UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 4, 2026

MEMORANDUM TO: Mahmoud Jardaneh, Chief
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

FROM: Ricky A. Vivanco, Project Manager
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

Signed by Vivanco, Ricky
on 05/04/26

SUBJECT: AUDIT SUMMARY FOR THE U.S. NUCLEAR REGULATORY COMMISSION AUDIT OF THE TENNESSEE VALLEY AUTHORITY CLINCH RIVER NUCLEAR SITE, UNIT 1 CONSTRUCTION PERMIT APPLICATION

By memorandum dated July 14, 2025 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25191A113), the U.S. Nuclear Regulatory Commission (NRC) staff issued an audit plan for the Tennessee Valley Authority (TVA) preliminary safety analysis report, exemptions and variances in support of the Clinch River Nuclear Site (CRNS), Unit 1 Construction Permit (CP) Application review.

The NRC started the audit on July 14, 2025. The audit was primarily conducted virtually via TVA's electronic reading room (eRR) and video teleconferences. In addition, a few in-person meetings were held at NRC headquarters in Rockville, Maryland.

An audit exit meeting was held on March 30, 2026. An audit summary is provided as an enclosure to this memo.

Docket No. 05000615

Enclosure:
Audit summary

Cc: GovDelivery (TVA Clinch River Nuclear Site Construction Permit)

CONTACT: Allen Fetter, NRR/DNRL
301-415-8556

Ricky Vivanco, NRR/DNRL
301-415-0021

SUBJECT: AUDIT SUMMARY FOR THE U.S. REGULATORY COMMISSION AUDIT OF THE TENNESSEE VALLEY AUTHORITY CLINCH RIVER CONSTRUCTION PERMIT APPLICATION.
DATED: MAY 4, 2026

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ADAMS Accession No: Pkg: ML26084A488, Memo: ML26084A494
e-concurrence: 20260325-70004

AUDIT SUMMARY FOR THE U.S. REGULATORY COMMISSION AUDIT OF THE TENNESEE VALLEY AUTHORITY CLINCH RIVER CONSTRUCTION PERMIT APPLICATION

1.0 BACKGROUND AND OBJECTIVES

By letters dated April 28, 2025 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML25118A209) and May 20, 2025 (ML25140A062), Tennessee Valley Authority (TVA) submitted both parts of an application for a Construction Permit (CP) for Clinch River Nuclear Unit 1 (CRN-1) at the Clinch River Nuclear Site (CRNS) to the U.S. Nuclear Regulatory Commission (NRC). By letter dated July 9, 2025, the NRC staff sent TVA a letter accepting the CRNS CP application for detailed review (ML25182A151). A notice of the acceptance for docketing was published in the Federal Register on July 15, 2025 (90 FR 31709).

By memorandum dated July 14, 2025 (ML25191A113), the NRC staff issued an audit plan for the TVA preliminary safety analysis report (PSAR), exemptions and variances in support of the CRNS, Unit 1 CP Application review. The audit was primarily conducted remotely via TVA's electronic reading room (eRR) and video teleconferences. In addition, a few in-person meetings were held at NRC headquarters in Rockville, Maryland.

The objective of the audit was to enable an effective and efficient review of the CRNS, Unit 1 CP application. The audit facilitated NRC staff's discussions and review to examine and evaluate information with the intent of gaining understanding, verify information, and/or identify information that will require docketing to support the basis for the staff's regulatory decision. Section 10 of this document provides a list of the docketed responses to questions (questions included) and PSAR markups, as applicable, and their ADAMS accession numbers.

2.0 AUDIT REGULATORY BASIS

The basis for the audit are the regulations in 10 CFR pertinent to the staff's review of the CP application, including 10 CFR 50.34, "Contents of applications; technical information," 10 CFR 50.35, "Issuance of construction permits," 10 CFR 100.20, "Factors to be considered when evaluating sites," 10 CFR 100.21, "Non-seismic site criteria," and 10 CFR 100.23, "Geologic and seismic siting criteria."

3.0 AUDIT LOCATION AND DATES

The audit was primarily conducted remotely via TVA's eRR and video teleconferences and in the following locations:

NRC Headquarters
One White Flint North
11545 Rockville Pike
Rockville, Maryland 20852-2738

The audit started on July 14, 2025, and ended on March 30, 2026.

