



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

November 21, 2017

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

FROM: Marieliz Vera, Project Manager /RA/
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: AUDIT PLAN FOR REGULATORY AUDIT OF NUSCALE
POWER, LLC; DESIGN DOCUMENTS FOR EMERGENCY
CORE COOLING SYSTEM VALVES

On January 6, 2017, NuScale Power, LLC (NuScale) submitted a design certification (DC) application for a small modular reactor to the U.S. Nuclear Regulatory Commission (NRC) (Agencywide Documents Access and Management System Accession No. ML17013A229). The NRC staff started its detailed technical review of NuScale's DC application on March 15, 2017.

The purpose of the subject audit to be conducted by the NRC staff is to: (1) gain a better understanding of the NuScale design; (2) verify information; (3) identify information that may require docketing to support the basis of the licensing or regulatory decision; and (4) review related documentation and non-docketed information to evaluate conformance with regulatory guidance and compliance with NRC regulations.

The audit will take place at NuScale's offices in Rockville, Maryland, and/or online via NuScale's electronic reading room. The audit is currently scheduled to start on November 27, 2017, and end on January 16, 2018. The audit plan is enclosed.

Docket No. 52-048

Enclosure:
Audit Plan

cc w/encl.: DC NuScale Power, LLC Listserv

CONTACT: Marieliz Vera, NRO/DNRL
301-415-5861

SUBJECT: AUDIT PLAN FOR REGULATORY AUDIT OF NUSCALE POWER, LLC; DESIGN
DOCUMENTS FOR EMERGENCY CORE COOLING SYSTEM VALVES
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U.S. NUCLEAR REGULATORY COMMISSION
REGULATORY AUDIT OF DESIGN DOCUMENTS FOR
EMERGENCY CORE COOLING SYSTEM VALVES

NUSCALE STANDARD PLANT DESIGN CERTIFICATION

DOCKET NO. 52-048

AUDIT PLAN

APPLICANT: NuScale Power, LLC

APPLICANT CONTACT: Marty Bryan, NuScale

DURATION: November 27, 2017 – January 16, 2018

LOCATION: U.S. Nuclear Regulatory Commission (NRC) Rockville Office
11545 Rockville Pike
Rockville, MD 20852-2738

NuScale Rockville Office or
NuScale Electronic Reading Room (eRR)

AUDIT TEAM: Thomas G. Scarbrough, Senior Mechanical Engineer (NRC),
Audit Lead
John Budzynski, Reactor Systems Engineer (NRC)
Clinton Ashley, Reactor Systems Engineer (NRC)
Luis Betancourt, Electronics Engineer (NRC)
Marieliz Vera Amadiz, Project Manager (NRC)

I. BACKGROUND

On March 15, 2017, the NRC accepted the design certification application (DCA) for docketing for the NuScale Power, LLC (NuScale) Standard Plant Design Certification (DC) Application for a small module reactor (SMR) design submitted by NuScale (Reference 1).

The NRC staff determined that efficiency gains would be realized by auditing the documents supporting the NuScale SMR design presented in the NuScale Final Safety Analysis Report (FSAR), in lieu of multiple requests for additional information (RAI) for the applicant to submit design documents. The purpose of this audit is to allow the NRC technical staff to gain an understanding of the design of the emergency core cooling system (ECCS) valves in the NuScale reactor to better focus the staff's inquiries to the applicant. During the audit and interactions with the applicant, there may be detailed RAIs developed, which would be part of a future formal correspondence.

Enclosure

II. PURPOSE

The purpose of the audit is to evaluate the detailed design of the ECCS valves in support of the NuScale Standard Plant DC application.

III. REGULATORY AUDIT BASIS

The audit basis is to confirm that the design of the NuScale ECCS valves is consistent with the assumptions for the performance of those valves in the NuScale DC application.

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," Section 47, "Contents of Applications; Technical Information," states the following:

The application must contain a level of design information sufficient to enable the Commission to judge the applicant's proposed means of assuring that construction conforms to the design and to reach a final conclusion on all safety questions associated with the design before the certification is granted. The information submitted for a DC must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. The Commission will require, before DC, that information normally contained in certain procurement specifications and construction and installation specifications be completed and available for audit if the information is necessary for the Commission to make its safety determination.

