

NuScaleDCRaisPEm Resource

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Sent: Monday, June 26, 2017 1:57 PM
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Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Jackson, Diane; Tabatabai, Omid; Ashley, Clinton
Subject: Request for Additional Information No. 70, RAI 8888
Attachments: Request for Additional Information No. 70 (eRAI No. 8888).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
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Request for Additional Information No. 70 (eRAI No. 8888)

Issue Date: 06/26/2017
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 06.02.04 - Containment Isolation System
Application Section: 06.02.04

QUESTIONS

06.02.04-6

10 CFR 52.47(a)(2) requires applicants to provide sufficient information to permit staff's understanding of the system designs and their relationship to the safety evaluations. DSRS 10.3, "Main Steam Supply System," Subsection III, "Review Procedure," Item 6.C states that the main steam isolation valves (MSIVs), including any other shutoff valves, can close against maximum steam flow. SRP 10.4.7, "Condensate and Feedwater System," specifies that isolation capabilities should be provided to ensure that the system safety function can be accomplished for loss of either onsite or offsite power assuming a single failure.

The NuScale FSAR Tier 2, Section 6.2.4, "Containment Isolation System," contains the following performance information related to primary side containment isolation valves (PSCIVs) and secondary side containment isolation valves (SSCIVs) (e.g., MSIVs and feedwater isolation valves (FWIVs)):

"The PSCIVs and SSCIVs are designed such that closure times assume the valve begins to stroke within two seconds of de-energization or loss of power to the pilot valve solenoid and fully stroke closed within five seconds of beginning the stroke for a total of seven seconds.

The PSCIVs are designed with the capability of stopping line break flows of 200 percent within a five second valve stroke time.

The MSIVs are capable of stopping fully developed steam line break flows of 100 percent and four percent steam conditions within a five second valve stroke time. The main steam isolation bypass valve is capable of closure within 10 seconds of receipt of a closure signal or loss of power. The FWIVs are capable of stopping fully developed FWLB flows of 200 percent in the forward direction and together with the internal safety-related check valve are capable of closure within 1 second on fully-developed reverse flow."

The basis for flow performance criteria (e.g., capability to stop break flows) is not evident in the NuScale FSAR. In particular, the staff could not find information on how the flow performance limits were established (e.g., associated with or derived from the safety evaluations). In addition, the flow performance is expressed in terms of percentage; the actual amount (e.g., lbm/hr) of flow should also be specified (e.g., as described in DSRS 10.3) and in order to support equipment qualification assessments.

Based on the regulation and staff guidance cited above, the NRC staff requests the applicant to clarify and technically justify the flow criteria (in mass/time) for the PSCIV, SSCIV, and any other backup valves credited for providing isolation (e.g., secondary MSIVs). The FSAR should be modified accordingly.