

August 15, 2017

Docket: PROJ0769

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

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 8871 (eRAI No. 8871) on the NuScale Topical Report, "Evaluation Methodology for Stability Analysis of the NuScale Power Module," TR-0516-49417, Revision 0

REFERENCES: 1. U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 8871 (eRAI No. 8871)," dated June 30, 2017
2. NuScale Topical Report, "Evaluation Methodology for Stability Analysis of the NuScale Power Module," TR-0516-49417, Revision 0, dated July 2016

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

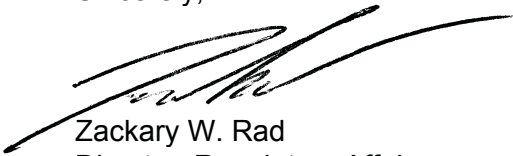
The Enclosure to this letter contains NuScale's response to the following RAI Question from NRC eRAI No. 8871:

- 01-15

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 Darrell Gardner at 980-349-4829 or at dgardner@nuscalepower.com.

Sincerely,



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



RAIO-0817-55450

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A
Bruce Bovol, NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 8871



RAIO-0817-55450

Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 8871

Response to Request for Additional Information Docket: PROJ0769

eRAI No.: 8871

Date of RAI Issue: 06/30/2017

NRC Question No.: 01-15

In accordance with 10 CFR 50 Appendix A GDC 10, "Reactor design," the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. The Standard Review Plan 15.0.2 acceptance criteria with respect to evaluation models specifies that the chosen mathematical models and the numerical solution of those models must be able to predict the important physical phenomena reasonably well from both qualitative and quantitative points of view.

Bullet 8 of Section 5.2, "Assumptions and Limitations," and Section 5.5.4, "Ambient Heat Losses," of topical report, TR-0516-49417- P, refer to ambient heat losses. It is not clear what the basis for the ambient heat losses are or how the model was qualified for production analysis.

In order to make an affirmative finding associated with the above regulatory requirement important to safety, NRC staff requests NuScale to describe how ambient heat losses are modeled for licensing calculations and justify any assumptions regarding ambient heat losses.

NuScale Response:

As indicated in Section 5.5.4 of the topical report, the ambient losses were computed from first principles using Equation 5-47. The heat transfer coefficient has been obtained by considering conduction through the outer vessel wall, convective and radiative heat transfer, and the result is fitted as given in Equation 5-48. As indicated in the topical report, the ambient heat loss component is insignificant relative to the steam generator (SG) except for the startup when the feedwater flow is very small. While the absolute value of ambient losses is not important, it was necessary to avoid the unphysical result of computing SG steam exit temperature that is higher than the primary coolant temperature during startup.

The examination of stability during startup, for which the ambient heat sink component is needed, has been performed for completeness of the comprehensive stability study.



Impact on Topical Report:

There are no impacts to the Topical Report TR-0516-49417, Evaluation Methodology for Stability Analysis of the NuScale Power Module, as a result of this response.