



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

June 6, 2025

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

FROM: Prosanta Chowdhury, Senior Project Manager **/RA/**  
New Reactor Licensing Branch  
Division of New and Renewed Licenses  
Office of Nuclear Reactor Regulation

SUBJECT: AUDIT SUMMARY FOR THE U.S. REGULATORY COMMISSION  
SUPPLEMENTAL AUDIT DURING PHASE A OF THE NUSCALE  
US460 STANDARD DESIGN APPROVAL APPLICATION REVIEW

By memorandum dated November 7, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24311A005), the U.S. Nuclear Regulatory Commission (NRC) staff issued an audit plan to review documents that support confirmatory evaluations and request for additional information responses for Phase A of the US460 Standard Design Approval application (SDAA) review. The following topical reports (TRs) were reviewed with the SDAA: TR-0516-49422, "Loss of Coolant Accident (LOCA) Evaluation Model," Revision 3 (ML23008A002); TR-0516-49416, "Non-LOCA Transient Analysis Methodology," Revision 4 (ML23005A305); and TR-124587, "Extended Passive Cooling and Reactivity Control Methodology," Revision 0 (ML23005A308).

The NRC started the audit on September 18, 2024. The audit was primarily conducted remotely via NuScale's electronic reading room (eRR) and video teleconferences. In addition, a few in-person meetings were held at NuScale's offices in Rockville, Maryland and Corvallis, Oregon.

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301-415-1647      301-415-8013

An audit exit meeting was held on March 6, 2025. An audit summary is provided as an enclosure to this memorandum.

Docket No. 05200050

Enclosure:  
Audit summary

Cc: NuScale US460 Standard  
Design Approval GovDelivery

SUBJECT: AUDIT SUMMARY FOR THE U.S. REGULATORY COMMISSION  
SUPPLEMENTAL AUDIT DURING PHASE A OF THE NUSCALE US460  
STANDARD DESIGN APPROVAL APPLICATION REVIEW.  
DATED: JUNE 6, 2025

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**ADAMS Accession No.: ML25080A205****via email\*****NRR-106**

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<b>DATE</b>	03/12/2024	06/03/2024	06/04/2025	03/14/2025
<b>OFFICE</b>	DNRL/NRLB:PM			
<b>NAME</b>	PChowdhury*			
<b>DATE</b>	06/06/2025			

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**AUDIT SUMMARY FOR THE U.S. REGULATORY COMMISSION SUPPLEMENTAL**  
**AUDIT DURING PHASE A OF THE NUSCALE US460 STANDARD DESIGN**  
**APPROVAL APPLICATION REVIEW**

## **1.0 BACKGROUND AND PURPOSE**

By memorandum dated November 7, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24311A005), the U.S. Nuclear Regulatory Commission (NRC) staff issued an audit plan for Phase A of the US460 Standard Design Approval application (SDAA) review. The following topical reports (TRs) were reviewed with the SDAA: TR-0516-49422, "Loss of Coolant Accident (LOCA) Evaluation Model," Revision 3 (ML23008A002); TR-0516-49416, "Non-LOCA Transient Analysis Methodology," Revision 4 (ML23005A305); and TR-124587, "Extended Passive Cooling and Reactivity Control Methodology," Revision 0 (ML23005A308).

The NRC started the audit on September 18, 2024. The audit was primarily conducted remotely via NuScale's electronic reading room (eRR) and video teleconferences. In addition, a few in-person meetings were held at NuScale's offices in Rockville, Maryland and Corvallis, Oregon. An audit exit meeting was held on March 6, 2025.

The purpose of the audit was for NRC staff to review documents that support confirmatory evaluations and request for additional information (RAI) responses. The NRC staff requested that some of the audit responses be submitted on the docket. Section 12 of this document provides a list of the docketed responses and their ADAMS accession nos.

NRC staff issued separate audit summaries for the following: (1) Phase A of the SDAA review – audit summary (ML24264A049); (2) TR-0516-49422, "Loss-of-Coolant Accident [LOCA] Evaluation Model," Revision 3 – audit summary (ML24262A230); (3) TR-0516-49416, "Non-Loss-of-Coolant Accident Analysis Methodology," Revision 4 – audit summary (ML24262A257); and (4) TR-124587, "Extended Passive Cooling and Reactivity Control Methodology," Revision 0 – audit summary (ML24263A009).

## **2.0 REGULATORY AUDIT BASIS**

This regulatory audit is based on the submittal of Revision 1 of the NuScale SDA application (ML23306A033). The bases for the submittal follow the regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," as outlined below:

- 10 CFR Part 52, Subpart E - Standard Design Approvals
  - § 52.131 Scope of subpart.

- § 52.133 Relationship to other subparts.
- § 52.135 Filing of applications.
- § 52.136 Contents of applications; general information.
- § 52.137 Contents of applications; technical information.
- § 52.139 Standards for review of applications.
- § 52.141 Referral to the Advisory Committee on Reactor Safeguards.
- § 52.143 Staff approval of design.
- § 52.145 Finality of standard design approvals; information requests.
- § 52.147 Duration of design approval.

### 3.0 AUDIT LOCATION AND DATES

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

#### **NRC Headquarters**

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

#### **NuScale**

11333 Woodglen Drive, Suite 205  
Rockville, Maryland 20852

1100 NE Circle Blvd  
Corvallis, OR 97330

The audit started with a teleconference entrance meeting on September 18, 2024, and ended with a teleconference exit meeting on March 6, 2025.

