



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 2, 2023

EA-23-042

Jim Barstow
Vice President, Nuclear Regulatory Affairs & Support Services
Tennessee Valley Authority
1101 Market Street
LP 4A-C
Chattanooga, TN 37402-2801

**SUBJECT: SEQUOYAH, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT
05000327/2023001 AND 05000328/2023001 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Jim Barstow:

On March 31, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Sequoyah, Units 1 and 2. On April 25, 2023, the NRC inspectors discussed the results of this inspection with Mr. Tom Marshall and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding did not involve a violation of NRC requirements.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC Resident Inspector at Sequoyah, Units 1 and 2.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document

J. Barstow

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Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,



Signed by McKown, Louis
on 05/02/23

Lou J. McKown II, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket Nos. 05000327 and 05000328
License Nos. DPR-77 and DPR-79

Enclosure:
As stated

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SUBJECT: SEQUOYAH, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT
05000327/2023001 AND 05000328/2023001 AND EXERCISE OF
ENFORCEMENT DISCRETION May 02, 2023

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DATE	05/02/2023	05/02/2023	05/02/2023		

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000327 and 05000328

License Numbers: DPR-77 and DPR-79

Report Numbers: 05000327/2023001 and 05000328/2023001

Enterprise Identifier: I-2023-001-0042

Licensee: Tennessee Valley Authority

Facility: Sequoyah, Units 1 and 2

Location: Soddy Daisy, TN 37379

Inspection Dates: January 01, 2023, to March 31, 2023

Inspectors: B. Bowker, Reactor Inspector
D. Hardage, Senior Resident Inspector
B. Kellner, Senior Health Physicist
M. Magyar, Reactor Inspector
A. Nielsen, Senior Health Physicist
A. Price, Resident Inspector

Approved By: Lou J. McKown, II, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Sequoyah, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

List of Findings and Violations

Failure of Unit 2 main transformer neutral bus due to incorrect installation of insulators			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000328/2023001-01 Open/Closed	[H.7] - Documentation	71152A
<p>A self-revealed Green finding was identified when the licensee failed to adequately implement TVA Transmission’s Substation and Switchyard Design Standard TE-SE-DES-09.200.4.6, Electrical Buses and Insulators, to ensure the Unit 2 main transformer neutral bus insulators were installed to accommodate thermal expansion. Specifically, contrary to TE-SE-DES-09.200.4.6, all neutral bus insulator clamps were assembled in the fixed orientation on the Unit 2 main transformer neutral bus insulators during 2A main bank transformer (MBT) replacement. This configuration did not allow for thermal expansion and led to failure of the insulators on the neutral bus which required operators to deenergize the main transformer.</p>			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
EDG	EA-23-042	Failure to Comply with 10 CFR 37 for the Protection of Radioactive Material Contained in Contaminated Steam Generators Stored in a Concrete Mausoleum	71124.08	Closed
LER	05000327/2022-002-00	LER 2022-002-00 for Sequoyah Nuclear Plant, Unit 1, Turbine Trip Function Inoperable Due to Slow to Close Turbine Throttle Valve	71153	Closed

PLANT STATUS

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

Unit 2 began the inspection period at RTP. The unit entered end of life coastdown on February 26, 2023. On March 17, 2023, the unit was at 84 percent RTP and shutdown for refueling outage 2R25. The unit remained shutdown for refueling the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed activities described in IMC 2515, Appendix D, "Plant Status," observed risk significant activities, and completed on-site portions of IPs. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from impending severe weather due to severe thunderstorms and tornado watch on January 12, 2023.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) 1A Emergency Diesel Generator (EDG) while 1B EDG was out of service for planned maintenance on January 25, 2023
- (2) Unit 2 residual heat removal system (RHR) aligned for reactor coolant system (RCS) cooldown in Mode 5 on March 18, 2023

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated system configurations during a complete walkdown of the Unit 1 and Unit 2 EDGs on January 5, 2023.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 1 and Unit 2 Cable Spreading Room, Control Building Elevation 706 on January 4, 2023
- (2) EDG Building Elevation 722 on January 25, 2023
- (3) Unit 1 and Unit 2 Auxiliary Building, Elevation 653 on February 12, 2023
- (4) Essential Raw Cooling Water Building on March 1, 2023

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated internal flooding mitigation protections in the turbine building in preparation for maintenance activities to install isolation valves in the in service raw cooling water main header.

