RAIO-0118-58271

January 22, 2018

Docket No. 52-048

U.S. Nuclear Regulatory Commission
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11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 302 (eRAI No. 9276) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 302 (eRAI No. 9276)," dated December 16, 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. 9276:

- 05.02.05-6

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 Steven Mirsky at 240-833-3001 or at smirsky@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. 9276

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NuScale Response to NRC Request for Additional Information eRAI No. 9276

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

eRAI No.: 9276
Date of RAI Issue: 12/16/2017

NRC Question No.: 05.02.05-6

10 CFR 50, Appendix A, General Design Criterion (GDC) 30 requires, in part, that means “be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.” Regulatory Guide 1.45, “Guidance on Monitoring and Response to Reactor Coolant System Leakage,” describes acceptable methods for implementing GDC 30 with respect to the selection of reactor core pressure boundary (RCPB) leakage detection systems.

In TS LCO 3.4.7, “RCS Leakage Detection Instrumentation,” NuScale uses three reactor coolant system (RCS) detection methods: (a) containment evacuation system (CES) condensate, (b) CES pressure, and (c) CES radiation monitor. The detection capability of methods (a) and (b) satisfies the quantitative guidance of detecting 1 gpm leakage within one hour, as indicated in RG 1.45. However, method (c) does not satisfy the above quantitative guidance, but provides qualitative capability for the RCS leakage detection as indicated in FSAR Section 5.2.5.

As a follow-up to the teleconference with NuScale on October 18, 2017 relating to the clarification on NuScale’s response to eRAI 8863 Question 06.02.04-4, the staff reviewed the statement in the RAI response that “with two of the methods inoperable due to high containment pressure, reactor operators will perform the required actions within specified completion times according to the technical specifications.” The referenced TS LCO 3.4.7 has in the “required actions” for Condition A, “One required leakage detection channel inoperable,” to perform SR 3.4.5.1, once per 24 hours. This “required action” does not meet NRC guidance in RG 1.45, Regulatory Positions C.2.2 and C.2.3. Position C.2.3 states that plant technical specifications should identify at least two independent and diverse methods that have the detection capabilities specified in C.2.2, which is detecting the leakage of up to 1 gpm within one hour. The staff finds that performing SR 3.4.5.1 may not meet the criterion of detecting 1 gpm leakage within one hour. If the two required methods used to satisfy the LCO requirement are either (a) and (c), or (b) and (c), and if in Condition A (One required leakage detection channel inoperable) and the only remaining available method under this condition is method (c), the CES gaseous radioactivity monitor, which does not have the capability specified in C.2.2 of RG 1.45, then the performance of SR 3.4.5.1 is inadequate. Therefore, Position C.2.3 of RG 1.45 is not satisfied.

Therefore, LCO 3.4.7, which could rely on the two methods (a) and (c), or methods (b) and (c), would not meet Position C.2.3 if either method (a) or (b) were inoperable. Since LCO 3.4.7 specifies two of the three methods, (a), (b), and (c) shall be operable, and method (c), gaseous radioactivity monitor, does not meet the capability guidance of C.2.2, the TS does not meet RG 1.45 and is inadequate.

The applicant is requested to revise the proposed LCO 3.4.7 to be consistent with RG 1.45 Positions C.2.2 and C.2.3 as discussed above.

NuScale Response:

The postulated condition of concern as described in the RAI is the loss of both channels of leakage detection instrumentation for method (a) or method (b).

As described in the response to eRAI 8863 Question 06.02.04-4, if either method (a) or method (b) has one or more required channels inoperable the reactor operators must perform the Required Actions of Condition A. With one channel of method (a), one channel of method (b), or one channel of both method (a) and method (b) inoperable two independent and diverse methods of detection remain available, consistent with the regulatory guidance.

However, if both channels of method (a), method (b), or the single channel of method (c) are inoperable, then consistent with the rules of applicability Condition B must also be entered. In each of these cases all required channels of the leakage detection *method* are inoperable. This condition specifically addresses the loss of diverse, independent means to quantify leakage as described in section C.2.3 of the regulatory guide. The Required Action for Condition B directs the restoration of at least one channel of the affected method within 72 hours, or will result in entry into Condition C because Required Action B.1 was not met.

Required Actions C.1 and C.2 require the unit to exit the MODES of Applicability for the RCS Leakage Detection Instrumentation LCO.

In summary, if either (or both) of the two methods that are used to quantify leakage as described in RG 1.45 C.2.2 are not capable of performing the required function, the required actions will result in the plant taking action to restore leakage instrumentation or to initiate a plant shutdown.

This formulation is consistent with requirements of 10 CFR 50.36, the Writer's Guide for Improved Standard Technical Specifications, and the rules in Chapter 1 and Section 3.0 of the proposed Technical Specifications.

NuScale response to previously submitted eRAI 9051, question 16-26 dated October 18, 2017 (ML17291A299), resulted in modifications to LCO 3.4.7 including clarification of the Conditions

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descriptions and Required Actions.

Impact on DCA:

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