4.0 AUDIT LOCATION AND DATESDESCRIPTION OF AUDIT ACTIVITIES AND SUMMARY OF OBSERVATIONS

TVA established an eRR on the Certrec platform for document viewing. At the beginning of every week, the NRC staff uploaded audit issues (via secure SharePoint) for TVA to address. Throughout the week TVA posted responses to audit issues in eRR or requested clarification calls. NRC staff held standing meetings with TVA every week to ensure mutual alignment on questions raised in the audit issues and paths forward on adequate responses. If a response and/or proposed PSAR markup was determined to be required, the NRC staff made formal requests for the information to be provided on the docket. As result of the audit discussions and questions, TVA submitted supplements to the application every month. A list of the docketed audit questions and responses and their ADAMS Accession numbers are provided in Section 10 below.

5.0 EXIT BRIEFING

The NRC staff conducted an audit exit meeting via teleconference on March 30, 2026.

6.0 OPEN ITEMS AND PROPOSED CLOSURE PATHS

During the audit, the NRC staff and TVA discussed the audit questions generated by the staff. Most of these audit questions were resolved in the audit. The NRC staff issued requests for additional information (RAIs) for those audit questions not resolved in the audit. Appendix E of the Final Safety Evaluation Report will provide a list of RAIs.

7.0 DEVIATIONS FROM THE AUDIT PLAN

The audit ended March 30, 2026, instead of March 23, 2026, to allow remaining audit questions that were not converted to RAIs.

8.0 REFERENCES

1. Submittal of the Preliminary Safety Analysis Report and Exemptions and Variances in Support of the Clinch River Nuclear Site Construction Permit Application May 20, 2025 (ADAMS Accession No. ML25140A063)

2. “Audit Plan for the Staff Review of the Tennessee Valley Authority Clinch River Nuclear Site, Unit 1 Construction Permit Application,” July 14, 2025 (ADAMS Accession No. ML25191A113)

9.0 AUDIT DOCUMENTS

Primarily, the staff audited documents via TVA’s eRR related to technical information found in the PSAR. The table below lists documents that were reviewed by the staff

Document Number	Document Title	Revision/Date
BV CRN 413227.58.0121.0000	Site Hazardous Substance Screening for CRHA	REV 0

Document Number	Document Title	Revision/Date
BV CRN 413227.58.0121.0001	Separation Distance for Hydrogen Storage Cylinders	REV 0
BV CRN 413227.58.0121.0002	Control Room Habitability Analysis – CRN Site	Rev. 0
BV CRN 415844.58.0121.0000	Clinch River Offsite Chemical Hazards	REV 0
BV CRN 415844.58.0121.0001	Clinch River Offsite Transportation Hazards	REV 0
BV CRN 415844.58.0121.0002	Aircraft Hazard Analysis	REV 0
Ref_ 2.5.1-340	2023 CRN Site Investigation Data Analysis Report	Rev.0
Ref 2.5.1-341	S&ME Data Report	Rev C DRAFT
REF_2.5.2_150_OAK001-PR-02	Probabilistic Seismic Hazard Analysis (PSHA) Update and Development of Seismic Design Response Spectra	Rev 0
Reference 2.5.2-198	SSHAC Level 2 Seismic Source Characterization Study	Rev 0
A-2.5-9	ESP Permit Conditions and Action Items	
2.5.2-249, GR24-05	RC Testing Report on Rock_CRN	Rev 1
2.5.2-249, GR24-04	Shear Wave Velocity Profiling using the Spectral-Analysis-of Surface Waves (SASW) Method at the CRN site	
GE-HITACHI_ACS_SASSI_NQA_V4-1M-A-AA_IKTR3_4_CoC	Quality Assurance Certificate of Conformance	June 25 2022
DBR-0057949r2	WI-23-400-12-T01_SASSI04P acquisition test report	October 2025
DBR-0066734_Rev1	SASSI04P v4.3.4-S Testing Design Basis Notes	September 2025
DBR-0087606r2	Effect of Residual Stresses Due to Rolling for the Curved Steel Sections for RB and SCCV on the Overall Stress State	Rev 2
DBR-0073007r0	Fire Rating Resistance of BWRX 300 Diaphragm Plates Steel Composite (DP-SC) System	Rev 0
172-GE-cofc	Certificate of Conformance	September 2016
DBR-0025738	ANSYS 172 Level 2 - Mechanical	Rev 1
004N9801	GVH Reactor Drawing	Rev 1
PAT_ANSYS17P_Mech Static	Mechanical APDL	Rev 0
NEDC-34045P	BWRX-300 GNF2 Fuel Bundle Information Report for Equilibrium 12-Month Cycle	Rev 0
NEDC-34044P	BWRX-300 GNF2 Equilibrium 12 Month Cycle Nuclear Design Report	Rev 0
NEDC-34041P	GNF2 Fuel Assembly Mechanical Design	Rev 0