71111.08P - Inservice Inspection Activities (PWR)

PWR Inservice Inspection Activities Sample - Nondestructive Examination and Welding Activities (IP Section 03.01) (1 Sample)

The inspectors verified that the following nondestructive examination and welding activities were performed appropriately:

- (1) Ultrasonic Examination (UT)
 - RHRF-124, Elbow to Valve, Augmented (observed)
 - RHRF-109, Elbow to Valve, Augmented (observed)
 - RHRS-188, Pipe to Elbow, Augmented (observed)

Visual Examination (VT)

- Bare metal visual of the Reactor Vessel Closure Head, N-729-6 (observed)

PWR Inservice Inspection Activities Sample - Vessel Upper Head Penetration Inspection Activities (IP Section 03.02) (1 Sample)

The inspectors verified that the license conducted the following vessel upper head penetration inspections and addressed any identified defects appropriately:

- (1)
 - Bare metal visual of the Reactor Vessel Closure Head, N-729-6 (observed)

PWR Inservice Inspection Activities Sample - Boric Acid Corrosion Control Inspection Activities (IP Section 03.03) (1 Sample)

The inspectors verified the licensee is managing the boric acid corrosion control program through a review of the following evaluations:

- (1)
 - Boric Acid Walkdown - March 29, 2023
 - CR1846476
 - CR1846477
 - CR1846481
 - CR1846482
 - CR1846493

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspector observed and evaluated licensed operator performance in the main control room during shutdown and cooldown for U2R25 on March 17, 2023.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated a simulator training scenario including a loss of all AC power and a steam generator tube rupture on January 18, 2023.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

- (1) Maintenance rule functional failure of the A Main Control Room chiller (CDE 3199) on February 7, 2023.
- (2) Maintenance rule functional failure of the Unit 1 Turbine Stop Valve #2 (CDE 3193) on March 8, 2023.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Unit 1 and 2, week of January 15 – January 21, 2023, including protection equipment reviews for scheduled maintenance on the 1A EDG, common station service transformer 'B' and 'C' station service air compressor.
- (2) Unit 1 and 2, week of January 22 – January 26, 2023, including protection equipment reviews for scheduled maintenance on the 1B EDG and common station service transformer 'B'.
- (3) Unit 1 and 2, week of March 12 – March 18, 2023, including protection equipment reviews for emergent inoperability of 1A EDG, 1A motor-driven auxiliary feedwater (MDAFW) pump and 2A MDAFW pump and scheduled maintenance on the Unit 2 turbine-driven auxiliary feedwater pump.
- (4) Unit 2, Yellow shutdown risk week of March 19-25, while RCS level was below the reactor flange level for reactor disassembly, including review of defense in depth protected equipment for U2R25.

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Closing of RHR cross-connect valves to facilitate RCS check valve testing in mode 3 on January 9, 2023
- (2) 1B-B centrifugal charging pump (CCP) discharge line leaking past 1A-A CCP check valve, 1-62-525 on January 27, 2023
- (3) 2-LCV-3-164, Steam Generator 1 auxiliary feedwater level control valve, failed stroke test on March 13, 2023
- (4) PK block spare contact point broken on 1A 6.9 shutdown board 1A-A on March 13, 2023
- (5) Holes in ice transport return line breach the auxiliary building secondary containment enclosure barrier on March 23, 2023

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) TMOD 2019-082-001-01, Remove 1A-A EDG tandem RVDT exciter assembly, DC signal comparator, and DC power supply while maintaining functionality of 1A-A EDG

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated refueling outage 2R25 activities from March 18 – March 31, 2023

71111.24 - Testing and Maintenance of Equipment Important to Risk

The inspectors evaluated the following testing and maintenance activities to verify system operability and/or functionality:

Post-Maintenance Testing (PMT) (IP Section 03.01) (3 Samples)

