



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

October 7, 2022

Ms. Cheryl A. Gayheart  
Regulatory Affairs Director  
Southern Nuclear Operating Co., Inc.  
3535 Colonnade Parkway  
Birmingham, AL 35243

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 – REGULATORY  
AUDIT IN SUPPORT OF REVIEW OF THE APPLICATION TO ALLOW USE OF  
LEAD TEST ASSEMBLIES FOR ACCIDENT-TOLERANT FUEL  
(EPID L-2022-LLA-0097)

Dear Ms. Gayheart:

By letter dated June 30, 2022 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML22181B156), Southern Nuclear Operating Company (SNC, the licensee) submitted a license amendment request (LAR) for Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. The proposed LAR would allow the use of lead test assemblies (LTAs) for accident-tolerant fuel (ATF).

The U.S. Nuclear Regulatory Commission (NRC) staff has identified the need for a regulatory audit to examine the SNC'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 via Teams using a licensee-established electronic portal available to NRC staff from approximately December 1, 2022, through January 31, 2023, with formal audit meetings to be scheduled during this period as needed. The NRC staff reserves the right to extend the audit, if necessary. The detailed audit plan is enclosed with this letter.

C. Gayheart

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If you have any questions, please contact me at (301) 415-3100 or by e-mail at [John.Lamb@nrc.gov](mailto:John.Lamb@nrc.gov).

Sincerely,

*/RA/*

John G. Lamb, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

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 ALLOW LEAD TEST ASSEMBLIES FOR ACCIDENT-TOLERANT FUEL

SOUTHERN NUCLEAR OPERATING COMPANY

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

### 1.0 BACKGROUND

By letter dated June 30, 2022 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML22181B156), Southern Nuclear Operating Company (SNC, the licensee) submitted a license amendment request (LAR) for Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. The proposed LAR would allow the use of lead test assemblies (LTAs) for accident tolerant fuel (ATF).

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" (ML19248C539).

### 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 (ML19226A274), with exceptions noted within this audit plan.

The NRC staff will perform the audit to support its evaluation of whether SNC'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 NRC 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" (ML071700658). The audit will assist the NRC staff with understanding the licensee's proposed ATF LTAs LAR.

### 3.0 REGULATORY AUDIT SCOPE AND METHODOLOGY

NRC's objectives of the audit are the following:

- Gain a better understanding of the detailed calculations, analyses, and bases underlying the LAR and confirm the NRC staff's understanding of the LAR.

Enclosure

- 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 basis used for this application.
- Identify any information needed to enable the NRC 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" (ML21141A238).

The NRC staff will audit the technical information and methods that the licensee used to determine the impact on the plant, 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 SNC 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.

- John G. Lamb, Division of Operating Reactor Licensing (DORL)/Plant Licensing Branch 2-1 (LPL2-1)
- Ed Miller, DORL/LPL2-1
- Kristy Bucholtz, Division of Risk Assessment (DRA)/Probabilistic Risk Assessment (PRA) Oversight (APOB)
- Josh Whitman, Division of Safety Systems (DSS)/Nuclear Methods and Fuel Branch (SFNB)
- Kent Wood, DSS/SFNB
- Charley Peabody, DSS/Nuclear Systems Performance (SNSB)
- Joshua Wilson, DSS/Technical Specifications Branch (STSB)
- Matt Hamm, DSS/STSB
- Henry Wagage, DSS/Containment and Plant Systems Branch (SCPB)
- Nageswara Karipineni, DSS/SCPB
- David Garmon-Candelaria, DRA/Radiation Protection and Consequence Branch (ARCB)

The audit team will consist of the following NRC staff from the Office of Nuclear Material Safety and Safeguards (NMSS).

- Pierre Saverot, Division of Fuel Management (DFM)/Storage and Transportation Licensing Branch (STLB)

- Donald Palmrose, Division of Rulemaking, Environmental, and Financial Support (REFS)/Environmental Review New Reactors Branch (ENRB)
- Rao Tammara, REFS/ENRB
- Brian Glowacki, REFS/ENRB

## 6.0 LOGISTICS

To support the review schedule communicated to SNC 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. The NRC staff information requests and communications with licensee staff will be coordinated through the NRC's licensing project manager.

