



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

August 1, 2022

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

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION  
REPORT 05000327/2022002 AND 05000328/2022002

Dear Mr. Barstow:

On June 30, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Sequoyah Nuclear Plant, Units 1 and 2. On July 19, 2022, 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.

No findings or violations of more than minor significance were identified during this inspection.

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

Sincerely,

A handwritten signature in blue ink, appearing to read "Louis J. McKown", is positioned above the typed name.

Signed by McKown, Louis  
on 08/01/22

Louis J. McKown, 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 NUCLEAR PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION  
REPORT 05000327/2022002 AND 05000328/2022002

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NAME	D. Hardage	L. McKown			
DATE	07/29/2022	08/01/2022			

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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: 05000327/2022002 and 05000328/2022002

Enterprise Identifier: I-2022-002-0027

Licensee: Tennessee Valley Authority

Facility: Sequoyah Nuclear Plant, Units 1 and 2

Location: Soddy Daisy, TN 37379

Inspection Dates: April 01, 2022 to June 30, 2022

Inspectors: N. Childs, Senior Project Engineer  
D. Hardage, Senior Resident Inspector

Approved By: Louis J. McKown, 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 Nuclear Plant, 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**

No findings or violations of more than minor significance were identified.

### **Additional Tracking Items**

None.

## **PLANT STATUS**

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

Unit 2 began the inspection period at RTP. On June 1, 2022, the unit reduced power to 20 percent RTP and removed the turbine from service to perform repairs on the main transformer neutral bus. On June 9, 2022, the turbine was returned to service and the unit was returned to RTP on June 10, 2022. The unit remained at or near RTP for 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

#### Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal summer temperatures including review the material condition of the plant's offsite AC power systems and onsite alternate AC power systems, including the switchyard and transformers on May 11, 2022.

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) Vital Instrument Board 2-I with vital inverter 2-I out of service for functional testing on April 5, 2022
- (2) Unit 1 auxiliary feedwater (AFW) system following testing of 1A AFW pump testing on April 8, 2021
- (3) Unit 2 "A" train component cooling water (CCS) after restoration from 2A2 CCS heat exchanger cleaning on April 28, 2022

- (4) Unit 1 and 2 offsite power while the Unit 2 Unit Station Service Transformers were out of service for corrective maintenance on the main transformer neutral bus on June 8, 2022

#### 71111.05 - Fire Protection

##### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 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 Auxiliary Building, Elevation 690 on April 20, 2022
- (2) Unit 1 and Unit 2 Auxiliary Building, Elevation 714 on April 27, 2022
- (3) Unit 1 and Unit 2 Auxiliary Building, Elevation 653 on May 18, 2022
- (4) Unit 1 and Unit 2 Auxiliary Instruments Rooms, Control Building, Elevation 685 on June 2, 2022
- (5) Unit 1 and Unit 2, Control Building, Elevation 669 on June 12, 2022

##### Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the onsite fire brigade training and performance during an unannounced fire drill at the Unit 1 lube oil storage tank in the Turbine Building on April 13, 2022.

#### 71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

##### Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (2 Samples)

- (1) The inspectors observed and evaluated licensed operator performance in the main control room during Unit 2 main generator NERC reactive load testing on April 16, 2022.
- (2) The inspectors observed and evaluated licensed operator performance in the main control room during an emergent Unit 2 downpower to take the main transformer offline following neutral bus disconnection on June 1, 2022.

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

- (1) The inspectors observed and evaluated a simulator examination scenario including a large break loss of coolant accident, loss of a safety related 6.9Kv bus and failure of phase B containment isolation valves to automatically close on June 6, 2022.

#### 71111.12 - Maintenance Effectiveness

##### Maintenance Effectiveness (IP Section 03.01) (1 Sample)

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

- (1) Failure of Unit Station Service Transformer 1B on-load tap changer (CDE 3157) to automatically lower tap positions when demanded on August 5, 2021

#### Aging Management (IP Section 03.03) (2 Samples)

The inspectors evaluated the effectiveness of the aging management program for the following SSCs that did not meet their inspection or test acceptance criteria:

- (1) 18-inch essential raw cooling water (ERCW) piping downstream of containment spray (CS) heat exchanger throttle valve 2-VLV-067-0537A (CR 1668098)
- (2) Auxiliary building general ventilation system air handling unit 1-AHU-313-642 fan housing corrosion (CR 1717877)

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

##### Risk Assessment and Management Sample (IP Section 03.01) (5 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 April 17-23, 2022, including protection equipment reviews for scheduled maintenance on the 2A2 component cooling water heat exchanger, and emergent failure of Unit 2 Steam Generator 3 Auxiliary Feedwater Level Controller.
- (2) Unit 1 and 2, week of April 24-30, 2022, including protection equipment reviews for scheduled maintenance on the 0B2 component cooling water heat exchanger, and the 2B centrifugal charging pump.
- (3) Unit 1 and 2, week of May 8-14, 2022, including planned maintenance on B station air compressor, emergent maintenance on 2B generator bus duct cooling fan including protection equipment reviews, and a conservative operations alert.
- (4) Unit 1 and 2, week of May 29-June 4, 2022, including planned maintenance on 'C' and 'D' common station service transformers, and emergent maintenance on the Unit 2 main transformer neutral bus which required removing unit 2 main turbine from service.
- (5) Unit 1 and 2, week of June 5-June 11, 2022, including planned maintenance on 'C' common station service transformer, and emergent repair of the Unit 2 main transformer including startup of the Unit 2 main turbine and return to RTP.