- (1) Work order (WO) 122833637, 1A Diesel Generator ambient manual start following preventative maintenance outage on January 19, 2023
- (2) WO 122806789, Perform As Found MOV test and PM inspection on 2-MVOP-1-151-S, Turbine Driven AFW pump Trip and Throttle Valve on March 16, 2023
- (3) WO 123550931, Verification of no external leakage after cutting, removing blockages and rewelding ice condenser bay 1 to 12 AHU condensate drain line on March 29, 2023

Surveillance Testing (IP Section 03.01) (2 Samples)

- (1) Unit 2 Testing and Setting of Main Steam Safety Valves on March 16, 2023
- (2) 2-SI-OPS-088-001.0, Phase A Isolation Test on March 19, 2023

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

- (1) 2-SI-SXP-074-202.0, RHR Pump 2A-A and 2B-B Comprehensive Performance and Check Valve Test on March 22, 2023

Containment Isolation Valve (CIV) Testing (IP Section 03.01) (1 Sample)

- (1) 0-SI-SLT-070-258.1, Containment Isolation Valve Local Leak Rate Test, Component Cooling System to RCP Oil Coolers Inboard (Penetration X-52) on March 30, 2023

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated how the licensee instructs workers on plant-related radiological hazards and the radiation protection requirements intended to protect workers from those hazards.

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors observed/evaluated the following licensee processes for monitoring and controlling contamination and radioactive material:

- (1) Licensee surveys of potentially contaminated material leaving the RCA.
- (2) Workers exiting the RCA during the Unit 2 refueling outage.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (3 Samples)

The inspectors evaluated the licensee's control of radiological hazards for the following radiological work:

- (1) Unit 2 Transfer Canal diving activities to repair transfer tube valve - ALARA Work Plan 2023-244 [Spent Fuel Pool side]
- (2) Inspection & Rebuild of accumulator check valve 2-VLV-063-0634 - ALARA Work Plan 2023-240
- (3) Unit 2 Reactor disassembly activities - ALARA Work Plan 2023-211

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (5 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) Unit 2 Keyway access in containment (Grave Danger/LHRA)
- (2) Unit 2 Letdown Heat Exchanger Room in containment (LHRA)
- (3) Tritiated Drain Tank Room - Aux Building 653' elevation (LHRA)
- (4) Spent Resin Tank Room - Aux Building 669' elevation (LHRA)
- (5) SFP Underwater Storage Lock Box (LHRA)

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.08 - Radioactive Solid Waste Processing & Radioactive Material Handling, Storage, & Transportation

Radioactive Material Storage (IP Section 03.01) (3 Samples)

The inspectors evaluated the licensee's performance in controlling, labeling and securing the following radioactive materials:

- (1) Dry Active Waste (DAW) building storage area
- (2) Radioactive material storage area 15
- (3) Disused steam generator storage mausoleum

Radioactive Waste System Walkdown (IP Section 03.02) (1 Sample)

The inspectors walked down the following accessible portions of the solid radioactive waste systems and evaluated system configuration and functionality:

- (1) Liquid radwaste processing filtration and demineralizer system

Waste Characterization and Classification (IP Section 03.03) (2 Samples)

The inspectors evaluated the following characterization and classification of radioactive waste:

- (1) 2022 DAW
- (2) Primary resin liner PO699639

Shipment Preparation (IP Section 03.04) (1 Sample)

- (1) The inspectors observed the preparation of a radioactive shipment of DAW on March 30, 2023.

Shipping Records (IP Section 03.05) (5 Samples)

The inspectors evaluated the following non-excepted radioactive material shipments through a record review:

- (1) Shipping record 21-0401, Type B, Filters
- (2) Shipping record 22-0601, Low Specific Activity (LSA), primary resin
- (3) Shipping record 22-0702, LSA, radwaste resin
- (4) Shipping record 22-1103, Surface Contaminated Object, vendor equipment
- (5) Shipping record 22-0301, Type B, primary resin

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

- (1) Unit 1 (January 1, 2022 through December 31, 2022)
- (2) Unit 2 (January 1, 2022 through December 31, 2022)

