



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

June 15, 2021

Mr. Kevin Cimorelli  
Site Vice President  
Susquehanna Nuclear, LLC  
769 Salem Boulevard  
NUCSB3  
Berwick, PA 18603-0467

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 –  
REGULATORY AUDIT PLAN IN SUPPORT OF LICENSE AMENDMENT  
REQUEST TO REVISE TECHNICAL SPECIFICATIONS TO ADOPT RISK-  
INFORMED COMPLETION TIMES (EPID L-2021-LLA-0062)

Dear Mr. Cimorelli:

By letter PLA-7897 dated April 8, 2021, Susquehanna Nuclear, LLC (the licensee) requested to amend license No. NPF-14 and NPF-22 for Susquehanna Steam Electric Station, Units 1 and 2, respectively, to adopt Technical Specifications Task Force (TSTF) Traveler 505 (TSTF-505), "Provide Risk-informed Extended Completion Times, RITSTF Initiative 4b," to permit the use of risk-informed technical specification completion times for certain actions required when limiting conditions for operation are not met.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's application and determined that a regulatory audit would assist in the timely completion of the review. The NRC staff will conduct a regulatory audit to support its review in accordance with the enclosed audit plan. A regulatory audit is a planned activity that includes the examination and evaluation of primarily non-docketed information.

The NRC staff will conduct the audit to increase its understanding of the application and identify information that will require docketing to support the NRC staff's regulatory findings. The NRC staff will conduct the audit virtually from approximately June 28 through December 31, 2021.

If you have any questions, please contact me at (301) 415-0489 or by e-mail at [Audrey.Klett@nrc.gov](mailto:Audrey.Klett@nrc.gov).

Sincerely,

*/RA/*

Audrey L. Klett, Senior Project Manager  
Plant Licensing Branch I  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure:  
Audit Plan

cc: Listserv

REGULATORY AUDIT PLAN  
BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
IN SUPPORT OF LICENSE AMENDMENT REQUEST TO REVISE  
TECHNICAL SPECIFICATIONS TO ADOPT RISK-INFORMED COMPLETION TIMES  
SUSQUEHANNA NUCLEAR, LLC  
SUSQUEHANNA STEAM ELECTRIC STATIONS, UNITS 1 AND 2  
DOCKET NOS. 50-387 AND 50-388

1.0 BACKGROUND

By letter PLA-7897 dated April 8, 2021 (Reference 1), Susquehanna Nuclear, LLC, (the licensee) submitted a license amendment request (LAR) to amend license Nos. NPF-14 and NPF-22 for Susquehanna Steam Electric Station, 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 **Error! Reference source not found.**). 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's) 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 information of primarily non-docketed information. 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 request 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 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 assessments of internal events (including internal flooding) and fire PRAs. The NRC will also audit the licensee's quantification of risk from significant external events, whether the licensee uses PRA or bounding methods, 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 interviews 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 and the subjects of requested interviews and meetings. 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, the NRC staff will supplement this list 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 will use the audit items list to support the periodic audit meetings with the licensee, which the NRC staff will schedule as needed. 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.

- Audrey Klett, Plant Licensing Branch 1 (LPL1)
- Brent Ballard, LPL1
- Malcolm Patterson, PRA Licensing Branch A (APLA)
- Todd Hilsmeier, APLA
- Naeem Iqbal, PRA Licensing Branch B (APLB)

- Bernard Grenier, APLB
- Charles Moulton, APLB
- Keith Tetter, PRA Licensing Branch C (APLC)
- Sunwoo Park, APLC
- Nadim Khan, Electrical Engineering Branch (EEEE)
- Khoi Nguyen, EEEB
- Ming Li, Instrumentation and Controls Branch B (EICB)
- Jack Zhao, EICB
- Gurjendra Bedi, Mechanical Engineering and Inservice Testing Branch (EMIB)
- Kaihwa Hsu, EMIB
- Harry Wagage, Containment and Plant Systems Branch (SCPB)
- Ahsan Sallman, Nuclear Systems Performance Branch (SNSB)
- Khadijah West, Technical Specifications Branch (STSB)
- Mark Wilk, Pacific Northwest National Laboratory (PNNL)
- Garill Coles, PNNL
- Steve Short, PNNL

## 6.0 LOGISTICS

To support the schedule established when the NRC staff accepted the LAR for technical review, , audit activities will be performed remotely and virtually using Microsoft Teams, teleconference, and any Web-based portals or meeting spaces created by the licensee. NRC information requests and communications with licensee staff will be coordinated through the NRC's licensing project manager.

The audit will occur June 28 through December 31, 2021. The NRC's entrance meeting with the licensee will likely be in late June 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 periodic (e.g., biweekly) meetings 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 two 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 one 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](#)<sup>1</sup> or the NRC licensing project manager.

