



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

September 15, 2021

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

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2 – REGULATORY
AUDIT IN SUPPORT OF REVIEW OF THE APPLICATION TO ADOPT
RISK-INFORMED EXTENDED COMPLETION TIMES – RITSTF INITIATIVE 4B
(EPID L-2021-LLA-0145)

Dear Sir or Madam:

By letter dated August 5, 2021, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21217A174), Tennessee Valley Authority (the licensee) submitted a license amendment request for Sequoyah Nuclear Plant, Units 1 and 2, respectively. The proposed amendments would modify the plant's Technical Specification requirements to permit the use of risk-informed completion times in accordance with Technical Specification Task Force Traveler TSTF 505, "Provide Risk-informed Extended Completion Times, RITSTF [Risk-Informed Technical Specification Task Force] Initiative 4b."

The U.S. Nuclear Regulatory Commission (NRC) staff has identified the need for a regulatory audit to examine the licensee's non-docketed information with the intent to gain understanding, to verify information, or to identify information that will require docketing to support the basis of the licensing or regulatory decision.

The NRC staff will conduct the audit virtually at NRC Headquarters in Rockville, Maryland, via a licensee-established electronic portal available to NRC staff from approximately September 20, 2021, through March 31, 2022, with formal audit meetings to be scheduled during this period as needed. The detailed audit plan is enclosed with this letter.

J. Barstow

- 2 -

If you have any questions, please contact me at (301) 415-1383 or by e-mail at Perry.Buckberg@nrc.gov.

Sincerely,

/RA/

Perry H. Buckberg, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-327 and 50-328

Enclosure:
Audit Plan

cc: Listserv

REGULATORY AUDIT PLAN
BY THE OFFICE OF NUCLEAR REACTOR REGULATION
TO SUPPORT THE REVIEW OF THE LICENSE AMENDMENT REQUEST
TO ADOPT RISK-INFORMED COMPLETION TIMES
TENNESSEE VALLEY AUTHORITY
SEQUOYAH NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-327 AND 50-328

1.0 BACKGROUND

By letter dated August 5, 2021 (Reference 1), Tennessee Valley Authority (the licensee) submitted a license amendment request (LAR) to amend Renewed Operating License Nos. DPR-77 and DPR-79 for the Sequoyah Nuclear Plant, Units 1 and 2, respectively. The proposed amendment would modify the plant's Technical Specification (TS) requirements to permit the use of risk-informed completion times (RICTs) in accordance with Technical Specification Task Force (TSTF) Traveler TSTF-505, "Provide Risk-informed Extended Completion Times, RITSTF [Risk-Informed Technical Specification Task Force] Initiative 4b" (Reference 2.). These RICTs would apply to certain actions required when limiting conditions for operation are not met.

The staff from the Nuclear Regulatory Commission's (NRC) Office of Nuclear Reactor Regulation (NRR) has initiated its review of the LAR in accordance with NRR Office Instruction LIC-101, "License Amendment Review Procedures" (Reference 3).

2.0 REGULATORY AUDIT BASIS

A regulatory audit is a planned license- or regulation-related activity that includes the examination and evaluation of primarily non-docketed information associated with the LAR. An audit is conducted to gain understanding, to verify information, and to identify information that will require docketing to support the basis of a licensing or regulatory decision. An audit will assist the NRC staff in efficiently conducting its review and gaining insights to the licensee's processes and procedures. Information that the NRC staff relies upon to make the safety determination must be submitted on the docket. This audit will be conducted in accordance with NRR Office Instruction LIC-111, "Regulatory Audits," Revision 1, dated October 2019 (Reference 4), with exceptions noted within this audit plan.

The NRC staff will perform the audit to support its evaluation of whether the licensee's LAR can be approved per Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.90, "Application for amendment of license, construction permit, or early site permit." The staff's review will be informed by NUREG-0800, Standard Review Plan Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis" (Reference 5). The audit will assist the NRC staff with understanding the licensee's proposed program to implement RICTs for certain TSs.

3.0 REGULATORY AUDIT SCOPE AND METHODOLOGY

NRC's objectives of the audit are the following:

- Learn how the licensee's proposed program implements TSTF-505 and conforms to NRC-endorsed guidance in Nuclear Energy Institute (NEI) report NEI 06-09, Revision 0-A, "Risk-Informed Technical Specification Initiative 4b, Risk-Managed Technical Specification Guidelines" (Reference 6).
- Gain a better understanding of the detailed calculations, analyses, and bases underlying the LAR and confirm the staff's understanding of the LAR.
- Gain a better understanding of plant design features and their implications for the LAR.
- Identify any information needed to enable the staff's evaluation of the technical acceptability of the probabilistic risk assessment (PRA) used for this application.
- Identify any information needed to enable the staff's evaluation of whether the proposed changes challenge design-basis functions or adversely affect the capability or capacity of plant equipment to perform design-basis functions.
- Identify questions and requests that may become formal requests for additional information (RAIs) per NRR Office Instruction LIC-115, "Processing Requests for Additional Information" (Reference 7).

