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

April 17, 2019

Dr. Peter Riccardella, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: CHAPTER 2, "SITE CHARACTERISTICS AND SITE PARAMETERS," AND CHAPTER 17, "QUALITY ASSURANCE AND RELIABILITY ASSURANCE," OF THE U.S. NUCLEAR REGULATORY COMMISSION STAFF'S SAFETY EVALUATION REPORT WITH OPEN ITEMS RELATED TO THE CERTIFICATION OF THE NUSCALE POWER, LLC, SMALL MODULAR REACTOR

Dear Dr. Riccardella:

Thank you for your letter, dated February 21, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19052A046), about the Advisory Committee on Reactor Safeguards (ACRS or Committee) review of Chapter 2, "Site Characteristics and Site Parameters," and Chapter 17, "Quality Assurance and Reliability Assurance," of the safety evaluation report (SER) with open items (OIs) associated with the NuScale Power, LLC (NuScale), design certification application (DCA). I appreciate the time and effort the ACRS has devoted to these important subjects, as reflected in meetings held with the ACRS Subcommittee for NuScale on December 18, 2018, and the ACRS Full Committee on February 6, 2019.

Your letter contained four conclusions and recommendations, as shown below with staff responses:

Conclusion and Recommendation 1:

We have not identified any major issues in Chapters 2 and 17 at this time. However, there are some items, as noted below, that need to be resolved.

Staff Response: The staff agrees with Conclusion and Recommendation 1.

Conclusion and Recommendation 2:

The NuScale methodology for calculating accident offsite χ/Q values for the exclusion area boundary and low population zone coupled with the accident source term methodology for the NuScale design needs to be completed and reviewed by the staff.

Staff Response: The staff agrees with Conclusion and Recommendation 2. The staff plans to complete its review of NuScale's methodologies, as stated in ACRS conclusion and Recommendation 2, by the end of the Phase 4 review.

Conclusion and Recommendation 3:

The staff has requested an exemption from the Commission from requiring an inspection, test, analysis, and acceptance criterion, or ITAAC for the NuScale design reliability assurance program and this remains an open item.

Staff Response: The staff agrees with Conclusion and Recommendation 3. The staff will complete its evaluation of the OI in Phase 4 of the DCA review in accordance with the Commission's direction on SECY-18-0093, "Recommended Change to Verification of the Design Reliability Assurance Program," dated September 20, 2018 (ADAMS Accession No. ML181928471), as stated in your letter.

In addition to the above recommendation, on page 3 of your letter, related to the discussion on DCA Chapter 17, the ACRS discussed the exclusion of the chemical and volume control system (CVCS) from design reliability assurance program (D-RAP) and stated that the final list of structures, systems, and components (SSCs) included in the D-RAP will be confirmed after Chapter 19 is completed. The staff notes that the applicant followed an adequate process for determining the D-RAP SSCs. Specifically, the applicant adequately used probabilistic risk criteria to develop a candidate list of risk significant SSCs, the expert panel adequately considered the CVCS for inclusion in the D-RAP list, and the rationale for not including the CVCS in the D-RAP SSCs was appropriately documented. The process (DCA Chapter 17, Figure 17.4.1) identifies those changes that would cause the applicant to consider any updates to the D-RAP list.

Conclusion and Recommendation 4:

The applicant's Open Design Items for structures, systems, and components covered by Chapter 17 requirements need to be identified for eventual closure.

Staff Response: NuScale's quality assurance program is committed to NQA-1-2008, "Quality Assurance Requirements for Nuclear Facility Applications," and NQA-1a-2009 (hereafter referred to as NQA-1). NQA-1 addresses the issue referred to in Conclusion and Recommendation 4. Specifically, NQA-1, Requirement 3, "Design Control," Subsection 403(d), states that documentation of design analyses shall include assumptions and also indicate assumptions that must be verified as the design proceeds.

Therefore, the applicant's commitment to NQA-1 further requires of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* Part 50, "Domestic Licensing of Production and Utilization Facilities," already calls for applicants and certificate holders to identify open design items (assumptions that need verification as the design proceeds) in their design calculation packages.

The NRC performed two quality assurance implementation inspections at NuScale. During these inspections, the NRC also verified the applicant's implementation of its quality assurance program. The NRC staff reviewed NuScale's design control process and the open design item process. The NRC staff did not identify any findings of significance during these inspections.

After DCA certification, combined license applicants and holders are required to ensure that engineering assumptions are verified as part of the combined license applicants' and holders' quality assurance programs.

The staff appreciates your review of this SER and looks forward to future interactions with the Committee as part of its NuScale review activities.

Sincerely,

/RA/

Frederick D. Brown, Director
Office of New Reactors

Docket No.: 52-048

cc: Chairman Svinicki
Commissioner Baran
Commissioner Burns
Commissioner Caputo
Commissioner Wright
SECY

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