



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

June 3, 2022

MEMORANDUM TO: Michael I. Dudek, Chief
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

FROM: Ricky Vivanco, Project Manager */RA/*
New Reactor Licensing Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE
MAY 4, 2022, OBSERVATION PUBLIC MEETING FOR PRE-
APPLICATION DISCUSSION OF NUSCALE POWER, LLC'S
TREATMENT OF DC POWER IN SAFETY ANALYSIS LICENSING
TOPICAL REPORT SUBMITTAL

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on May 4, 2022, to discuss pre-application topics related to the NuScale Power, LLC (NuScale) method of treatment of DC power in safety analysis for a future Licensing Topical Report (LTR) submittal. NuScale requested this meeting to provide context for the method as part of the overall design and deterministic safety analysis processes. NuScale also sought feedback from the NRC staff on the methodology approach proposed in the future LTR submittal. This meeting was the second pre-application meeting held on this topic.

The public meeting notice dated May 4, 2022, was posted on the NRC public website, and can be found in the NRC's Agencywide Documents Access and Management Systems (ADAMS) under Accession No. ML22117A074. Information related to NuScale presentation can be found under ML22115A259.

Enclosed are the meeting agenda (Enclosure 1), list of participants (Enclosure 2), overview (Enclosure 3), summary of feedback – non-proprietary version (Enclosure 4) and summary of feedback – proprietary version (Enclosure 5). The complete ADAMS package can be found under ML22152A235.

Docket No. 99902078

Enclosures:
As stated

cc: w/encl.: DC NuScale Power

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Getachew Tesfaye, NRR/DNRL
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SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 4, 2022, OBSERVATION PUBLIC MEETING FOR PRE-APPLICATION DISCUSSION OF NUSCALE POWER, LLC'S TREATMENT OF DC POWER IN SAFETY ANALYSIS LTR SUBMITTAL DATED: JUNE 3, 2022

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ADAMS Accession Nos.:

PKG: ML22152A235

MEMO: ML22152A236

***via eConcurrence**

NRR-106

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U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 4, 2022,
OBSERVATION PUBLIC MEETING FOR PRE-APPLICATION DISCUSSION OF NUSCALE
POWER, LLC'S TREATMENT OF DC POWER IN SAFETY ANALYSIS LTR SUBMITTAL

MEETING AGENDA

May 4, 2022

<i>Time</i>	<i>Topic</i>	<i>Speaker</i>
11:00 – 11:05 PM	Introductions and Opening Remarks	All
11:05 - 11:10 PM	Discussion of NuScale's Treatment of DC Power in Safety Analysis	NRC/NuScale
11:10 - 11:30 PM	Questions from the public	NRC/Public
	Closed Portion	
11:30-1:00 PM	Continued Discussion of Proprietary Information	NRC/NuScale
1:00 PM	Adjourn	

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OBSERVATION PUBLIC MEETING FOR PRE-APPLICATION DISCUSSION OF NUSCALE
POWER, LLC'S TREATMENT OF DC POWER IN SAFETY ANALYSIS LTR SUBMITTAL

LIST OF ATTENDEES

May 4, 2022

Name	Organization
Ricky Vivanco	NRC
Getachew Tesfaye	NRC
Michael Dudek	NRC
Sheila Ray	NRC
Victor Cusumano	NRC
Rebecca Patton	NRC
Antonio Barrett	NRC
Brian Smith	NRC
Joseph Donoghue	NRC
Adam Rau	NRC
Robert Beaton	NRC
MJ Ross-Lee	NRC
Joshua Miller	NRC
Bruce Bavol	NRC
Ryan Nolan	NRC
Rosemary Sugrue	NRC
Carl Thurston	NRC
Michael Snodderly	NRC
Joshua Miller	NRC

Craig Harbuck	NRC
Thomas Griffith	NuScale
Paul Infanger	NuScale
Andy Lingenfelter	NuScale
Kristopher Cummings	NuScale
Meghan McCloskey	NuScale
Ben Bristol	NuScale
Kevin Lynn	NuScale
Robert Gamble	NuScale
Mark Shaver	NuScale
David Rickenbach	NuScale
Kent Welter	NuScale
Gary Becker	NuScale
Melissa Bates	DOE
Yan Peng	
John Pfabe	

U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 4, 2022,
OBSERVATION PUBLIC MEETING FOR PRE-APPLICATION DISCUSSION OF NUSCALE
POWER, LLC'S TREATMENT OF DC POWER IN SAFETY ANALYSIS LTR SUBMITTAL

OVERVIEW

The U.S. Nuclear Regulatory Commission (NRC) held an observation public meeting on May 4, 2022, to discuss pre-application topics related to the NuScale Power, LLC (NuScale) method of Treatment of DC Power in Safety Analysis LTR submittal. NuScale requested this meeting to provide context for the method as part of the overall design and deterministic safety analysis processes, outline the method described in the topical report and provide an example of the method as it is applied. NuScale also sought feedback from the NRC staff on the proposed approach in the future topical report submittal. This meeting was the second pre-application meeting held on this topic. The non-proprietary information related to NuScale's presentation can be found under ADAMS Accession No. ML22115A259.

