



April 19, 2019

Docket No. 52-048

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

SUBJECT: NuScale Power, LLC Supplemental Response to NRC Request for Additional Information No. 54 (eRAI No. 8837) on the NuScale Design Certification Application

REFERENCES: 1. U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 54 (eRAI No. 8837)," dated June 09, 2017
2. NuScale Power, LLC Response to NRC "Request for Additional Information No. 54 (eRAI No.8837)," dated May 18, 2018

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) supplemental response to the referenced NRC Request for Additional Information (RAI).

The Enclosure to this letter contains NuScale's supplemental response to the following RAI Question from NRC eRAI No. 8837:

- 03.11-4

This letter and the enclosed response make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Marty Bryan at 541-452-7172 or at mbryan@nuscalepower.com.

Sincerely,

Zackary W. Rad
Director, Regulatory Affairs
NuScale Power, LLC

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Enclosure 1: NuScale Supplemental Response to NRC Request for Additional Information eRAI No. 8837



Enclosure 1:

NuScale Supplemental Response to NRC Request for Additional Information eRAI No. 8837

Response to Request for Additional Information Docket No. 52-048

eRAI No.: 8837

Date of RAI Issue: 06/08/2017

NRC Question No.: 03.11-4

Regulatory Basis

10 CFR 50.49 and 10 CFR Part 50, Appendix A, Criterion 4 require that certain components important to safety be designed to withstand environmental conditions, including the effects of radiation, associated with design basis events, including normal operation, anticipated operational occurrences, and design basis accidents.

DSRS Section 3.11 indicates that the applicant's safety analysis report should be sufficient to support the conclusion that all equipment that are important to safety are capable of performing their design safety functions under all environmental conditions that may result from any normal mode of plant operation, anticipated operational occurrence, design basis events, and post-design basis events.

DSRS Section 3.11 also states that the staff will conclude that the environmental design and qualification of mechanical, electrical, and I&C equipment that are important to safety are acceptable and meet applicable regulations, based on the finding that the applicant has implemented an environmental design and qualification program that provides adequate assurance that mechanical, electrical, and I&C equipment that are important to safety will function as intended in the event of anticipated operational occurrences, as well as in the normal, accident, and post-accident environmental conditions. The applicant's environmental design and qualification program should be in accordance with the requirements and guidance described in the regulations, regulatory guides and industry standards identified in Subsection II of DSRS Section 3.11.

Finally, RGs 1.89 and 1.183 provide guidance on how to perform the radiological analysis related to equipment qualification. These guides indicate that assuming 1% failed fuel cladding

or the technical specification primary coolant activity limits, would be an acceptable assumption to use in calculating the normal operation equipment qualification dose.

Question

The DCD doesn't describe the assumptions used to determine radiological conditions outside of containment and inside the plant for EQ purposes during and following accidents. For example, there is no discussion of accident source terms outside of containment or radioactive material released to the plant atmosphere following design basis accidents and how it impacts the TID to equipment. In addition, there is no information available for staff to assess the radiological conditions in the general plant areas during and following an accident (such as radiation zone maps). These assumptions and information are important in demonstrating that the requirements of 10 CFR 50.49 and GDC 4 are met. Please provide this information.

NuScale Response:

In the response to RAI 8837, Questions 03.11-1, 03.11-3 and 03.11-4, submitted by RAIO-0518-60069, dated May 18, 2018, NuScale referred to a future accident source term topical report revision (TR-0915-17565, Rev. 3) that would "describe the methodology used to develop the revised NuScale source term". Upon review of the responses to the RAI 8837 Questions provided by RAIO-0518-60069, it appears that the responses to Questions 03.11-1 and 03.11-3 are correct and complete as currently written and only the the response to Question 03.11-4 requires a supplementary response to clarify the source terms used to develop the EQ for equipment outside of the containment. The following provides this supplementary response:

Using these revised accident source terms from the aforementioned topical report (including the iodine spike source term), NuScale has performed calculations to determine radiological conditions for environmental qualification purposes for all design basis accident scenarios. The maximum dose from any scenario in any given zone was chosen to bound all credible scenarios/design basis accidents.

Impact on DCA:

There are no impacts to the DCA as a result of this response.