The NRC staff will audit the PRA methods that the licensee would use to determine the risk impact from which the revised completion times would be obtained, including the licensee's assessments of internal events (including internal flooding), fire, and seismic probabilistic risk assessments (PRAs). The NRC will also audit the licensee's assessment of risk from other external events, and the licensee's evaluation of defense-in-depth.

4.0 INFORMATION AND OTHER MATERIAL NECESSARY FOR THE AUDIT

The NRC staff will request information and an audit meeting(s) throughout the audit period. The NRC staff will use an "audit items list" to identify the information (e.g., methodology, process information, and calculations) to be audited. The NRC staff will provide the final audit items list as an enclosure to the audit summary report, which will be publicly available. The attachment to this audit plan includes the initial audit items list. Throughout the audit period, the NRC staff will provide the licensee with audit questions and audit-related requests so that the licensee can better prepare for audit discussions with NRC staff. Any information accessed through the licensee's portal will not be held or retained in any way by NRC staff. The NRC staff requests the licensee to have the requested audit information listed in the audit items list to be readily available and accessible for the NRC staff's review via a Web-based portal.

5.0 TEAM ASSIGNMENTS

The audit team will consist of the following NRC staff from NRR and contractors.

- Perry Buckberg, Plant Licensing Branch 2-2 (LPL2-2)
- Ed Miller, LPL2-1
- Todd Hilsmeier, PRA Licensing Branch A (APLA)
- Jigar Patel, APLA
- Thinh Dinh, PRA Licensing Branch B (APLB)
- Naeem Iqbal, APLB
- Bernard Grenier, APLB

- Milton Valentin-Olmeda, PRA Licensing Branch C (APLC)
- De (Wesley) Wu, APLC
- Khadijah West, Technical Specifications Branch (STSB)
- Hanry Wagage, Containment and Plant Systems Branch (SCPB)
- Norbert Carte, Instrumentation and Controls Branch B (EICB)
- Joseph Ashcraft, EICB
- Edmund Kleeh, Electrical Engineering Branch (EEEE)
- Adakou Foli, EEEB
- Summer Sun, Nuclear Systems Performance Branch (SNSB)
- Garill Coles, Pacific Northwest National Laboratory (PNNL)
- Steve Short, PNNL

6.0 LOGISTICS

To support the review schedule communicated to Tennessee Valley Authority (TVA) when the NRC staff accepted the LAR for technical review, audit activities will be performed remotely and virtually using Microsoft Teams, teleconference, and a Web-based portal or other virtual meeting space created by the licensee. NRC information requests and communications with licensee staff will be coordinated through the NRC's licensing project manager.

The virtual audit will begin approximately September 20, 2021, and will last through March 31, 2022. The NRC's entrance meeting with the licensee will likely be in late September 2021. The NRC's licensing project manager will inform the licensee of the entrance and exit meeting dates when they are established. The NRC intends to establish an audit meeting(s) (e.g., a single, multi-day audit meeting; periodic audit meetings throughout the audit period) on mutually agreeable dates and times (to be determined) to discuss information needs and questions arising from the NRC's review of the audited items.

The NRC staff requests the licensee to have the information referenced in Section 4.0 of this audit plan available and accessible for the NRC staff's review via an internet-based portal within 2 weeks of the date of this audit plan. The NRC staff requests that any supplemental information requested be available and accessible for the NRC staff's review within 1 week of the date of the NRC's notification to the licensee of the new requests. The NRC's licensing project manager will inform the licensee via routine communications when the NRC staff no longer needs access to the portal. The NRC staff requests the licensee to notify the review team when an audit item is added to its portal by sending an e-mail to the [review team e-mail address](#)¹ or the NRC licensing project manager.

¹ SequoyahTSTF-505@usnrc.onmicrosoft.com

7.0 SPECIAL REQUESTS

The NRC requests access to requested documents and information through a Web-based portal that allows the NRC staff and contractors to access documents over the Internet. The following conditions associated with the online portal must be maintained while the NRC staff and contractors have access to the online portal:

- The online portal will be password-protected. A separate password will be assigned to each member of the NRC staff and NRC contractors participating in the audit.
- The online portal will prevent the NRC participants from printing, saving, downloading, or collecting any information directly from the online portal.
- Conditions of use of the online portal will be displayed on the login screen and will require acknowledgment by each user.

Username and password and/or other Web-based portal access information should be provided directly to members of the NRC staff and contractors as needed. The NRC licensing project manager will provide the licensee with names and contact information of the NRC staff and contractors participating in the audit. All other communications should be coordinated through the NRC project manager.

8.0 DELIVERABLES

The NRC staff will develop any RAIs, as needed, via NRR Office Instruction LIC-115 and issue such RAIs separately from audit-related correspondence. The NRC staff will issue an audit summary report prior to completing its review of the LAR.