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 1 (January 1, 2022 through December 31, 2022)
- (2) Unit 2 (January 1, 2022 through December 31, 2022)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) October 1, 2022 through March 31, 2023

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual
Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample
(IP Section 02.16) (1 Sample)

- (1) November 19, 2022 through February 28, 2023

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (2 Samples)

- (1) Unit 2 main transformer neutral bus insulator failure on June 1, 2022
- (2) Unit 2 Reactor Coolant Pump 1 has red brown possible boron buildup on five main flange hydranuts on March 21, 2023

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Report (IP section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 50-327/2022-002-00, Turbine Trip Function Inoperable Due to Slow to Close Turbine Throttle Valve (ADAMS accession: ML22349A023) The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER therefore no performance deficiency was identified. The inspectors also concluded that no violation of NRC requirements occurred.

INSPECTION RESULTS

Enforcement Discretion	Enforcement Action EA-23-042: Failure to Comply with 10 CFR 37 for the Protection of Radioactive Material Contained in Contaminated Steam Generators Stored in a Concrete Mausoleum	71124.08
<p><u>Description:</u> On November 10, 2021, the NRC issued Inspection Report numbers 05000327/2021003 and 05000328/2021003, which documented a violation of 10 CFR Part 37.11 involving disused steam generators (>Category 2 material, exempt waste) stored in large concrete storage modules. The violation met the criteria for Enforcement Discretion as described in Enforcement Guidance Memorandum (EGM) 14-001, "Interim Guidance for Dispositioning 10 CFR Part 37 Violations with Respect to Large Components or Robust Structures Containing Category 1 or Category 2 Quantities of Material at Power Reactor Facilities Licensed Under 10 CFR Parts 50 and 52." The inspectors re-evaluated storage and security of the steam generators and determined that there have been no changes since the last inspection.</p> <p><u>Corrective Actions:</u> The licensee has documented the issue in their corrective action program. As specified in EGM 14-001, the application of discretion is authorized until the underlying technical issue is dispositioned through rulemaking or other regulatory action.</p> <p><u>Corrective Action References:</u> CR 1707916</p>		
<p><u>Enforcement:</u></p> <p><u>Violation:</u> On November 10, 2021, a violation of 10 CFR Part 37.11 was documented in Inspection Report numbers 05000327/2021003 and 05000328/2021003. During the week of March 27 - 31, 2023, the inspectors determined that the previously identified violation remains.</p> <p><u>Basis for Discretion:</u> This violation continues to meet the criteria for Enforcement Discretion as described in EGM 14-001.</p>		

