RAIO-0917-56215

September 26, 2017 Docket No. 52-048

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. 120 (eRAI No. 9020) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 120 (eRAI No. 9020)," dated August 02, 2017

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. 9020:

- 05.04.12-1

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 Response to NRC Request for Additional Information eRAI No. 9020

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NuScale Response to NRC Request for Additional Information eRAI No. 9020

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

eRAI No.: 9020
Date of RAI Issue: 08/02/2017

NRC Question No.: 05.04.12-1

10 CFR 50.34(f)(2)(vi) requires, in part, that a design provide the capability of high point venting of non-condensable gases from the reactor coolant system, and other systems that may be required to maintain adequate core cooling. NuScale has requested an exemption from 10 CFR 50.34(f)(2)(vi). In order to make a finding on the exemption, staff needs sufficient information to ensure that core cooling capability is not inhibited by the presence of non-condensable gases.

TR-0916-51299-P, the Long-Term Cooling Methodology technical report, makes an assumption related to non-condensable gases that is substantially larger than what could be initially present in containment in order to account for gases present in the RCS. It is not clear to the NRC staff why that quantity is limiting. The applicant is requested to provide a statement clarifying why such assumption is bounding.

NuScale Response:

The 35 psia initial containment pressure in the long term cooling minimum cooldown calculations equates to more than 700 lbm of noncondensible gas being initially present in the containment vessel.

A calculation was done to conservatively calculate the mass of noncondensible gas present in the reactor coolant system and containment vessel during normal steady-state operation that could be transported to the containment during long term emergency core cooling system operation. The sources of noncondensible gas considered in this calculation were gas dissolved in the reactor coolant system liquid, accumulated in the pressurizer vapor space, accumulated in the control rod drive mechanisms and the reactor coolant system degasification line, and initially present in the containment vessel. Conservative assumptions in this calculation include a conservatively high partial pressure of noncondensible gas in the pressurizer, assuming the pressurizer pressure is at the high end of the normal operating range, and the initial pressurizer level is below the normal operating range. With these sources of noncondensible gas and conservative assumptions, the total mass of noncondensible gas is less than 300 lbm. With

more realistic assumptions for pressurizer level and partial pressure of noncondensible gas in the pressurizer the total mass of noncondensible gas is less than 200 lbm.

Therefore, the initial containment pressure assumption made in the long term cooling minimum cooldown calculations is based on a bounding quantity of noncondensible gases as compared to the actual amount of noncondensible gas present in the reactor coolant system and containment vessel during normal steady-state operation that could be transported to the containment during long term emergency core cooling system operation.

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