Document Number	Document Title	Revision/Date
	Report	
NEDC-34042P	BWRX-300 GNF2 Fuel Assembly Thermal-Mechanical Design Report	Rev 0
NEDC-33270P	GNF2 Advantage Compliance with GESTAR II	Revision 11
NEDE-21175-3-P	BWR Fuel Assembly Evaluation of combined Safe Shutdown (SSE) and Loss-of-Coolant Accident LOCA Loadings	Amendment No. 3 October 1984
NEDE-21354-2-P	BWR Fuel Channel Mech Design and Deflections	Amendment No. 2 July 1977
NEDE-23542-P	Fuel Assembly Evaluation of Shipping-Handling Loads	March 1977
NEDE-24011-P-A-31	General Electric Standard Application for Reactor Fuel (GESTAR II)	November 2020
007N4419r1	Control Rod Design Spec	Rev 1
NEDC-34039P	BWRX-300 GNF2 Steady State Nuclear Methods - TGBLA06-PANAC11 Application Methodology	Rev 0
NEDC-34040P	BWRX-300 GNF2 Fuel Assembly Pressure Drop Characteristics	Rev 0
DBR-0064207r2	System G12 Control Rod Drive System FMEA	Rev 2
DBR-0087339r0	Component FMCRD FMEA	Rev 0
DBR-0058803r2	BWRX-300 LOCA Conservative Cases for Standard Plant PSAR Input	Rev 2
NEDC-34349P	BWRX-300 DNNP Licensing Considerations from Joint Report	Rev 0
DBR-0055078r0	PCCS Performance Characteristics Sensitivity Study	Rev 0
DBR-0076432	PSA Fail-to-Scram Probability and Frequency Calculations	Rev 0
DBR-0052031	BWRX-300 Probabilistic Safety Analysis Systems Analysis	Rev F
DBR-0050343	BWRX-300 Probabilistic Safety Assessment Data Analysis	Rev F
008N5511r1	BWRX-300 Noble Gas Effluent Dose for CRN-1	Rev 1
007N1078r2	Annual Average Gaseous Effluent Releases for the BWRX-300 Standard Plant	Rev 2
007N1460r3	BWRX-300 Annual Average Liquid Effluent Activity Releases	Rev 3
006N7202	OGS Diagram	Rev 1
005N9751	BWRX-300 General Description	Revision F
006N2915	BWRX-300 PSA Methodology	Revision 0
DBR 0051003	Dependency Matrix - BWRX-300 Systems	Revision B
005N3081	Design Control of PRA Attributes - BWRX-300	Revision A
DBR-0050184	Event Trees - BWRX-300	Revision E
007N4637	External Hazard Screening -TVA Clinch River	Revision 1

Document Number	Document Title	Revision/Date
006N7387	High-Wind Scoping Analysis Report - BWRX-300	Revision A
DBR-0050275	Initiating Events Analysis - BWRX-300	Revision D
006N7483	Internal Fire Scoping Evaluation - BWRX-300	Revision B
006N7940	Internal Flood PSA - BWRX-300	Revision B
006N9865	Internal Hazards Screening for BWRX-300 PSA	Revision A
DBR-0052085	Full Power L1 Internal Events Quantification-BWRX-300	Revision C
006N7608	Level 2 PSA BWRX-300	Revision B
DBR-0066213	Low Power and Shutdown PSA Model Results and Insight- BWRX-300	Rev A
DBR-0050343	PSA Data Analysis_BWRX-300	Revision C
008N0504	PSA Summary - TVA-Clinch River Nuclear Site Unit 1	Revision 1
DBR-0052031	PSA System Notebooks & System Reliability	Revision E
DBR-0071331	PSA Uncertainty & Sensitivity for Level 1 - BWRX-300	Revision A
006N7493	Scoping Seismic PSA for the BWRX-300	Revision B
007N6885	Severe Accident Analysis DEC-SA Selection - BWRX-300	Revision A
008N847	BWRX Acronym List	
DBR-0065404	Fuel and Heavy Load Movements Probabilistic Safety Assessment	Rev A
006N5339	Spent Fuel Pool PSA - BWRX-300	Revision A
	Fault List	2024
DBR-0058729	BWRX-300 Transient Analysis - Reactivity Increase Events	Rev 0
DBR-0057953R0	BWRX-300_TRACG Basedeck	Rev 0
DBR-0058589R0	BWRX-300 Transient Analysis - Temperature Decrease (TD) Events	Rev 0
006N9004r0.pdf	BWRX-300 Deterministic Safety Analysis Performance Requirements	Rev 0
DBR-0060800-R0	BWRX-300 Transient Analysis - Pressure Increase (PI) Events	Rev 0
009N9061r0	BWRX-300 Standard Design Containment Fission Product Removal Evaluation Model	Rev 0
007N6579r0	Onsite Atmospheric Dispersion for the BWRX-300 Clinch River Nuclear Site	Rev 0
009N8417r1	TVA CRN Offsite Atmospheric Dispersion Factors	Rev 1
DBR-0071451r1	BWRX-300 Short-term Onsite Atmospheric Dispersion Factors Appendix A	Rev 1
007N4637r3	External Hazards Screening	Rev 3

