



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

July 24, 2019

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

SUBJECT: INTERIM LETTER – CHAPTER 3, SECTION 3.9.2, AND CHAPTERS 14, 19, AND 21 OF THE U.S. NUCLEAR REGULATORY COMMISSION STAFF'S SAFETY EVALUATION REPORT WITH OPEN ITEMS RELATED TO THE DESIGN CERTIFICATION APPLICATION REVIEW OF THE NUSCALE POWER, LLC, SMALL MODULAR REACTOR

Dear Dr. Riccardella:

In your letter dated June 19, 2019, the Advisory Committee on Reactor Safeguards (ACRS or the Committee) reported on the Committee's interim safety review of Chapter 3, Section 3.9.2, "Dynamic Testing and Analysis of Systems, Structures and Components"; Chapter 14, "Initial Test Program and Inspections, Tests, Analyses, and Acceptance Criteria"; Chapter 19, "Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors"; and Chapter 21, "Multi-Module Design Considerations," of the U.S. Nuclear Regulatory Commission (NRC) staff's safety evaluation report (SER) with open items for the NuScale Power, LLC (NuScale), small modular reactor (Agencywide Documents Access and Management System Accession No. ML19170A381). 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 May 14–16, 2019, and the ACRS Full Committee on June 5, 2019.

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

Conclusion and Recommendation 1:

SIET Test Facility-3 (TF-3) comprehensive vibration tests are required to ensure that the steam generator design is not susceptible to flow-induced vibration. The completion of these tests should be identified as an item for Inspections, Tests, Analyses and Acceptance Criteria (ITAAC).

Staff Response: The NRC staff agrees that completion of the TF-3 tests provides additional demonstration that the steam generator design is not susceptible to flow induced vibration. As these tests will not be finished before the planned completion of the staff's review of the design certification application, the NRC staff will apply appropriate licensing tools (e.g., ITAAC and/or combined license action item).

Conclusion and Recommendation 2:

We have not identified any major issues at this time for Chapter 3, Section 3.9.2, and Chapters 14, 19, and 21.

Staff Response: The NRC staff agrees with Conclusion and Recommendation 2. The staff plans to close the remaining open items and submit an advanced SER for Committee review by the end of the staff's Phase 4 review.

Conclusion and Recommendation 3:

To help identify risk insights in this unique design, there are technical issues in the probabilistic risk assessment (PRA) that merit further consideration.

Staff Response: The NRC staff acknowledges the technical issues raised by the ACRS in its letter and notes that the scope of the staff's review of a design certification PRA is to ensure the applicant has adequately addressed the Commission's objectives regarding consideration of severe accidents and the use of PRA in the design of the facilities. These objectives are focused on identification and reduction of potential vulnerabilities, identification of risk-informed safety insights, comparison to the Commission's safety goals, and support for other programmatic objectives (e.g., regulatory treatment of non-safety systems and the reliability assurance program). The staff performed an extensive review of the NuScale DCA and audits of the supporting notebooks, including an assessment of sensitivity studies and uncertainty quantification, to verify that the PRA will support the intended uses of a design certification PRA once all open items are resolved. The staff utilized the agency commissioned enhanced safety focused review approach (ESFRA) and took into consideration the unique design features to limit its review to the information needed to make reasonable assurance findings that the Commission's objectives were met. The staff notes that a COL holder will be required by 10 CFR 50.71(h) to develop a Level 1 and a Level 2 PRA covering those initiating events and modes for which NRC-endorsed consensus standards on PRA exist one year prior to the scheduled date for initial loading of fuel. The staff will consider revisiting the technical issues raised by ACRS as it prepares its Phase 4 advanced SER with no open items.

The NRC staff appreciates your review of these parts of the 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 Caputo
Commissioner Wright
SECY

SUBJECT: INTERIM LETTER – CHAPTER 3, SECTION 3.9.2, AND CHAPTERS 14, 19 AND 21 OF THE NRC STAFF’S SAFETY EVALUATION REPORT WITH OPEN ITEMS RELATED TO THE DESIGN CERTIFICATION APPLICATION REVIEW OF THE NUSCALE SMALL MODULAR REACTOR
 DATED: JULY 24, 2019

DISTRIBUTION: OEDO-19-00314

PUBLIC
 SLee, NRO
 PChowdhury, NRO
 RFranovich, NRO
 MVerá, NRO
 TLuphold, NRO
 MHayes, NRO
 RKaras, NRO
 KKavanagh, NRR
 RTaylor, NRO
 RidsNroDlse
 RidsNroDsra
 RidsNroDcip
 RidsEdoMailCenter
 RidsAcrsAcnwMailCenter
 RidsOgcMailCenter
 RidsNroMailCenter

ADAMS Accession Nos.: Pkg: ML19179A225; Ltr: ML19183A409 *via e-mail NRO-002

OFFICE	NRO/DLSE/LB1: PM	NRO/DLSE/LB1: PM	NRO/DLSE/LB1: PM	NRO/DLSE/LB1: PM	NRO/DLSE/LB1: LA
NAME	CSantos	PChowdhury*	MVerá	RFranovich	MMoore*
DATE	7 /15 /2019	7 / 2 /2019	7 / 15 /2019	7 / 15 /2019	7/03/2019
OFFICE	QTE	NRO/DESR/SPRA : BC	NRO/DESR/MEB : BC	NRO/DLSE/SRS B: BC	NRR/DIRS/QVI B: BC
NAME	QTE*	MHayes*	TLuphold*	RKarás*	KKavanagh*
DATE	7 / 8 /2019	7 / 1 /2019	7 / 2 /2019	7 / 2 /2019	7 / 2 /2019
OFFICE	NRO/DLSE/RG RB: BC	NRO/DLSE/LB1: BC	NRR/DIRS: D	NRO/DESR: D	NRO/DLSE: D
NAME	MDudek*	GCranston for SLee	GBowman* for CMiller	KCoyné*	RTaylor
DATE	7 / 2 /2019	7 /15/2019	7 / 10 /2019	7 /12 /2019	7 /16 /2019
OFFICE	NRO: D				
NAME	FBrown				
DATE	7 /24 /2019				

OFFICIAL RECORD COPY