9.0 REFERENCES

1. Letter from James T. Polickoski to the U.S. Nuclear Regulatory Commission, "Sequoyah Nuclear Plant, Units 1 and 2, Renewed Facility Operating License Nos. DPR-77 and DPR-79, NRC Docket Nos. 50-327 and 50-328, License Amendment Request to Revise Technical Specifications to Adopt Risk-Informed Completion Times TSTF-505, Revision 2, 'Provide Risk-Informed Extended Completion Times – RITSTF Initiative 4b' (SQN-TS-20-03)," August 5, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21217A174).
2. TSTF-505, Revision 2, "TSTF Comments on Draft Safety Evaluation for Traveler TSTF-505, 'Provide Risk-Informed Extended Completion Times,' and Submittal of TSTF-505, Revision 2," July 2, 2018 (ADAMS Accession No. ML18183A493).
3. U.S. Nuclear Regulatory Commission, NRR Office Instruction LIC-101, Revision 6, "License Amendment Review Procedures," July 31, 2020 (ADAMS Accession No. ML19248C539).
4. U.S. Nuclear Regulatory Commission, NRR Office Instruction LIC-111, Revision 1, "Regulatory Audits," October 31, 2019 (ADAMS Accession No. ML19226A274).
5. U.S. Nuclear Regulatory Commission, NUREG-0800, "Standard Review Plan," Section 19.2, "Review of Risk Information Used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidance," June 2007 (ADAMS Accession No. ML071700658).

6. Nuclear Energy Institute, NEI 06-09, Revision 0-A, "Risk-Informed Technical Specification Initiative 4b, Risk-Managed Technical Specification Guidelines," November 2006 (ADAMS Accession No. ML12286A322).
7. U.S. Nuclear Regulatory Commission, NRR Office Instruction LIC-115, Revision 1, "Processing Requests for Additional Information," August 9, 2021 (ADAMS Accession No. ML21141A238).

Initial Audit Items List

Item #	Audit Item
1	Reports of full-scope and focused-scope peer reviews, facts and observations (F&Os) closure reviews, and any self-assessments referred to in license amendment request (LAR) Enclosure 2 for the internal events, internal flooding, fire, and seismic probabilistic risk assessments (PRAs) cited in the LAR
2	For the internal events, internal flooding, fire, and seismic PRAs, plant-specific documentation (e.g., uncertainty notebooks) related to: <ul style="list-style-type: none"> a. The review of the PRA model assumptions and sources of uncertainty (generic and plant-specific assumptions/uncertainties) b. Identification of key assumptions and sources of uncertainty for this LAR c. Parametric uncertainty and state-of-knowledge correlation evaluation
3	PRA notebooks for the modeling of FLEX equipment and FLEX human error probabilities credited in the PRAs
4	PRA notebook(s) for the Reactor Protection System pertaining to modeling of the Eagle 21 digital control system, including basis for the representative failure probability
5	Documentation of how shared or cross-tied systems are modeled in the PRA
6	Sequoyah fire PRA notebooks containing the results of the fire PRA
7	If available, the primary document(s) supporting the revised Sequoyah Units 1 and 2 warning time analysis to reconfirm that the external flooding hazard can be screened out using screening criterion C5 (or using the criteria of Section 6-2-3 of ASME/ANS RA-Sa-2009 if external flooding cannot be screened as a slow-moving event).
8	If modeled, the PRA notebooks associated with the modeling of Open Phase Condition (OPC) in electrical switchyards and the Open Phase Isolation System (OPIS).
9	Documentation supporting the development of the real-time risk tool and benchmarking it against the PRA
10	Documentation supporting the example risk informed completion times (RICT) calculations presented in LAR Enclosure 1, Tables E1-2 and E1-3
11	Plant and PRA configuration control procedures
12	Any draft or final RICT program procedures (e.g., for risk management actions, PRA functionality determination, and recording limiting conditions for operation)
13	Plant procedures related to risk management actions for the electrical power systems, if available
14	Relevant design documentation (e.g., single line diagrams of the electrical power distribution systems and piping and instrumentation diagrams)
15	Design details of systems shared or cross-tied between Units 1 and 2, including electrical and mechanical systems
16	Other documentation that the licensee determines to be responsive to the staff's information requests

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OFFICE	NRR/DORL/LPLII-2/PM	NRR/DORL/LPLII-2/LA	NRR/DRA/APLA/BC	NRR/DRA/APLB/BC
NAME	PBuckberg	RButler	RPascarelli	JWhitman
DATE	9/9/2021	9/9/2021	9/2/2021	9/9/2021
OFFICE	NRR/DRA/APLC	NRR/DEX/EICB/BC	NRR/DEX/EEEEB/BC	NRR/DSS/SNSB/BC
NAME	SRosenberg	MWaters	SRay	SKrepel (RBeaton for)
DATE	9/9/2021	9/9/2021	9/9/2021	9/10/2021
OFFICE	NRR/DSS/SCPB/BC	NRR/DSS/STSB/BC (A)	NRR/DORL/LPLII-2/PM	NRR/DORL/LPLII-2/BC
NAME	BWittick	NJordan	PBuckberg	DWrona
DATE	9/9/2021	9/9/2021	9/15/2021	9/15/2021

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