UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

April 2, 2025

MEMORANDUM TO: Walter L. Kirchner, Chairman
NuScale Subcommittee
Advisory Committee on Reactor Safeguards

FROM: Matthew Sunseri, Member M.W. Sunseri
NuScale Subcommittee
Advisory Committee on Reactor Safeguards

SUBJECT: INPUT FOR ACRS REVIEW OF THE NUSCALE STANDARD DESIGN APPROVAL (SDA) APPLICATION – SAFETY EVALUATION REPORT FOR CHAPTER 16, "TECHNICAL SPECIFICATIONS"

In response to the Subcommittee's request, I have reviewed the NRC staff's safety evaluation report (SER) provided to support ACRS review of the SDA application, and the associated section of the applicant's submittal for Chapter 16, "Technical Specifications." The following is my recommended course of action concerning further review of this chapter and the staff's associated safety evaluation.

Background

SDAA Part 2 contains the NuScale US460 design Final Safety Analysis Report (FSAR). FSAR Chapter 16 addresses topics related to the proposed generic technical specifications (GTS) and Bases including the following:

- GTS Content: Most GTS requirements are written to provide operating limitations on an individual NuScale Power Module (NPM or module) or unit. Operability requirements on some systems (e.g., the reactor pool) and limits on the values of monitored variables (e.g., the reactor pool water level, temperature, and boron concentration) apply to multiple NPMs. The limitations on such systems and variables are applied individually and concurrently to the operation of each applicable NPM.

- Selection Criteria for Limiting Conditions of Operation (LCOs): Technical Report (TR)-1116-52011-NP, Revision 4, "Technical Specifications Regulatory Conformance and Development," that NuScale submitted as part of the US600 DCA, documents the application of the LCO selection criteria of Title 10 of the Code of *Federal Regulations* (10 CFR) 50.36(c)(2)(ii) to the NuScale US600 design and safety analyses of design-basis accidents (DBAs), anticipated operational occurrences (AOOs), and transients. The Regulatory Conformance and Development Report provides the basis for including the LCOs chosen for the GTS and not including LCOs for systems typically addressed by an LCO in the STS NUREGs. TR-101310-NP, Revision 0, "US460 Standard Design Approval Technical Specifications Development," supplements the

descriptions in the Regulatory Conformance and Development Report by identifying differences with the US600 design certification application (DCA) GTS.

- Completion Times and Surveillance Frequencies: The GTS required action completion times are proposed consistent with those completion times provided in the standard technical specifications (STS) for similar conditions in which the associated LCO is not met. Likewise, NuScale indicated that GTS surveillance requirement performance frequencies are proposed consistent with the frequencies of similar surveillance requirements (SRs) in the STS. NuScale provided the initial surveillance frequencies and the basis for each frequency in FSAR Table 16.1-1, "Surveillance Frequency Control Program Base Frequencies." The plant-specific TS issued with a combined license (COL) or operating license (OL) referencing the NuScale US460 standard design will include GTS Subsection 5.5.11, "Surveillance Frequency Control Program." The COL or OL holder will incorporate the information in FSAR Table 16.1-1 in the documentation specified by plant-specific TS Subsection 5.5.11 for implementing the surveillance frequency control program.

- Consideration of Technical Specifications Task Force Traveler Changes to STS: Section 4.2 of the DCA Regulatory Conformance and Development Report states that available information regarding travelers through June 30, 2018, was considered by NuScale during preparation of the US600 GTS. This traveler information was supplemented by the US460 Standard Design Approval Technical Specifications Development Report.

SER Summary

The SER documents the staff's evaluation of the applicant's design for compliance with applicable regulations and standards, including 10 CFR Part 52, Subpart E, "Standard Design Approvals." The NRC staff evaluated the descriptions and discussions of NuScale's proposed GTS. Based on the above determinations, the NRC staff found that the descriptions and discussions of NuScale's GTS are sufficient and meet the applicable regulatory requirements and guidance, and acceptance criteria, for the issuance of a standard design approval.

Discussion

Review of the GTS generally considered the manner that LCOs, completion time and surveillance frequencies were selected and various administrative controls. There are no concerns with the way the technical specifications were constructed or the differences between the proposed US460 GTS and the approved US600 GTS. System, structure and components technical requirements are best identified and discussed during the specific chapter reviews. For example, the subcommittee has questions regarding the reactor protection system ability to address a proprietary high-impact technical issue that was brought up by NuScale that involves a specific sequence of events. This proprietary topic is best addressed during our Chapter 6 and 15 reviews. Likewise, we should be thinking about proposed technical specifications during any of our technical chapter topic reviews.

Recommendation

As lead reviewer for NuScale Chapter 16, I recommend that the Committee not perform any additional review of this chapter. Specific technical information should be addressed and validated during the review of relevant chapters.

References

1. U. S. Nuclear Regulatory Commission, “Safety Evaluation of NuScale SDAA Chapter 16, ‘Technical Specifications’,” January 7, 2025 (ADAMS Accession No. ML24305A241).

2. NuScale Power, LLC, “Standard Design Approval Application, Part 2, Chapter 16, ‘Technical Specifications’,” Revision 1, October 31, 2023 (ADAMS Accession No. ML23304A368).

3. NuScale Power, LLC, “Noteworthy Differences Between NuScale Design Certification and Standard Design Approval Chapter 16, ‘Technical Specifications’,” January 10, 2025 (ADAMS Accession No. ML25010A144).

4. NuScale Power, LLC, “Licensing Technical Report, TR-101310-NP, ‘US460 Standard Design Approval Technical Specifications Development’,” Revision 0, December 31, 2022 (ADAMS Accession No. ML23304A370).

5. NuScale Power, LLC, Licensing Technical Report TR-1116-52011-NP, “Technical Specifications Regulatory Conformance and Development,” Revision 4, May 20, 2020 (ADAMS Accession No. ML20141L804).

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