### 4.0 KEY AUDIT TEAM MEMBERS

#### AUDIT TEAM (Project Managers):

Mahmoud Jardaneh (Branch Chief)	Ricky Vivanco	David Drucker
Getachew Tesfaye (Project Lead)	Thomas Hayden	Dennis Galvin
Stacy Joseph	Prosanta Chowdhury	
Alina Schiller	River Rohrman	

#### AUDIT TEAM (Technical Branch Chiefs):

Branch Chief	Branch	Branch Chief	Branch
Wendell Morton	DEX/EEEEB	Milton Valentin	DSS/SCPB
Stewart Bailey	DEX/EMIB	Shivani Mehta	DSS/STSB
Jason Paige	DEX/ELTB	Angie Buford	DNRL/NVIB
Fanta Sacko	DEX/EICB	Matthew Mitchell	DNRL/NPHP
Ian Tseng	DEX/ESEB	Steven Bloom	DNRL/NCSG
Barbara Hayes	DEX/EXHB	James Anderson	DRO/IOLB
Evan Davidson	DRA/APLB	Kerri Kavanagh	DRO/IQVB

Shilp Vasavada	DRA/APLC	Kenneth Erwin	NMSS/REFS/ERNRB
Kevin Hsueh	DRA/ARCB	Jessie Quichocho	NSIR/DPR/RLB
Rebecca Patton	DSS/SNRB	Mario Fernandez	NSIR/DPCP/CSB
Phillip Sahd	DSS/SNSB	Amanda Marshall	NSIR/DPCP/RSB
Scott Krepel	DSS/SFNB		

## **5.0 KEY APPLICANT PARTICIPANTS**

Thomas Griffith, Licensing Manager  
Wren Fowler, Licensing Supervisor  
Jim Osborn, Licensing Supervisor  
Elisa Fairbanks, Licensing Supervisor  
Amanda Bode, Licensing Supervisor  
Erin Blumsack, Licensing Engineer

## **6.0 AUDIT DOCUMENTS**

Primarily, the staff audited documents via NuScale's eRR. On a few occasions, the staff reviewed hardcopy documents and or files on a NuScale-owned computer during an in-person meeting.

## **7.0 DESCRIPTION OF AUDIT ACTIVITIES AND SUMMARY OF OBSERVATIONS**

During the audit, the NRC staff reviewed responses to the audit questions and then provided feedback to NuScale. NuScale provided revised responses in the eRR based on the NRC feedback. NRC staff reviewed the revised responses and provided feedback as appropriate. The NRC staff tracked the status of audit questions and provided to NuScale on a weekly basis.

A list of the docketed audit question responses and their ADAMS Accession Nos. are provided in Section 12 below.

## **8.0 EXIT BRIEFING**

The NRC staff conducted an audit exit meeting via teleconference on March 6, 2025. The NRC staff summarized their observations.

## **9.0 OPEN ITEMS AND PROPOSED CLOSURE PATHS**

During the audit, the NRC staff and NuScale discussed the audit questions generated by the staff and the responses provided by NuScale. The NRC staff issued RAIs for some of the audit questions that remained unresolved. Appendix E of the Final Safety Evaluation Report will provide a list of RAI responses and links to those RAI responses. All audit items and RAIs were resolved on or before the issuance of this audit summary.

## **10.0 DEVIATIONS FROM THE AUDIT PLAN**

Not applicable.

## 11.0 REFERENCES

1. NuScale Power, LLC, US460 Standard Design Approval application, Revision 1, October 31, 2023, (ML23306A033).
2. TR-0516-49422, "Loss-of-Coolant Accident [LOCA] Evaluation Model," Revision 5 (ML25086A182).
3. TR-0516-49416, "Non-Loss-of-Coolant Accident Analysis Methodology," Revision 5 (ML25085A357).
4. TR-124587, "Extended Passive Cooling and Reactivity Control Methodology," Revision 0 (ML23005A308).
5. "Audit Plan for the Staff Review of the NuScale Power, LLC Standard Design Approval Application – NuScale US460," March 22, 2023 (ML23067A300).
6. "Updated - Audit Plan for the Staff Review of the NuScale Power, LLC Standard Design Approval Application – NuScale US460 Design," July 29, 2024 (ML24211A089).

## 12.0 DOCKETED RESPONSES TO AUDIT QUESTIONS

Question	ADAMS ML#
<b>Chapter 3</b>	
A-3.9.2-26	ML24346A147
<b>Chapter 5</b>	
A-5.4.3-4	ML25071A178
<b>Chapter 6</b>	
A-6.2-4	ML25022A195
A-6.3-10	ML25022A196
<b>Chapter 9</b>	
A-9.1.5-3	ML25063A183
<b>Chapter 15</b>	
A-15.6.5-1	ML24348A008
A-15.9-1	ML25065A161
<b>Non-LOCA</b>	
NonLOCA.LTR-3, 9, 18, 19, 20, 21, 69	ML25042A062
A-NonLOCA-20	ML25035A245
A-NonLOCA-46	ML25014A269
A-NonLOCA-46S	ML25014A271
NonLOCA-50	ML25058A423
NonLOCA-55	ML25045A237
A-NonLOCA-56	ML25014A273
A-NonLOCA-63	ML25014A275
A-NonLOCA-66	ML25014A277

<b>XPC</b>	
XPC-2	ML25030A364
XPC-6	ML25051A166
XPC-21	ML25058A229
XPC-23	ML25056A126
XPC-24	ML25045A158