September 27, 2017

MEMORANDUM TO: Samuel S. Lee, Chief
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

FROM: Omid Tabatabai, Senior Project Manager ***/RA/***
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: AUDIT PLAN FOR THE REGULATORY AUDIT OF NUSCALE POWER'S, LLC STATION BLACKOUT TRANSIENT SENSITIVITY ANALYSIS (CAC NO. RA9030)

The purpose of this one-day regulatory audit is for the U.S. Nuclear Regulatory Commission (NRC) staff to (1) review NuScale Power's, LLC (NuScale) Station Blackout transient sensitivity case, and (2) hold discussions with NuScale staff related to specific areas of NuScale design certification application, Tier 2, Section 8.4, "Station Blackout," to determine whether NuScale design meets the applicable regulations. The NRC staff will conduct this audit in accordance with the guidance provided in Office of New Reactors-REG-108, "Regulatory Audits."

The audit will take place at NuScale's Rockville Office and/or via NuScale Electronic Reading Room. The audit is currently scheduled for November 8, 2017. The audit plan is provided in Enclosure 1.

Docket No. 52-048

Enclosure:
Audit Plan

cc w/encl.: DC NuScale Power LLC Listserv

CONTACT: Omid Tabatabai, NRO/DNRL
301-415-6616

SUBJECT: AUDIT PLAN FOR THE REGULATORY AUDIT OF NUSCALE POWER, LLC STATION BLACKOUT TRANSIENT SENSITIVITY ANALYSIS (CAC NO. RA9030) DATED: 9/27/2017

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U.S. NUCLEAR REGULATORY COMMISSION

AUDIT PLAN FOR THE REGULATORY AUDIT OF NUSCALE POWER, LLC'S STATION BLACKOUT SENSITIVITY ANALYSIS (DOCKET NO. 52-048)

AUDIT PLAN

Applicant:	NuScale Power, LLC
Location:	U. S. Nuclear Regulatory Commission (NRC) Headquarters via NuScale Power's, LLC (NuScale) Electronic Reading Room and at NuScale's Office in Rockville, Maryland, as necessary
Reviewers:	Fanta Sacko (Audit Team Leader) Swagata Som, Senior Electrical Engineer Sheila Ray, Senior Electrical Engineer
Project Manager:	Omid Tabatabai
NuScale Contacts:	Darrell Gardner, Steve Mirsky
Audit Dates/Times:	November 8, 2017 8:30 a.m. - 4:00 p.m.

BACKGROUND AND REGULATORY BASIS:

In the design certification application (DCA), Final Safety Analysis Report (FSAR) Tier 2, Section 8.4.3, the applicant states that a Station Blackout (SBO) transient sensitivity case that considered a simultaneous loss of all alternating current and direct current (DC) power was evaluated and demonstrates that the NuScale Power Plant design does not rely on DC power from the highly reliable DC Power System (EDSS) to meet the requirements of Title10 *Code of Federal Regulations* (CFR) 50.63, "Loss of all alternating current power."

In Request for Additional Information (RAI)-8824, Question 08.04-1 Agencywide Documents Access and Management System (ADAMS) Accession No. ML17146B298), the staff requested additional information regarding the assumptions and a summary of the SBO transient sensitivity evaluation that NuScale performed to show compliance with 10 CFR 50.63. In response to RAI-8824, Question 08.04-1 (ADAMS Accession No. ML17179A979), dated June 28, 2017, the applicant stated:

> "Consistent with the definition of a Station Blackout in 10 CFR 50.2, "Definitions" the SBO transient analysis identified in FSAR Section 8.4 assumes operation of the EDSS during the event, which in part forms the basis for compliance with 10 CFR 50.63. FSAR Section 8.4 includes the assumptions and a summary for the analysis of record. The model and assumptions for the sensitivity case are the same as the base case except the sensitivity case includes a simultaneous failure of the EDSS at the outset of the event, which represents an additional

failure that is precluded by the SBO definition. Consequently, the sensitivity evaluation is not used to show compliance with 10 CFR 50.63, and NuScale does not believe that the results of the sensitivity study should be included in the FSAR. The analysis that documents the assumptions and results of the sensitivity case can be made available for NRC audit upon request."

AUDIT PURPOSE:

The purpose of this one-day regulatory audit is for the NRC staff to (1) review NuScale's SBO transient sensitivity case and (2) hold discussions with NuScale staff related to specific areas of NuScale FSAR, Section 8.4, "Station Blackout," and the applicant's methodology, to determine whether NuScale design DCA meets the applicable regulations, i.e. 10 CFR 50.63. Specifically,

1. The NRC staff seeks clarification of NuScale's assumptions and methodology on the SBO transient analysis.

2. The NRC staff seeks clarification on the SBO sensitivity case which demonstrates that the NuScale design does not rely on DC power from the EDSS to meet the requirements of 10 CFR 50.63.

The information to be reviewed is intended to provide direct support for the safety conclusions that apply to the NuScale DCA under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants". Specifically, the information to be reviewed will provide support to the staff's review regarding NuScale's assertion that the design does not rely on DC power from the EDSS to meet 10 CFR 50.63. The information to be assessed is intended to augment the NRC staff's understanding and verification. Furthermore, this information will be referenced in the NRC staff's final safety evaluation report (FSER) on the methodology and assumptions of the NuScale DCA, regarding how the electrical systems meet the applicable regulations.

The NRC staff will conduct this audit in accordance with the guidance provided in Office of New Reactors Office (NRO) Instruction, NRO-REG-108, "Regulatory Audits."

INFORMATION AND DOCUMENTS NECESSARY FOR THE AUDIT:

1. SBO transient sensitivity case

2. An overview presentation of the document(s) to the NRC staff by NuScale subject matter experts.

AUDIT TEAM ASSIGNMENTS:

The audit team is comprised of the following NRC staff. These individuals will review the relevant documents that are related to the audit and will be available at the time of the audit:

- Tania Martinez Navedo, Electrical Engineering Branch, Acting Chief
- Omid Tabatabai, Licensing Branch 1, Senior Project Manager
- Fanta Sacko (Audit Team Leader)
- Swagata Som, Senior Electrical Engineer
- Sheila Ray, Senior Electrical Engineer

AUDIT ACTIVITIES AND DELIVERABLES:

The NRC audit team review will cover the technical areas identified previously in this audit plan. The NRC Project Manager will coordinate with NuScale in advance of audit activities to verify specific documents, identify any changes to the audit schedule and requested documents, and record the participants of the audit (NRC and NuScale staff).

The NRC staff acknowledges the proprietary and/or sensitive nature of the information requested and will handle appropriately throughout the audit. While the NRC staff will take notes, the NRC staff will not remove hard copies or electronic files from the audit site(s).

At the completion of the audit, the audit team will issue an audit summary within 90 days that will be declared and entered as an official agency record in the NRC's ADAMS records management system, in accordance with NRO-REG-108. The audit outcome may be used to assist the NRC staff in the issuance of request for additional information for the licensing review of the NuScale Design Certification Document and to identify any additional information to be submitted on the docket in support of the NRC staff's preparation of the FSER.