The NRC staff will review the design documents for the ECCS valves described in the NuScale FSAR Tier 2:

- Section 3.9.6, "Functional Design, Qualification, and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints," and
- Section 6.3, "Emergency Core Cooling System."

The NRC staff will conduct this audit in accordance with the guidance provided in the Office of New Reactors (NRO) -REG-108, "Regulatory Audits" (Reference 2).

IV. REGULATORY AUDIT SCOPE

The primary scope of this audit is the review of design drawings for the ECCS valves (including the main valve, inadvertent actuation block valve, trip valve, and reset valve) to be used in the NuScale SMR to verify that the design of those valves is consistent with their performance assumed in the NuScale FSAR. If the qualification plans and test plans for the ECCS valves are not available during this audit, the NRC staff will conduct a follow-up audit of those design documents at a later date.

V. DOCUMENTS/INFORMATION NECESSARY FOR THE AUDIT

The design drawings for the ECCS valves are to be made available to the NRC staff in the NuScale eRR. If available, the qualification plans and test plans for the ECCS valves should

also be placed in the eRR for NRC staff review. Appropriate handling and protection of proprietary information shall be acknowledged and observed throughout the audit.

VI. SPECIAL REQUESTS

The NRC staff requests that NuScale provide the technical staff with access to the audit documents. NuScale can upload the requested documents into the NuScale eRR for staff's review. During the audit, the NRC staff will have questions and discussion items for the NuScale subject matter experts. When the NRC staff's review of the documents associated with a specific issue is complete, the staff will notify either the NRO, Division of New Reactor Licensing or NuScale that these documents can be removed from eRR; thereby minimizing their residence time in eRR.

VII. AUDIT ACTIVITIES AND DELIVERABLES

The NRC audit team review will review the technical documents identified in Section V of this audit plan.

The regulatory audit will be scheduled from November 27, 2017, through January 16, 2018, from 7:00 AM to 3:00 PM, at the U.S. NRC Rockville Office, 11545 Rockville Pike, Rockville, MD 20852-2738. At the end of the audit, a technical audit summary will be provided by the technical reviewers to the NRC Project Manager (PM) for prompt issuance to the applicant as well as a public version of the same.

The NRC PM will coordinate with NuScale in advance of audit activities to verify specific documents and identify any changes to the audit schedule and requested documents.

The audit entrance/exit meetings and weekly audit meeting are to be scheduled as followings:

- Entrance Meeting – November 27, 2017.
- Exit Meeting: January 16, 2018.
- Weekly Audit Telephone Conference (as needed): Monday 11:00 AM – 12:00 PM EST.

The NRC staff acknowledges the proprietary nature of the information requested. It will be handled 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.

During the weekly telephone conferences, the NRC will discuss with NuScale any issues identified during the audit, and their resolution either through audit activities or by another mechanism, such as RAIs or public meetings. During the weekly conferences, NRC will also identify any new emerging information needs as well as documents that can be removed from eRR.

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 Agencywide Documents Access and Management System (ADAMS) records management system.

The audit outcome may be used to identify any additional information to be submitted for making regulatory decisions, and will assist the NRC staff in the issuance of RAIs (if necessary)

to support the NRC review of the NuScale design certification application in preparation of the NRC's Safety Evaluation Report.

If the qualification plans and test plans for the ECCS valves are not available during this audit, the NRC staff will conduct a follow-up audit of those design documents at a later date.

If necessary, any circumstances related to the performance of the audit will be communicated to Marieliz Vera Amadiz, NRC at 301-415-5861, or email: Marieliz.VeraAmadiz@nrc.gov.

VIII. REFERENCES

1. NRC Letter, "NuScale Power, LLC. – Acceptance of an Application for Standard Design Certification of a Small Modular Reactor," ADAMS Accession Number ML17074A087, March 23, 2017.
2. NRO-REG-108, "Regulatory Audits," ADAMS Accession Number ML081910260, April 2, 2009.
3. NuScale Standard Plant DC Application, Revision 0, December 2016.