The beginning of the meeting was open to the public. NuScale gave opening remarks and a short presentation to summarize what the closed session presentation would cover. Only general questions were posed from the NRC during this time. NuScale clarified that this topical report would be submitted sometime late 2nd quarter or in the beginning of the 3rd quarter of this year. NuScale further clarified that this Topical Report is a new submittal and neither a supplement nor revision to a previous topical report about passive electrical systems. There were no questions posed from the public attendees.

During the closed portion of the meeting, NuScale gave a presentation showing details of their proposed methodology. NuScale also included an example of how the methodology would be applied. The NRC staff provided feedback throughout the presentation (i.e., a non-proprietary version is summarized in Enclosure 4 and the proprietary version in summarized in Enclosure 5). The NuScale personnel and NRC staff agreed a third pre-application meeting may be warranted.

**U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF THE MAY 4, 2022,
OBSERVATION PUBLIC MEETING FOR PRE-APPLICATION DISCUSSION OF NUSCALE
POWER, LLC'S TREATMENT OF DC POWER IN SAFETY ANALYSIS LTR SUBMITTAL**

SUMMARY OF FEEDBACK – NON-PROPRIETARY VERSION

On May 4, 2022, the NRC staff held a pre-application discussion with NuScale Power, LLC regarding a proposed future LTR for the treatment of DC power in the safety analysis. The staff concluded its comments with the viewpoint that based on the limited information provided to the staff during the meeting, it would be challenged to find the proposed methodology acceptable and appropriate for generic application. Further, the staff stated that it would be difficult to assess that the augmented quality DC power supply (EDAS) is not safety-related without final design information and a safety analysis would be needed that demonstrates acceptable consequences if the EDAS fails during event progression. The staff also explained that determinations on topics like the one proposed in this proposed LTR, or more generically for the crediting of non-safety-related structures, systems and components (SSCs) in the Chapter 15 safety analysis, are reviewed on an event-specific or case-by-case basis. In this case the information the staff needs to make such a finding is either not available (yet) or might not be appropriate for a generic methodology. Finally, it was acknowledged that further engagement on this topic should be considered. The bullets below provide a summary of the specific feedback the NRC staff communicated during the May 4, 2022, public meeting:

- Staff stated that consistent with the philosophical approach to design-basis event analysis, it would need to have event-specific information to fully understand the frequency of occurrence of the event and its consequences.
- Staff stated that, currently, the regulations and applicable guidance do not allow the exclusion of the consideration of failures of non-safety-related SSCs following event initiation. Title 10 of the Code of Federal Regulations, Part 50.2 definition of safety-related are those SSCs relied upon to remain functional “during and following design-basis events.” Therefore, the assessment of availability/need for an SSC is not only required at event initiation, but throughout the entire transient. Absent an event-specific analysis to show that EDAS failure doesn’t lead to a more limiting result or result in a figure of merit not being satisfied the staff is not able to conclude the EDAS meets the definition of “safety-related.” In addition, the staff identified general design criteria (GDC) 1 which requires the quality of the SSCs to be commensurate with the importance of the safety function being performed:

- NuScale stated that it will justify the EDAS is not safety-related {{
}}. The staff stated that approach appears appropriate for that particular event sequence, {{
}}.
 - Staff described a similar topic encountered during the DCA review where the non-safety-related backup main steam isolation valves (MSIVs) were credited for mitigation of steam generator tube failure (STGF) events. NuScale resolved the issue by demonstrating the result of the non-safety-related backup MSIV failing during a SGTF would not result in unacceptable consequences or meet any of the safety-related criteria in 10 CFR 50.2.
- Staff stated that, in general, assumptions for timing of power-loss scenarios have been reviewed on an event-specific basis when a safety analysis is submitted. The staff reiterated that it would need to review the event progression in order to make determination of how it can be treated.
- Staff stated that failures identified by a failure modes and effects analysis (FMEA) are used by the staff to find potential single failures of safety-related SSCs. {{
}}. Typically, during Chapter 15 reviews, non-safety-related SSCs are assumed to fail non-mechanistically since they are not appropriately qualified. In these cases, the staff verifies that the non-safety-related SSCs are assumed to operate in a manner which leads to the most limiting results.
- Staff stated its approach to crediting of non-safety-related SSCs has been on a case-by-case basis. At a minimum, the credited non-safety-related SSC should not be part of the primary success path (i.e., not needed to meet any acceptable criteria). The staff should be able to reach a conclusion that crediting the non-safety-related SSCs is not needed if it fails during event progression and use of the system only provides additional margin to the acceptable criteria. As such, the staff stated that it would be challenging to reach these conclusions without a final design and safety analysis.
- Staff stated that there is extensive history regarding the assumption of failures in electrical components. For example, both passive and active single failures of safety-related/Class 1E electrical equipment is assumed at any time during a transient. Also, it may not be appropriate for the NuScale design to use the same simplifications or assumption as operating facilities if the design does not have a Class 1E onsite power system.