## 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:

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<sup>1</sup> [SusquehannaTSTF-505@usnrc.onmicrosoft.com](mailto:SusquehannaTSTF-505@usnrc.onmicrosoft.com)

- 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 information should be provided directly to members of the NRC staff and contractors. The NRC licensing project manager will provide the licensee 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 K. Cimorelli to the U.S. Nuclear Regulatory Commission, "Susquehanna Steam Electric Station Proposed Amendment to Licenses NPF-14 and NPF-22: 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' PLA-7897," April 8, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21098A206)
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, "Processing Requests for Additional Information," November 6, 2019 (ADAMS Accession No. ML19242B237)

**AUDIT ITEMS LIST**  
**SUSQUEHANNA UNITS 1 AND 2 TSTF-505 LICENSE AMENDMENT REQUEST**

ITEM #	AUDIT REQUEST
1	Near-term (i.e., late June or early July 2021): Presentation of an overview of the risk-informed completion time (RICT) program procedures, including those for determining risk management actions, a demonstration of the process for calculating RICTs (including use of the configuration risk management program tool), and a demonstration of how to use the licensee's Web-based portal.
2	Results of the fire probabilistic risk analysis (PRA)
3	Reports of full-scope and focused-scope peer reviews (and F&O closure reviews referred by date in LAR Enclosure 2, Sections 3, 4, and 5) and any self-assessment performed for the internal events, internal flooding, and fire PRAs cited in the license amendment request (LAR)
4	Closure reports on facts and observations (F&Os) from these assessments
5	For the internal events, internal flooding, and fire PRAs, plant-specific documentation (e.g., uncertainty notebooks) related to: <ul style="list-style-type: none"> <li>a. The review of the PRA model assumptions and sources of uncertainty</li> <li>b. Identification of key assumptions and sources of uncertainty for the application</li> </ul>
6	PRA notebooks for the modeling of FLEX equipment and FLEX human error probabilities credited in the PRA
7	Documentation supporting the example RICT calculations presented in LAR, Enclosure 1, Table E1-2
8	Any draft or final RICT program procedures (e.g., for risk management actions, PRA functionality determination, and recording limiting conditions for operation)
9	Plant and PRA configuration control procedures
10	Documentation supporting the development of the real-time risk tool and benchmarking it against the PRA
11	Relevant design documentation, e.g., single line diagrams of the electrical power distribution systems and piping and instrumentation diagrams
12	Design details of systems shared or cross-tied between Units 1 and 2, including electrical and mechanical systems
13	Documentation of how shared or cross-tied systems are modeled in the PRA
14	The following documents referenced in the SSES LAR, if not already identified: <ul style="list-style-type: none"> <li>a. Susquehanna Calculation EC-RISK-0043, "Technical Adequacy of the SSES PRA Models – Probabilistic Risk Assessment," Revision 1, dated December 7, 2020</li> <li>b. Susquehanna Calculation EC-RISK-0040, "Summary and Quantification of Model SSES19R011 – Full Power Internal Events Probabilistic Analysis (FPIE)," Revision 0, dated August 3, 2020</li> <li>c. Susquehanna Calculation EC-RISK-0056, "Assessment of Key Assumptions and Sources of Uncertainty for Risk-Informed Applications," Revision 0, dated February 8, 2021</li> <li>d. Appendix B of the roadmap document (NQPA-B-NA-009)</li> <li>e. Results Notebook (PA-BNA-232)</li> <li>f. Parametric uncertainty notebooks for internal events, internal flooding, and fire PRAs</li> </ul>
15	All primary Susquehanna fire PRA notebooks

ITEM #	AUDIT REQUEST
16	<p>The following calculations:</p> <ul style="list-style-type: none"><li>a. Susquehanna Calculation EC-RISK-0048, "Fire PRA Interim Model OCT17R2F1 Quantification and Sensitivity – Fire Probabilistic Risk Analysis (FPRA)," Revision 0, dated September 22, 2020.</li><li>b. Susquehanna Calculation EC-RISK-0046, "Seismic CDF and LERF Estimate for TSTF-505 (RICT) Program – Seismic Margin Analysis for Risk Informed Applications," dated August 28, 2020.</li><li>c. Susquehanna Calculation EC-RISK-0045, "High Confidence Low Probability Failure (HCLPF) Value for the Seismic Penalty Calculation – Seismic Margin Analysis for Risk Informed Applications," dated August 28, 2020.</li><li>d. Susquehanna Calculation EC-RISK-0047, "External Hazards Assessment – SSES External Hazards Assessment for Risk Informed Applications," Revision 0, dated August 28, 2020.</li><li>e. Susquehanna Calculation EC-093-1023, "Turbine Missile Probability Analysis for Susquehanna Unit 1 &amp; 2," Revision 3, dated August 29, 2014.</li></ul>
17	Other documentation that the licensee determines to be responsive to the staff's information requests
18	Additional justification for adding "following isolation" in the completion times for Actions A.2, C.2, and D.2 in TS 3.6.1.3.
19	Load list for each safety-related bus
20	Plant procedures related to the risk management action for the electrical power systems, if available



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**ADAMS Accession No.: ML21153A137**

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