



January 23, 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. 200 (eRAI No. 9021) on the NuScale Design Certification Application

REFERENCES: 1. U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 200 (eRAI No. 9021)," dated August 25, 2017
2. NuScale Power, LLC Response to NRC "Request for Additional Information No. 200 (eRAI No.9021)," dated October 23, 2017

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. 9021:

- 03.09.03-4

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. 9021

Enclosure 1:

NuScale Supplemental Response to NRC Request for Additional Information eRAI No. 9021

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

eRAI No.: 9021

Date of RAI Issue: 08/25/2017

NRC Question No.: 03.09.03-4

Per requirements of GDCs 1, 2, 4, 14, and 15; 10 CFR 50.55a; this section evaluates the operating capability for components, valves and piping as they relate to ASME Class 1, Class 2, and Class 3 components. Per SRP 3.9.3 Appendix A.5.C, to ensure the operating capability of Helical Coil Steam Generator (HCSG), the applicant is requested to discuss whether and how does the HCSG, which is actually the helical coil piping system, meet the piping functional operability conditions as concluded by NUREG-1367.

1. Reversing dynamic loads are considered due to earthquakes, or relief-valve actuation and pressure wave loads.
 2. Dynamic moments are calculated using an elastic response spectrum analysis with +/-15% peak broadening and with not more than 5% damping.
 3. Steady-state (e.g., weight) stresses do not exceed 0.25Sy.
 4. D_o/t does not exceed 50 where D_o is the pipe outer diameter and t is the thickness.
 5. External pressure does not exceed internal pressure.
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NuScale Response:

The initial response to Question 03.09.03-4 was provided by NuScale letter RAIO-1017-56765 dated October 23, 2017. That response provided discussion of the criteria used for evaluation of

the Helical Coil Steam Generator (HCSG) tubing to meet the five piping functional operability conditions of NUREG-1367.

NuScale noted in its response that 'SG tubing meets criteria provided for design by analysis according to NB-3200 and is not required to be designed using Code equations for piping from NB-3600. NUREG-1367 provides criteria that must be met for piping in instances where the Level D Code equations from NB-3600 may not be sufficient to ensure that functionality is not impaired (e.g due to large displacement). Although NUREG-1367 does not actually address SG tubing designed by NB-3200, the helical coil tubing is expected to satisfy the functional operability conditions provided in NUREG-1367 as follows:'

and made the following statement to address NUREG-1367 operability condition 2:

'2. For seismic loading, moments are calculated using elastic response spectrum analysis as required by the design specification. In-structure response spectra used in the analysis are broadened by 15% in accordance with FSAR Section 3.7.2.5.1 and Section 8.4.2.5 of TR-0916-51502-P, Rev. 0. Damping shall not exceed 5%.'

The purpose of this supplemental response is to provide clarification to this NUREG-1367 condition 2 discussion. Although elastic response spectrum analysis was used for evaluation of the HCSG tubing, NB-3200 SG tubing evaluation is not limited to the performance of elastic response spectrum analysis. As noted in the ASME design specification, elastic response spectrum analysis is one of several acceptable methods for evaluation of the HCSG tubing.

Accordingly, the discussion of NUREG-1367 operability condition 2 is superseded by the following:

'2. For seismic loading, moments are calculated using elastic response spectrum analysis as allowed by the ASME design specification as one of several acceptable analysis methods. In-structure response spectra used in the analysis are broadened by 15% in accordance with FSAR Section 3.7.2.5.1 and Section 8.4.2.5 of TR-0916-51502-P, Rev. 0. Damping shall not exceed 5%.'

Impact on DCA:

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