Failure of Unit 2 main transformer neutral bus due to incorrect installation of insulators
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Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000328/2023001-01 Open/Closed	[H.7] - Documentation	71152A
<p>A self-revealed Green finding was identified when the licensee failed to adequately implement TVA Transmission’s Substation and Switchyard Design Standard TE-SE-DES-09.200.4.6, Electrical Buses and Insulators, to ensure the Unit 2 main transformer neutral bus insulators were installed to accommodate thermal expansion. Specifically, contrary to TE-SE-DES-09.200.4.6, all neutral bus insulator clamps were assembled in the fixed orientation on the Unit 2 main transformer neutral bus insulators during 2A main bank transformer (MBT) replacement. This configuration did not allow for thermal expansion and led to failure of the insulators on the neutral bus which required operators to deenergize the main transformer.</p> <p><u>Description:</u> On the afternoon of June 1, 2022, Security personnel notified Shift Operators of a fallen object near the Unit 2 main transformer. Subsequent inspections by Operators and System Engineering identified a partial collapse of the main transformer neutral bus. The bus remained connected to each in-service MBT neutral bushing and was partially suspended by the 2A MBT high-pressure fire protection piping. On June 1, 2022 at 22:52 Unit 2 commenced a downpower to 20 percent RTP and removed the turbine and main transformer from service for repairs.</p> <p>The neutral bus for the 161 kV single-phase main transformers (phases A, B, C, and spare) is a 6-inch diameter aluminum tubing that runs horizontally for approximately 200 feet and is supported at five locations by supports that are approximately evenly distributed. These supports are ceramic insulators that are attached to a steel structure.</p> <p>The 2A MBT had been replaced in the fall of 2021 during the Unit 2 refueling outage. The work scope did not include replacement of the existing neutral bus insulator, but the insulator was removed and reinstalled during this activity. Sequoyah drawings 75N230 and 75N232 were used by craft personnel reassembling the neutral bus but did not identify the desired insulator clamp configuration for the neutral bus insulators which would allow for thermal expansion of the neutral bus. After the insulator failure, each neutral bus insulator clamp was found assembled in the fixed orientation. Such a configuration is inconsistent with recommended substation design practices and limits thermal expansion of the conductor. The preferred method of configuring is a fixed center clamp and slipped adjacent clamps which permits thermal expansion of the bus and reduces the overall loading of the insulators.</p> <p>The most likely cause of the identified neutral bus damage is excessive thermal expansion of the neutral bus from the existing support configuration (i.e., all fixed supports). Because of the fixed supports, the neutral bus thermal expansion is constrained, applying large loads to the supports. Excessive thermal expansions events including fault transients and daily ambient temperature variations will result in cyclic fatigue to the brittle ceramic insulators, initiating cracks leading to eventual failure.</p> <p>Corrective Actions: The switchyard was evacuated until the main transformer was deenergized. The damaged insulators were replaced and the neutral bus was reinstalled in the correct configuration. Switchyard drawings were updated to include the required configuration for the neutral bus insulators.</p> <p>Corrective Action References: CR 1780355, 1781005, 1780826</p>			

Performance Assessment:

Performance Deficiency: Failure of the licensee to adequately implement TVA Transmission's Substation and Switchyard Design Standard TE-SE-DES-09.200.4.6, Electrical Buses and Insulators, to ensure the Unit 2 main transformer neutral bus insulator configuration was installed to accommodate thermal expansion of insulators was a performance deficiency. Specifically, contrary to TE-SE-DES-09.200.4.6, all neutral bus insulator clamps were assembled in the fixed orientation on the Unit 2 main transformer neutral bus insulators during 2A main bank transformer (MBT) replacement. This configuration did not allow for thermal expansion and lead to failure of the insulators.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, failure of the neutral bus could lead to failure of the main transformer and reactor trip in the event of a grid disturbance and did require an emergent downpower from rated thermal power to take the transformer offline for immediate corrective maintenance.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined the finding was of very low safety significance (Green) using Appendix A, Exhibit 1, Transient Initiators, because the finding did not result in an actual reactor trip and a loss of mitigation equipment relied upon to transition the plant to a stable shutdown condition.

Cross-Cutting Aspect: H.7 - Documentation: The organization creates and maintains complete, accurate and up-to-date documentation. The inspectors determined that the finding had a cross-cutting aspect of Documentation within the cross-cutting area of Human Performance because TVA did not create and maintain complete, accurate, and up-to-date documentation. Specifically, the SQN design drawings did not identify clamp configuration for the neutral bus insulators.

