

August 22, 2017

Docket: PROJ0769

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

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 8831 (eRAI No. 8831) 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. 8831 (eRAI No. 8831)," dated June 23, 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).

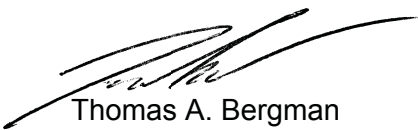
The Enclosure to this letter contains NuScale's response to the following RAI Question from NRC eRAI No. 8831:

- 01-7

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,



Thomas A. Bergman
Vice President, Regulatory Affairs
NuScale Power, LLC



RAIO-0817-55548

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Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 8831



Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 8831

**Response to Request for Additional Information
Docket: PROJ0769**

eRAI No.: 8831

Date of RAI Issue: 06/23/2017

NRC Question No.: 01-7

Title 10 of the Code of Federal Regulations (CFR), Part 50, Appendix A, General Design Criterion (GDC) 10 – Reactor Design, states that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits (SAFDLs) are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences (AOOs). GDC 12- Suppression of reactor power oscillations, states that the reactor core and associated coolant, control, and protection system shall be designed to assure that power oscillation which can result in conditions exceeding SAFDLs are not possible or can be reliably and readily detected and suppressed.

In Section 10.4 (Bullet 1), "Stability Analysis Application Methodology," of the stability methodology topical report (TR), TR-0516-49417-P, the statement implies that some limiting conditions were considered. It is not clear from this statement if the stability methodology gives consideration to those conditions of operation that are the most adverse allowable by technical specifications.

In order to make an affirmative finding associated with the above regulatory requirement important to safety, NRC staff requests NuScale to confirm that licensing calculations are being performed given consideration of the most adverse conditions of operation allowable by technical specifications.

NuScale Response:

The Topical Report presents the stability methodology covering the computational methods and the methodology of its application. The latter is delineated in Section 10.4 of the Topical Report.

The methodology development as presented in the Topical Report included extensive parameter variation covering a wide range of operation and design variability and concluded that the system is stable within its stated operating range with the exclusion of riser boiling - a condition that is monitored and prevented by the plant protection system with adequate margin. Application of this methodology for the purposes of design certification is presented in FSAR



Section 15.9 with design-specific inputs and assumptions. The topical report uses typical or expected values. The analysis in FSAR Section 15.9 is based on the equilibrium core design described in FSAR Section 4.3. The stability analysis presented in 15.9 is considered adequate for the purposes of design certification to demonstrate stable behavior; however, confirmatory analysis will be completed as part of the NuScale Reload Analysis Methodology which is a COLA action item. A specific example of this confirmatory analysis is stated at the end of Section 10.4 of the Topical Report,

"In order to utilize the methodology described in this report, the applicability of the regional exclusion stability protection solution by satisfying the condition that the conservative maximum (positive) MTC is within the value used for the generic analysis and the riser subcooling is within the technical specification value must be confirmed on a cycle-specific basis."

During the development of this RAI response, NuScale identified the need to review and potentially change the related FSAR sections. These changes are expected to be minor and any conforming changes would be provided as part of a future update to the FSAR.

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.