EDG Tornado Depressurization
PER 123204, ECCS Pump NPSH Calc Affected by dP Across RWST Vent
PER 123658, MPM-DB Breaker (March, 2002) have not been implemented into reactor trip breaker maintenance procedures
PER 131593, 1-FCV-0029 Did Not Meet Engineering Specs.
PER 154330, Concerns with Revised ASTM Standard for Diesel Fuel Oil
PER 160221. Unit #2 Cold Leg Accumulator #2 has in-leakage
PER 160392, Corporate Review of OE28046
PER 161027, Extended LCO Duration A-A Aux Control Air Compressor
PER 165501, Review of NRC Information Notice 2009-02
PER 165526, Self Assessment SQN-ENG-F-09-001 Findings
PER 167217, Section XI Boric Acid Transfer Pump Test
PER 175149, Fuel Oil Piping Failed PM
PER 177214, Containment Spray HX
PER 200212, Check Valve Leakage Evaluation
PER 208877, 2-LT-3-172 compliance instrument loss of as found tolerance
PER 216956, Check Valve Leakage Following SI Performance Testing
PER 218360, Since at least 1999, SQN has been adding the wrong correction factors to the specific gravity readings
PER 218538, Leak On Valve Downstream of BA Pump Boric Acid Buildup
PER 218749, Check Valve Leakage Following SI Performance Testing

Work Orders

057931000, Inspection and Cleaning of the 6.9kV Shutdown Board 1A-A Internal Bus and Rear Panels, dated May 15, 1993
05-777194, PM# 051102030, Preventive Maintenance Work Instruction for 2-RLY-003-0062A, Rev. 4, dated December 9, 2006
06-778126, PM# 051101030, Preventive Maintenance Work Instruction for 1-RLY-003-0062A, Rev. 4, dated July 12, 2007
06-778009, Turbine Impulse Chamber Pressure Switch Calibration per IDP, dated October 6, 2007
06-778252-000, 1-FCV-1-4 MSIV Retorque and Packing Change, dated October 5, 2007
07-772329, Turbine Impulse Chamber Pressure Switch Calibration per IDP, dated May 16, 2008

07-772592, PM# 051102030, Preventive Maintenance Work Instruction for 2-RLY-003-0062A, Rev. 4, dated May 29, 2008
07-773935-000, 5 Yr PM for Control Air Supply Valves, dated January 15, 2008
07-782101-000, CSST B Tap Changer Relay Calibration, dated October 18, 2008
08-771742, Turbine Impulse Chamber Pressure Switch Calibration per IDP, dated April 3, 2009
08-771855, PM# 051101030, Preventive Maintenance Work Instruction for 1-RLY-003-0062A, Rev. 4, dated April 5, 2009
08-771903-000(2), Swapout Breaker with a Refurbished Bkr, dated March 31, 2009
08-771989-000, Swapout Breaker with a Refurbished Bkr, dated April 15, 2009
08-776188-000, 1-FCV-1-4 Internal vibration on MSIV PMT, dated April 25, 2009
08-776189-000, 1-FCV-1-11 Internal vibration on MSIV PMT, dated April 25, 2009
08-777321-000, CSST C Tap Changer Relay Calibration, dated August 6, 2009
06-778251-000, 1-FCV-1-4 MSIV Retorque and Packing Change, dated October 5, 2007
08-778749, Turbine Impulse Chamber Pressure Switch Calibration per IDP, dated November 10, 2009
08-781232-000, CSST B Tap Changer Relay Calibration, dated January 25, 2010
10-770467-000, Planned for maintenance for sticking Check valve 32-0561, dated January 19, 2010
110842725, Clean EDG 1A Fuel Oil Vent Line
MLM56951, Common Station Service Transformer 'A' Doble Test, dated April 28, 2009
SNP-03-03, Common Station Service Transformer 'A' Doble Tests, dated December 4, 2003
TACF 1-06-013-202, Remove the Mechanical Cover From The Breaker Installed In Compartment 6 of 6.9kv Shutdown Board 1A-A, dated July 20, 2006

Design Change Packages

DCN-D21971, Replace Cable PP3541A for D/G 1A-A, Rev. A
DCN M-11705A, Removal of Check Valve internals Downstream MSIV, dated April 24, 1996

Miscellaneous

20-27, SAR Change Request, June 2, 2006
900323U0600, Letter to NRC – Revised Response to NRC Bulletin 88-04, March 15, 1990
ASME OM Code-2001 ISTC
E-22252, Develop ASME Section XI Pump Curves and Issue in Design Output Calculation, January 13, 2010
Functional Evaluation 41022, SIS Pump 2A Discharge Pipe
Issuance of Technical Specification Amendments for the Sequoyah Nuclear Plant, Units 1 and 2 (TAC Nos. M92212 and M92213) (TS 93-09), August 22, 1995
Issuance of Technical Specification Amendments for the Sequoyah Nuclear Plant, Units 1 and 2 (TAC Nos. M94237 And M94238) (TS 93-09), March 1, 1996
Letter E.G. Wallace (TVA) to USNRC, Sequoyah (SQN) and Browns Ferry (BFN) Nuclear Plants – Supplemental Submittal on Station Blackout (SBO) Implementation of NUMARC 87-00 Guidance, May 5, 1990
NRC Letter from D.E. LaBarge (NRC) to M.O. Medford (TVA), Supplemental Safety Evaluation (SSE) – Station Blackout Analysis, Sequoyah Nuclear Plant Units 1 and 2 (TAC Nos. M68603 and M68604), dated June 11, 1982