Enforcement: Inspectors did not identify a violation of regulatory requirements associated with this finding.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On April 25, 2023, the inspectors presented the integrated inspection results to Tom Marshall and other members of the licensee staff.
- On March 30, 2023, the inspectors presented the ISI Exit Meeting inspection results to SQN Site Vice President – Tom Marshall and other members of the licensee staff.
- On March 30, 2023, the inspectors presented the Baseline Radiation Safety Inspection Exit Meeting inspection results to Tom Marshall, Site VP and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	AOP-N.02	Tornado Watch/Warning	Revision 45
71111.04	Corrective Action Documents Resulting from Inspection	CR 1831518	1-VLV-67-515A, 1A DG ERCW Outlet, found unsealed	01/25/2023
	Procedures	0-SO-82-1	Diesel Generator 1A-A	Revision 65
71111.05	Corrective Action Documents Resulting from Inspection	CR 1827472	Cable Spreading Room Sprinkler Interference	01/05/2023
	Fire Plans	AUX-0-653-00	Pre-Fire Plan Auxiliary Building Elevation 653	Revision 9
		CON-0-706-00	Pre-Fire Plan Control Building Elevation 706	Revision 8
71111.06	Procedures	AOP-M.05	Loss of Raw Cooling Water	Revision 11
		AOP-M.08	Internal Flooding	Revision 8
		EA-32-2	Establishing Control and Service Air	Revision 5
71111.11Q	Miscellaneous	Simulator Exercise Guide (SEG) OPL273S2313	SGTR with loss of Station Power	Revision 0
71111.12	Corrective Action Documents	CR 1811241	Turbine Stop Valve #2 failed to indicate closed on 1-XX-55-6A and locally	10/22/2022
		CR 1819566	'A' MCR chiller tripped while shutting panel door	11/28/2022
	Miscellaneous	Cause Determination Evaluation (CDE) 3193	Maintenance rule functional failure of the Unit 1 Turbine Stop Valve #2	10/22/2022
		Cause Determination Evaluation (CDE) 3199	Maintenance rule functional failure of the A MCR chiller	11/28/2022
71111.13	Procedures	0-GO-16	System Operability Checklists	Revision 33
		1-PI-OPS-000-	Attachment 2 - SQN Defense-in-Depth Assessment	Revision 43

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		020.2		
		NPG-SPP-07-2.11	Shutdown Risk Manage	Revision 16
71111.15	Corrective Action Documents	CR 1820231	Questionable use of Tech Spec note	11/30/2022
		CR 1832017	1B charging pump balance drum flow increase	01/27/2023
		CR 1841785	PK block spare contact point broken on 1A 6.9 SDBD 1A-A Panel 7	03/13/2023
		CR 1841940	2-LCV-3-164 failed the valve stroke, the stroke was unusual and erratic	03/13/2023
		CR 1842258	Possible ABSCE Breach Upstream of 0-FLT-61-2123	03/14/2023
		CR 1843752	Holes in Ice Transport return line	03/23/2023
	Engineering Evaluations	EWR 23-SBE-061-035	Ice Return Air Line ABSCE Boundary Evaluation (Unit 2)	03/23/2023
		EWR# 23-DEC-202-029	Civil Design to provide seismic functionality recommendation for SQN-1-PK-202-CM7/1-A (GE TEST BLOCKS TYPE PK2) with broken contactor	03/13/2023
	Operability Evaluations	CR 1832025	1B-B CCP discharge line is leaking past the 1A-A CCP check valve, 1-62-525	01/27/2023
	Procedures	1-SI-SXP-062-201.B	Centrifugal Charging Pump 1B-B Performance Test	Revision 29
2-SI-SXV-000-201.0		Full Stroking of Category A and B Valves During Operation	Revision 22	
71111.20	Corrective Action Documents	CR 1844444	Unit 2 Fuel Transfer Tube Wafer Valve appears to be unable to full close	03/22/2023
	Corrective Action Documents Resulting from Inspection	CR 1843392	Dry boric acid identified on 2-VLV-68-580, Loop 3 Letdown Isolation	03/18/2023
		CR 1843394	Dry boric acid identified on 2-VLV-68-431A, Root valve to FT-68-71A	03/18/2023
		CR 1843395	Dry boric acid identified on 2-VLV-68-432A, Root valve to FT-68-71B	03/18/2023
		CR 1843396	Dry boric acid identified on 2-VLV-68-433A, Root valve to FT-68-71D	03/18/2023
		CR 1843397	Dry boric acid identified on 2-VLV-68-541, Loop 4 H1 Isolation	03/18/2023