#### 71111.15 - Operability Determinations and Functionality Assessments

##### Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

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

- (1) Unit 2 unsealed floor drain in upper containment on April 22, 2022
- (2) Immediate Determination of Operability for low ERCW flow to the 1A CS heat exchanger on May 24, 2022
- (3) Prompt Determination of Operability for multiple ERCW leaks on CCS/AFW Pump Area Cooler A-A on June 5, 2022

- (4) Past Operability Evaluation for gas discharge from 1B residual heat removal suction piping on June 9, 2022

#### 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) ECP 23874 Fuel Transfer System Upgrades

#### 71111.19 - Post-Maintenance Testing

##### Post-Maintenance Test Sample (IP Section 03.01) (3 Samples)

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

- (1) Work Order (WO) 122262217, Perform a clam and mic inspection on 2A2 CCS Heat Exchanger, on April 22, 2022
- (2) WO 122920826, Replace 2B Isophase bus duct cooling fan motor, on May 15, 2022
- (3) WO 122973254, CCS and AFW Pump Cooler A-A – Replace Cooler Coil, on June 6, 2022

#### 71111.22 - Surveillance Testing

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

##### Surveillance Tests (other) (IP Section 03.01) (3 Samples)

- (1) 1-SI-SXP-003-201.A, Motor Driven Auxiliary Feedwater Pump 1A-A Performance Test, on April 6, 2022
- (2) 2-PI-OPS-047-002.0, Steam Inlet Valve Testing, on April 28, 2022
- (3) 1-PI-OPS-047-723.0, Unit 1 Turbine Trip Block Solenoid Valve Test, on May 4, 2022

##### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) 0-PI-SFT-360-001.0, Flex Pumps Operating Instructions for Maintenance Activities, on June 15, 2022

#### 71114.06 - Drill Evaluation

##### Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

- (1) Emergency preparedness training drill involving an extended loss of all AC power resulting in a general emergency conducted on April 20, 2022



## **OTHER ACTIVITIES – BASELINE**

### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

#### IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 1 (April 2021 through March 2022)
- (2) Unit 2 (April 2021 through March 2022)

#### IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

- (1) Unit 1 (April 2021 through March 2022)
- (2) Unit 2 (April 2021 through March 2022)

#### IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

- (1) Unit 1 (April 2021 through March 2022)
- (2) Unit 2 (April 2021 through March 2022)

### 71152A - Annual Follow-up Problem Identification and Resolution

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

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

- (1) CR 1727625 Resolution of fuel transfer system exceeding overload setpoint needed
- (2) CR 1748187 PRT venting is excessive.

### 71152S - Semiannual Trend Problem Identification and Resolution

#### Semiannual Trend Review (Section 03.02) (1 Sample)

- (1) The inspectors reviewed the licensee's corrective action program for potential adverse trends with the long-term installation of scaffolding that might be indicative of a more significant safety issue.

### 71153 - Follow Up of Events and Notices of Enforcement Discretion

#### Event Followup (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated the circumstances surrounding a notice of unusual event (NOUE) due to unexpected seismic monitoring alarms and the licensee's response on April 29, 2022.

#### Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated licensee performance in response to Unit 2 failure of the Main Transformer and associated downpower on June 2, 2022.

## **INSPECTION RESULTS**

No findings were identified.