A desktop audit will take place between December 1, 2022, and January 31, 2023. 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 a three-day virtual audit meeting via Microsoft Teams on mutually agreeable dates and times, tentatively scheduled for the week of December 5, 2022, to discuss information needs and questions arising from the NRC's review of the audited items. The NRC staff may change and/or add audit dates and times, or extend the audit, if necessary. Audit meeting agenda and questions will be sent in advance of the audit meeting.

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 by November 1, 2022, so the NRC staff has sufficient time to review the documents before the audit starts on December 1, 2022. 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 NRC's licensing project manager when an audit item is added to its portal by sending an e-mail to 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:

- 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.

Initial Audit Items List

Item #	Audit Item
1	The Westinghouse evaluation discussed in the Non-LOCA (loss-of-coolant accident) Transients in Section 3.4. The third paragraph of that section references a Westinghouse evaluation to address the potential effects of the LTAs on non-LOCA transient events, and then lists five conclusions of that evaluation.
2	The evaluation performed to determine the impact from LTAs on the unfavorable exposure time in the anticipated transient without scram (ATWS) probabilistic risk assessment (PRA) model.
3	The evaluation, described in paragraph 1 of Section 3.1, to determine the impact of 16 higher enrichment lead test rods (four LTAs, each with four higher enrichment fuel rods) on the core radionuclide inventory used for radiological/dose consequences.
4	The evaluation, described in paragraph 4 of Section 3.1, comparing the core inventory for a core design implementing LTAs and the core inventory used for radiological/dose consequences.
5	<p>The evaluations supporting the following conclusions in Section 3.4</p> <ul style="list-style-type: none"> <li>• It has been confirmed that inclusion of the LTAs does not increase the amount of fuel damage considered in the radiological consequences analyses of the locked rotor or rod ejection accident in the analyses of record, i.e., 5% for locked rotor with no fuel melting and 10% for rod ejection with melting limited to less than the innermost 10% of the fuel pellet at the hot spot (LR, CRE).</li> <li>• It has been confirmed that the LTAs do not impact the core average nuclide activities used to determine the activity released from fuel assumed to fail following a locked rotor, rod ejection accident, or LOCA (LR, CRE, LOCA).</li> <li>• The activities of dose significant radionuclides postulated for release in a fuel handling accident (FHA) involving the LTAs (e.g., Xe-133, Xe-135, I-131, I-132, I-133) are bounded by the activities of the same radionuclides in the existing FHA analyses.</li> </ul>
6	The Analysis of Record Criticality Safety Analysis documents, and any Criticality Safety Analysis or evaluations performed to support the LAR.
7	Analyses and any supplemental information related to the emissivity of coated cladding during a LOCA. Specifically, analyses related to how the emissivity changes with time during a LOCA or the net effect of a reduction in emissivity on PCT.
8	Analyses and documentation, if any, demonstrating compliance with L&C 1 of WCAP-18482-P, requiring licensees to demonstrate that control rod ejection analytical models, methods, and acceptance criteria are applicable to fuel designs containing ADOPT pellets and capture all relevant fuel burnup and cladding corrosion related phenomena.

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(EPID L-2022-LLA-0097) DATED OCTOBER 7, 2022

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RidsNrrDraApla Resource	RTammara, NRR
RidsNrrDraAplc Resource	DGarmon-Candelaria, NRR
KWood, NRR	
JWhitman, NRR	
NKariipineni, NRR	

**ADAMS Accession No.: ML22103A253**

OFFICE	NRR/DORL/LPLII-2/PM	NRR/DORL/LPLII-2/LA	NRR/DSS/SNSB/BC	NRR/DSS/SCPB/BC
NAME	JLamb	KGoldstein	DWoodyatt	BWittick
DATE	9/19/2022	09/21/2022	9/20/2022	9/19/2022
OFFICE	NRR/DRA/APOB	NRR/DSS/STSB/BC	NRR/DRA/ARCB	NRR/DSS/SFNB/BC
NAME	AZoulis	VCusumano	KHsueh	SKrepel
DATE	9/22/2022	9/22/2022	9/27/2022	10/6/2022
OFFICE	NRR/DORL/LPLII-2/BC	NRR/DORL/LPLII-2/PM		
NAME	SWilliams (MMarkley for)	JLamb		
DATE	10/7/2022	10/7/2022		

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