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.24	Procedures	0-SI-SLT-070-258.1	Containment Isolation Valve Local Leak Rate Test Component Cooling	Revision 19
		1-SI-OPS-082-007.A	Electrical Power System Diesel Generator 1A-A	Revision 71
		2-SI-SXP-003-202.S	Turbine Driven Auxiliary Feedwater Pump 2A-S Comprehensive Performance Test	Revision 24
71124.01	ALARA Plans	2023-211	U2R25 Rx Disassembly and Reassembly	Revision 0
		2023-244	U2R25 Transfer Canal & Equipment Pit Diving	03/23/2023
	Corrective Action Documents		Condition Reports (CRs) 1813282, 1813391, 1815914, 1816036, 1816606, 1818135, 1828128, 1831347, and 1846349	Various
	Corrective Action Documents Resulting from Inspection	1845870	Scaffold in on 690' elevation in Aux Bldg did not have an RP survey tag	03/28/2023
	Miscellaneous		Electronic Dosimeter dose and dose rate alarm logs from November 2022 through March 30 2023	Various
			Personnel Contamination Event Log 11/1/20222 through 3/28/2023	Various
			Sequoyah Nuclear Plant – U1R25 Outage ALARA Report	03/08/2023
		TEDE-2023-006	Remove/install blind flange and vortex suppressors - RWP 23240023 [Respirators required]	02/16/2023
		TEDE-2023-007	Cavity seal ring removal and stud hole cleaning - RWP 23240002 [No respirator]	02/16/2023
		TEDE-2023-008	Rx Head O-Ring Removal, RWP 23240022 [Respirator required]	02/16/2023
	Procedures	0-TI-NUC-000-002.0	Storing Material in Spent Fuel Pool or New Fuel Vault [SFP non-fuel item(s) inventory dated 11/16/2022]	Revision 40
		NISP-RP-003	Radiological Air Sampling	Revision 1
		NPG-SPP-05.18	Radiation Work Permits	Revision 9
		RCDP-21	Radiological Air Sampling	Revision 0
RCI-01		Radiation Protection Program	Revision 90	
Radiation Surveys	SQN-M-20230322-17	Unit 2 Aux Building Upender Underwater Survey	03/22/2023	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		SQN-M-20230323-16	Unit 2 Aux Building Upender Underwater Survey	03/23/2023
		SQN-M-20230324-11	Diver survey - repairs on wafer valve	03/24/2023
		SQN-M-20230325-3	EPRI Survey [post crud burst shutdown source term trending]	03/25/2023
		SQN-M-20230327-19	2-VLV-063-0634 Breach	03/27/2023
	Radiation Work Permits (RWPs)	23210021	U2R25- U-2 Aux Bldg & Annulus	Revision 0
		23220002	U2R25 - U-2 Lower Ctmnt - High Radiation Area	Revision 0
		23240012	U2R25 - U-2 Upper Ctmnt [NO respirators allowed]	Revision 0
		23240022	U2R25 - U-2 Upper Ctmnt [respirator required]	Revision 0
		23240065	734' SFP Area - Diving activities in the Spent Fuel Pool to repair U2 fuel transfer system [transfer tube wafer valve]	03/22/2023
	Self-Assessments	1724382	Radiological Hazard Assessment and Exposure Control Self Assessment	05/16/2022
		1724397	Occupational ALARA Planning and Controls	1/12/2023
	71124.08	Corrective Action Documents	CR 1707916	
CR 1764606				
Procedures		NPG-SPP-05.6.1	Radiation Protection Implementation of 10CFR37 Category 1 and Category 2 Quantities of Radioactive Material	Revision 3
		NPG-SPP-05.9.1	Radioactive Material/Waste Shipments	Revision 10
		RHSI-13	Administration and Control of Onsite Storage of Low Level Radioactive Waste	Revision 4
Self-Assessments		CR 1684128	Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation	08/21/21
		CR 1752444	Part 37 Self-Assessment	03/21/2022
71151	Miscellaneous		Electronic Dosimeter Dose and Dose Rate Alarm logs (11/1/2022 through 3/30/2023)	Various
71152A	Corrective Action Documents	CR 1780355	Fallen Unit 2 Generator Neutral Bus	06/01/2023
		CR 1781005	Unit 2 neutral bus configuration	06/04/2023
		CR 1843684	Ice condenser bays 1 to 12 AHU condensate drain line clogged	03/20/2022
		CR 1843794	Remove pool of water from RCP platform 2-4	03/20/2023

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71153	Corrective Action Documents	CR 1811241	Turbine Stop Valve #2 failed to close	10/22/2022
	Operability Evaluations	CA 1811241-001	Perform Past Operability Evaluation on TV-2	10/25/2022