NRC letter to O.J. Zeringue TVA, NRC Integrated Inspection Report 50-327/97-18 and 50-328/97-18 and Notice of Violation, February 19, 1998
NRC letter to R.H Wessman, MOV Terminal Voltage Issue Per GL 89-10 Program at Sequoya Nuclear Plant, February 11, 1998
SQN ETAP Conversion, March 3, 1999
SQN-E14-080601-001, Sequoyah Nuclear Plant (SQN) - Transmission System Study for Grid Operations, May 22, 2008
SQN Response to (GL) 2008-01 for Gas Accumulation in ECCS, dated June 6, 2008 and October 11, 2009
Summary of Performance test Results for ECCS Pumps, March 1, 2010
TVA Letter G.W. Morris to NRC, Browns Ferry Nuclear Plant (BFN) Units 1,2 & 3, Sequoyah Nuclear Plant (SQN) Units 1 & 2 and Watts Bar Nuclear Plant (WBN) Unit 1 -Nuclear Regulatory Commission (NRC) Generic Letter (GL) 2006-02: Grid Reliability and the Impact on Plant Risk And the Operability of Offsite Power – Response, April 3, 2006
TVA Letter K. Powers (TVA) to NRC, Sequoya Nuclear Plant (SQN) – Supplemental Information for Technical Specification (TS) Change Request 93-09, March 29, 1994
TVA-SQN-TS-93-09, Sequoya Nuclear Plant (SQN) - Revised Amendment Implementation Date for Technical Specification (TS) Change 93-09 (TAC Nos. M87872 and M87873), August 19, 1994
TVA-SQN-TS-93-09, Revision 1, Technical Specification (TS) Change 93-09, Rev. 1, December 8, 1995
TVA-SQN-TS-93-09, Technical Specification (TS) Change 93-09, October 1, 1993
Piping Slope and Bow Survey and Evaluation, dated October 3, 2008

Vendor Manuals

OS&Y Swing Check Valves Vendor Manual/Instruction, dated February 26, 2009
SQN-VTM-W120-0330, Rod Control Power Supply Reactor Trip Switchgear and Associated Components, Rev. 29
Vendor Manual for MSIV Atwood and Morrill Company, Rev. 0011

Corrective Action documents initiated due to CDBI activity:

PER 221396, Unrealistic PRA time assumption to complete an action
PER 221550, No technical basis for 5 minute time limit for training job performance measures
PER 221645, Simulator scenario interrupted due to computer lockup
PER 221800, Weakness in Ops procedure E-3 for contingency actions after single failures
PER 221896, Simulator scenario confusion about DG run time limit without cooling
PER 221931, Calculation SQN-VD-VDC-1 battery board voltages are incorrect
PER 222097, No documented basis on PMs for the CSSTs
PER 222102, Walkdown of Vital Batteries revealed visible corrosion on battery post
PER 222137, FSAR analysis for SG tube rupture does not clearly address the limiting single failure which could delay termination of break flow
PER 222139, Time validation for SG tube rupture mitigating actions do not include limiting single failures
PER 222147, SG tube rupture analysis was conservative but lacked rigor of original analysis
PER 222268, Visible corrosion observed during walkdown on EDG 1A-A battery connection

PER 222299, No sign or out of service tag on permanent eyewash station while temporary station is installed - item 260
PER 222310, Wasp nests partially obstruct the EDG 1A-A fuel oil day tank atmospheric vents
PER 222732, Bowed tubing of EDG 1A-A pressure indication gauges
PER 223044, Inadequate documentation on PER operability determinations
PER 223548, Inadequate response to wasp nests partially blocking DG vent line (ref 222310)
PER 223620, Inadequate response to corrosion on battery terminals (ref 222102)
PER 223664, Inappropriate current reading during performance of surveillance test
PER 223900, Calculations in active status which are functionally superseded
PER 223905, CS pump calculations analyze for suction from RWST and not from cont. sump
PER 223908, CS pump performance test appears to not include instrument uncertainty in acceptance criteria
PER 224364, Periodic re-contact not maintained with Westinghouse per SPP-2.5 on SR Class 1 manuals and publications
PER 224410, Inadequate surveillance on vital battery IV and V
PER 224420, Mud dauber nests found inside DG fuel oil vent pipes
PER 224975, Vendor manual updates do not identify superseded information
PER 225149, Load shedding procedures do not exist for DG batteries following SBO event
PER 225265, Instrument Uncertainties - extent of condition review of PER 223908
PER 225367, No steps in PM to verify the acceptance criteria for tap changer operation time
PER 225380, Calculation SQN-CPS-057 determined LOCA as bounding case - SBO should be bounding case
PER 225499, Scaffolding procedure MMTP-103 is unclear as to when a 50.59 is required
PER 225506, Calculation SQN-CPS-060, appendix E, does not have the latest load profile for calculating voltage due to internal battery resistance
PER 225515, Clarification of operation procedures associated with AMSAC
PER 225519, Basis for assumptions in calculations SQN-VD-VDC-001 and SQN-TI-06-008 lack clarity
PER 225534, Electrical calculation for Aux Power uses non-conservative approach. Fixing the board voltage may result in non-conservative answers
PER 225704, Electrical calculation SQN-APS-010 is not clear as to inputs conditions
PER 225707, SQN has what appears to be a high Acceptance Criteria of Air Supply Check Valve leakage in our Diesel Starting Air Valve Test procedures
PER 225755, Delay in removing wet boric acid after SR was initiated