

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Monday, May 08, 2017 10:36 AM
To: RAI@nuscaldpower.com
Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Karas, Rebecca; Thomas, Matt; Schmidt, Jeffrey; Baval, Bruce
Subject: Request for Additional Information No. 19 (eRAI No. 8769) Section 04.02 (SRSB)
Attachments: Request for Additional Information No. 19 (eRAI No. 8769).pdf

Attached please find NRC staff's request for additional information concerning review of the NuScale Design Certification Application.

Please submit your response within 60 days of the date of this RAI to the NRC Document Control Desk.

If you have any questions, please contact me.

Thank you.

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Licensing Branch 1 (NuScale)
Division of New Reactor Licensing
Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-0546

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Request for Additional Information No. 19 (eRAI No. 8769)

Issue Date: 05/08/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 04.02 - Fuel System Design

Application Section: 4.2

QUESTIONS

04.02-1

Title 10 of the Code of Federal Regulations, Part 50, Appendix A, Criterion 2, requires that SSCs important to safety are designed to withstand the effects of earthquakes without the loss of capability to perform their safety functions. The design bases for these SSCs shall reflect: (1) the severity of the historical reports, with sufficient margin to cover the limited accuracy, quantity, and time period for the accumulated data, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed. SRP Section 4.2 Appendix A (II)(1) provides review guidance regarding the review of inputs used to analyze the loads.

Technical Report TR-0816-51127 provides NuScale specific fuel and control rod assembly analyses including the fuel structural analysis for externally applied forces. This analysis is based on input motions which cover a variety of conditions. It does not appear to the staff that the input motion analysis covers fuel in a power module located in the Reactor Vessel Flange Tool (RFT) after the crane and upper portion of the NPM have been removed.

In order to make an affirmative finding associated with the above regulatory requirement that accounts for all relevant SSCs important to safety, the NRC staff requests the following information to be provided:

- a) Describe the power module locations included in the NuScale fuel assembly structural response to externally applied forces analysis that is addressed in TR-0816-51127.
- b) Provide a fuel structural response to externally applied loads analysis for any permissible fuel locations not included in the answer to part (a) of this RAI (e.g. fuel located in the RFT while the crane and upper portion of the NPM are no longer attached, if applicable).
 - a. Include in this analysis a reference for the input motion assumptions
 - b. Provide justification for the applicability of the fuel assembly natural frequency testing used in this model. In particular, the staff is interested in the applicability of the fuel assembly pluck tests to a situation in which the fuel assembly is constrained only on one end (after the upper core plate has been removed).