10.0 DOCKETED RESPONSES TO AUDIT QUESTIONS

By letters dated October 1, 2025 (package ML25275A435), October 30, 2025 (package ML25303A102), December 2, 2025 (package ML25336A281), January 7, 2026 (package ML26007A162), February 4, 2026 (package ML26035A330), March 2, 2026 (package ML26061A094) and April 1, 2026 (package ML26091A344), TVA voluntarily supplemented the CP Application resulting from discussions held during the audit. The list below contains the breakdown by questions from the NRC staff and the applicant's docketed answers. The questions numbers represent the Chapter and Sections (I.e. A-Ch.Sec-#)

Question Number	Package with response
A-2.5-10	ML26061A094
A-2.5-11	ML26091A344
A-2.5-12	ML26091A344
A-2.5-13	ML26091A344
A-2.5-14	ML26091A344
A-2.5-15	ML26091A344
A-2.5-16	ML26091A344
A-2.5-17	ML26091A344
A-2.5-18	ML26091A344
A-2.5-19	ML26091A344
A-2.5-20	ML26091A344
A-2.5-21	ML26091A344
A-2.5-22	ML26091A344
A-2.5-23	ML26091A344
A-2.5-24	ML26091A344
A-2.5-25	ML26061A094
A-2.5-26	ML26091A344
A-2.5-27	ML26091A344
A-2.5-9	ML25336A281
A-3.10-1	ML25303A102
A-3.10-2	ML25336A281
A-3.11-2	ML26007A162
A-3.5-2	ML26091A344
A-3.5-4	ML26035A330
A-3.5-5	ML25303A102
A-3.5-6	ML25303A102
A-3.5-7	ML25336A281
A-3.5-8	ML26007A162
A-3.6-1	ML26007A162
A-3.6-2	ML26035A330
A-3.6-3	ML26035A330
A-3.6-4	ML26035A330
A-3.6-5	ML26007A162

Question Number	Package with response
A-3.7-1	ML25303A102
A-3.7-2	ML25336A281
A-3.7-3	ML25303A102
A-3.7-4	ML26035A330
A-3.7-5	ML25303A102
A-3.7-6	ML25303A102
A-3.7-7	ML26061A094
A-3.8-1	ML25303A102
A-3.8-2	ML26091A344
A-3.8-3	ML26007A162
A-3.8-4	ML26007A162
A-3.8-5	ML25336A281
A-3.8-6	ML25336A281
A-3.8-7	ML26035A330
A-3.8-8	ML26007A162
A-3.8-8F	ML26035A330
A-3.9.2-1	ML26091A344
A-3.9.2-2	ML26035A330
A-3.9.2-3	ML26035A330
A-3.9-1	ML25275A435
A-3.9-4	ML26007A162
A-3.9-5	ML26035A330
A-3A-1	ML25303A102
A-3B-1	ML25336A281
A-3C-1	ML26061A094
A-3F-1	ML26061A094
A-4.2-10	ML26091A344
A-4.2-14	ML26091A344
A-4.2-18	ML26091A344
A-4.2-19	ML26091A344
A-4.2-21	ML26091A344
A-4.2-25	ML26091A344
A-4.2-7	ML26091A344
A-4.3-1	ML26091A344
A-4.3-2	ML25275A435
A-4.3-3	ML26091A344
A-4.3-6	ML26007A162
A-4.4-6	ML26007A162
A-4.5-1	ML25275A435
A-4.5-2	ML25275A435
A-4.5-3	ML25336A281
A-4.6-1	ML26061A094

