

September 22, 2022

Docket No. 99902078

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

**SUBJECT:** NuScale Power, LLC Submittal of Presentation Materials Entitled “SDAA: Updates to NuScale’s Comprehensive Vibration Assessment Program,” PM-125615, Revision 0 (Open Session)

NuScale Power, LLC (NuScale) has requested a meeting with the NRC technical staff on September 29, 2022, to discuss updates to NuScale’s Comprehensive Vibration Assessment Program.

The purpose of this submittal is to provide presentation materials to the NRC for use during this meeting.

The enclosure to this letter is the nonproprietary version of the presentation entitled “SDAA: Updates to NuScale’s Comprehensive Vibration Assessment Program.”

This letter makes no regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions, please contact Liz English at 541-452-7333 or at [eenglish@nuscalepower.com](mailto:eenglish@nuscalepower.com).

Sincerely,



Mark W. Shaver  
Manager, Licensing  
NuScale Power, LLC

Distribution: Michael Dudek, NRC  
Getachew Tesfaye, NRC  
Bruce Bavol, NRC

Enclosure 1: “SDAA: NuScale Updates to the Comprehensive Vibration Assessment Program,” PM-125615, Revision 0 (Open Session)

**Enclosure 1:**

“SDAA: NuScale Updates to the Comprehensive Vibration Assessment Program,” PM-125615,  
Revision 0 (Open Session)

NuScale Nonproprietary



# SDAA Pre-Application Presentation

September 29, 2022

## SDAA: Updates to NuScale's Comprehensive Vibration Assessment Program

Olivia Hand, P.E., Mechanical Engineer

Stan Scoma, Licensing Engineer

Open Session

## Acknowledgement and Disclaimer

This material is based upon work supported by the Department of Energy under Award Number DE-NE0008928.

This presentation was prepared as an account of work sponsored by an agency of the United States (U.S.) Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.

## Agenda

- Meeting Purpose
- Meeting Objective
- Overview of SDAA technical report content
- Critical Issues from Previous Pre-Application Engagements
- Summary

## Meeting Purpose

- Present updates to the Standard Design Approval Application (SDAA) Comprehensive Vibration Assessment Program (CVAP)

## Meeting Objective

- NRC to gain understanding of the updates for the SDAA CVAP

# Overview of Technical Report Content



## Technical Report Overview

- SDAA Analysis Technical Report – TR-121353
  - Similar scope as NPM-160: brief overview of design, discussion of primary and secondary flow conditions, screening of components for the FIV mechanisms, analysis program inputs, analysis program methodology and results
  - NPM-160 contained some limited discussion of the CVAP vibration measurement and inspection program; this is duplicate to the M&I content and will not be produced in the analysis TR
- SDAA M&I Technical Report – TR-121354
  - Benchmarking scope is unchanged: TF-1, TF-2, TF-3 build out modal testing, SG IFR
  - Validation program methodology is unchanged (ASME V&V20)
  - Validation program test requirements are unchanged
  - Initial startup testing – this section will contain new information for the NPM-20 sensor plan
  - Inspection program – methodology is unchanged but scope of inspection is updated to match screening

# Critical Issues from Previous Pre-Application Engagements

## Critical Issues from Previous Pre-Application Engagements

- Critical Issue #1 – Non-prototype classification of nth module
  - NuScale plans for nth module to be classified as non-prototype.
  - Full inspections of the prototype will be performed after initial startup test program is completed.
  - The future applicant who references the SDAA will make determination of whether startup instrumentation or full inspection will be pursued for nth module.
- Critical Issue #2 – Startup instrumentation plan
  - Will be addressed in closed session
- Critical Issue #3 – Design progress updates
  - Will be addressed in closed session
- Critical Issue #4 – SG-DWO resolution for vibration aspects
  - Cavitation and turbulent buffeting assessments for the IFR are underway. Will require reconciliation with SG IFR design and design transient when available; therefore no results are presented today.
  - The following CVAP-related topics will be addressed in the CVAP technical reports:
    - Screening of IFR for leakage flow instabilities
    - Cavitation and/or slug-flow loads on the IFR; concern for erosion
    - Turbulent buffeting loads and wear for the IFR due to DWO
- Critical Issue #5 – format of reported design analysis safety margins
  - Issue closed, preliminary results will be addressed in closed session

## Summary

- Updates to the SDAA CVAP include:
  - Overview of Technical Report Content
  - Critical Issues from Previous Pre-Application Engagements

## Acronyms

ASME	American Society of Mechanical Engineers
CVAP	Comprehensive Vibration Assessment Program
DWO	density wave oscillation
IFR	inlet flow restrictor
NPM	NuScale Power Module
SDAA	Standard Design Approval Application
SDA	Standard Design Approval
SG	steam generator
TF	test facility
TR	technical report
V&V	verification and validation