## **EXIT MEETINGS AND DEBRIEFS**

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

- On July 19, 2022, the inspectors presented the integrated inspection results to Mr. Tom Marshall and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	CR 1744025	MODs in the 161KV Switchyard in a degraded state, leading to operator burdens and safety issues	12/24/2021
		CR 1775628	Perform overhaul of 2B Gen Bus Cooling Fan	05/11/2022
	Corrective Action Documents Resulting from Inspection	CR 1775623	Temporary Equipment near B/U Security D/G	05/11/2022
71111.04	Procedures	0-SI-OPS-082-007.W	AC Electrical Power Source Operability Verification	Revision 45
		0-SO-250-2	120 Volt AC Vital Instrument Power System	Revision 75
		1-SO-3-2	Auxiliary Feedwater System	Revision 62
		2-SO-70-1 Attachment 2	Component Cooling Water System "A" Train Power Checklist 2-70-1.02	Revision 10
		2-SO-70-1 Attachment 3	Component Cooling Water System "A" Train Valve Checklist 2-70-1.03	Revision 19
71111.05	Corrective Action Documents Resulting from Inspection	CR 1772110	Several items left in overhead above CCS mezzanine-AB 690	04/26/2022
	Fire Plans	AUX-0-653-00	Pre-Fire Plan Auxiliary Building - El. 653	Revision 9
		AUX-0-690-01	Pre-Fire Plan Auxiliary Building - El. 690 (Unit 1 Side)	Revision 9
		AUX-0-690-2	Pre-Fire Plan Auxiliary Building El. 690 (Unit 2 side)	Revision 9
		AUX-0-714-01	Pre-Fire Plan Auxiliary Building - El. 714 (Col. A1-15, Q-U)	Revision 11
		AUX-0-714-02	Pre-Fire Plan Auxiliary Building - El. 714 (Col. U-X and U1 & U2 Additional Equip. Builds.)	Revision 9
71111.11Q	Miscellaneous	SEG# OPL273E2241	Cycle 22-4 Simulator Exam 1	Revision )
	Procedures	2-PI-ENG-SERC	SERC Verification and Data Reporting of the SQN U2 Main Generator Real and Reactive Power Capability	Revision 4
71111.12	Corrective Action Documents	CR 1712648	USST 1B tap changer not tapping	08/06/2022
		CR 1720709	Aging Management Program Evaluation Needed for 1-AHU-313-642 Fan Housing Corrosion	09/13/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Procedures	0-TPP-DXX-000-100.14	License Renewal Aging Management Program Basis Document Internal Surfaces in Miscellaneous Piping and Ducting Components Program	Revision 2
		0-TPP-DXX-000-100.38	License Renewal Aging Management Program Basis Document Service Water Integrity Program	Revision 0
		NEDP-21	License Renewal Program	Revision 10
		NEDP-21.0.2	License Renewal Activities Prior to Period of Extended Operation	Revision 1
		TI-4	Maintenance Rule Performance Indicator Monitoring, Trending, and Reporting - 10CFR50.65	Revision 38
	Work Orders	WO 121910540	18-inch ERCW Piping Downstream of 2-VLV-67-537A Proactive Mitigation	Revision 0
71111.13	Corrective Action Documents	CR 1775437	DFR work and COA	05/11/2022
		CR 1775447	2B bus duct cooling fan high vibration and noise	05/11/2022
	Procedures	0-GO-16	System Operability Checklists	Revision 32
		0-SI-OPS-082-007.W	AC Electrical Power Source Operability Verification	Revision 45
		NPG-SPP-07.3.4	Protected Equipment	Revision 12
71111.15	Calculations	30-D053-EPM-BVC-052788	Determination of Required ERCW and Air Flow Rates to ESF Room Coolers	Revision 10
	Corrective Action Documents	CR 1778610	Low ERCW flow for the 1A containment spray heat exchanger	05/24/2022
		CR 1778964	OPDP-8 IDO not performed correctly	05/25/2022
	Miscellaneous	ACMP 22-018	Adverse condition monitoring plan (ACMP) for 1A containment spray heat exchanger ERCW flow	06/02/2022
		EWR 22-DEM-067-061	Information to support IDO for CR 1778610	05/25/2022
		SO-22-018	Sequoyah operations department standing order for 1A containment spray heat exchanger	06/02/2022
		SQN Design Criteria SQN-DC-V-21.0	Environmental Design	Revision 30
	Operability Evaluations	CAR 1762356-001	Past Operability Evaluation Documentation for CR 1762356	04/02/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.19		CR 1780764	PDO for A-A CCS and AFW pump area cooler isolated for ERCW leakage	07/05/2022
	Procedures	0-SO-30-10	Auxiliary Building Ventilation System	Revision 72
	Procedures	0-MI-MRR-070-611.0	Component Cooling System Heat Exchanger Maintenance	Revision 16
		0-PI-SFT-067-001.A	ERCW Train A Flow Monitoring	Revision 6
71114.06		0-SI-SXI-000-201.0	ASME Section XI Inservice Pressure Test	Revision 25
	Corrective Action Documents Resulting from Inspection	CR 1772024	Simulator programing, RCS model boundary flow area for CVCS set to 0.0	04/26/2022
	Corrective Action Documents	CR 1773425	On 4/27, PORV tailpipe temperature high alarm received	05/03/2022
		CR 1774563	PORV tailpipe temperature began to rise from 110deg	05/07/2022
71152S		CR 1777618	Tracking CR for ACMP U1 PORV tailpipe temperature	05/19/2022
	Corrective Action Documents	CR 1758645	NRC-identified unsatisfactory housekeeping in Unit 1 el. 690 Pipe Chase	03/01/2022
		CR 1758645	NRC identified unsatisfactory housekeeping in Unit 2 el 690 and 669 pipe chase	03/04/2022
		CR 1768207	Unlabeled Scaffolding in 669 pen room	04/07/2022
		CR 1777740	Housekeeping, Scaffolding Removal, U-2 Aux Instrument Room	05/20/2022
	Corrective Action Documents Resulting from Inspection	CR 1768277	Deficiencies identified with the Scaffold Program at SQN	04/08/2022
	Procedures	MMTP-102	Erection of Scaffolds/Temporary Work Platforms and Ladders	Revision 21