Question Number	Package with response
A-4.6-2	ML26061A094
A-4.6-3	ML26061A094
A-4.6-5	ML26091A344
A-4A-1	ML25275A435
A-5.2.3-1	ML25275A435
A-5.2.3-2	ML25275A435
A-5.2.3-3	ML25275A435
A-5.2-4	ML25275A435
A-5.2-6	ML25303A102
A-5.4-3	ML26007A162
A-5.4-5	ML26091A344
A-6.1-1	ML26061A094
A-6.1-2	ML26007A162
A-6.2-15	ML26035A330
A-6.2-16	ML26091A344
A-6.2-17	ML26061A094
A-6.2-5	ML25303A102
A-6.2-6	ML25303A102
A-6.2-7	ML25303A102
A-6.3-1	ML26007A162
A-6.3-3	ML26007A162
A-6.6-1	ML26007A162
A-8.1-1	ML25275A435
A-8.1-2	ML25275A435
A-8-10	ML26007A162
A-8-13	ML26007A162
A-8-14	ML26007A162
A-8-15F	ML26035A330
A-8-16	ML26061A094
A-8-17	ML26035A330
A-8-18	ML26035A330
A-8-19	ML26061A094
A-8-20	ML26061A094
A-8-4	ML26007A162
A-8-5	ML25303A102
A-8-6	ML25303A102
A-8-7	ML26061A094
A-8-8	ML26061A094
A-8-9	ML26007A162
A-9.1-10	ML26035A330
A-9.1-6	ML25303A102
A-9.1-7	ML25303A102

Question Number	Package with response
A-9.1-8	ML25303A102
A-9.1-9	ML26035A330
A-9.2-10	ML26035A330
A-9.2-3	ML25336A281
A-9.2-4	ML26035A330
A-9.2-5	ML26035A330
A-9.2-6	ML26007A162
A-9.2-7	ML26007A162
A-9.2-8	ML26007A162
A-9.2-9	ML26007A162
A-9.3-3	ML26061A094
A-9.3-5	ML26061A094
A-9.3-6	ML26061A094
A-9.3-7	ML26061A094
A-9.5-1	ML25336A281
A-9.5-2	ML25336A281
A-9.5-3	ML25336A281
A-10.2-1	ML25336A281
A-10.2-2	ML25336A281
A-10.2-3	ML26091A344
A-10.4-2F	ML26035A330
A-11.2-3	ML25336A281
A-11.2-4	ML26007A162
A-11.3-1	ML26007A162
A-11.4-1	ML26007A162
A-12.2-1	ML25275A435
A-12.2-3	ML26091A344
A-12.2-4F	ML26035A330
A-12.3-1	ML26007A162
A-12.3-2	ML26061A094
A-12.5-1	ML26007A162
A-12.5-2	ML26007A162
A-13.1-2	ML26007A162
A-13.1-4	ML26007A162
A-13.2-1	ML26007A162
A-13.3-1	ML26091A344
A-13.3-2	ML26091A344
A-13.7-1	ML25275A435
A-13.7-2	ML25275A435
A-15.1-1	ML26035A330
A-15.2-1	ML26091A344
A-15.2-3	ML26035A330

Question Number	Package with response
A-15.2-4	ML26091A344
A-15.2-5	ML26091A344
A-15.2-6	ML26061A094
A-15.2-7	ML26091A344
A-15.3-1	ML26091A344
A-15.5-1	ML25303A102
A-15.5-11	ML26091A344
A-15.5-12	ML26091A344
A-15.5-15	ML26091A344
A-15.5-16	ML26091A344
A-15.5-17	ML26091A344
A-15.5-19	ML26061A094
A-15.5-24	ML26091A344
A-15.5-25	ML26091A344
A-15.5-27	ML26091A344
A-15.5-28	ML26091A344
A-15.5-30	ML26035A330
A-15.5-31	ML26091A344
A-15.5-32	ML26061A094
A-15.5-33	ML26061A094
A-15.5-35	ML26091A344
A-15.5-4	ML26091A344
A-15.5-7	ML25336A281
A-15.5-8	ML26007A162
A-15.5-9	ML26061A094
A-16.4-1F	ML26035A330
A-17.1-1	ML25275A435
A-17.5-1	ML25275A435
A-17.5-2	ML25275A435
A-17.5-3	ML25275A435
A-17.5-4	ML25303A102