

NuScaleDCRaisPEm Resource

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Sent: Friday, July 07, 2017 4:25 PM
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Subject: Request for Additional Information No. 89, RAI 8942
Attachments: Request for Additional Information No. 89 (eRAI No. 8942).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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Request for Additional Information No. 89 (eRAI No. 8942)

Issue Date: 07/07/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 03.06.02 - Determination of Rupture Locations and Dynamic Effects Associated with the Postulated Rupture of Piping

Application Section: 3.6

QUESTIONS

03.06.02-15

In NuScale Tier 2 FSAR Table 1.8-2, "Combined License Information Items," the applicant identifies four action items (COL Items 3.6-1, 3.6-2, 3.6-3, and 3.6-4) for COL applicant related to pipe break hazards analysis (PRHA) for certain plant areas. The details of those four COL items are described in FSAR Section 3.6. Specifically, COL Item 3.6-1 states that a COL applicant that references the NuScale Power Plant design will determine if a high-energy line break or moderate energy line break outside of the Reactor Building, Control Building, or Radioactive Waste Building could affect site-specific essential equipment (or result in a transient or other off-normal event in a second module), and install protection as necessary. COL Item 3.6-2 states that a COL applicant that references the NuScale Power Plant design will finalize the stress analysis of the high-energy lines in the Reactor Pool Bay, design appropriate protection features, and update Table 3.6-2, Figure 3.6-12, Figure 3.6-13, Figure 3.6-14, and Figure 3.6-15 as appropriate. COL Item 3.6-3 states that a COL applicant that references the NuScale Power Plant design will finalize the stress analysis and the environmental analysis of the high-energy lines outside the Reactor Pool Bay. This includes the identification of any new detection and auto-isolation functions for mitigating an auxiliary boiler high-energy line break. In addition, the COL applicant will update Table 3.6-2, Figure 3.6-16 and Figure 3.6-17 as appropriate. COL Item 3.6-4 states that a COL applicant that references the NuScale Power Plant design will finalize the stress analysis for the high-energy lines outside the NuScale Power Module (NPM) if needed to identify and mitigate the consequences of potential breaks.

GDC 4 "Environmental and Dynamic Effects Design Bases," in part, requires that nuclear power plant SSCs important to safety be designed to accommodate the effects of, and be compatible with, environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss of coolant accidents. These SSCs are to be protected against the effects of pipe whip and discharging fluids resulting from high or moderate energy pipe breaks. 10 CFR 52.47(a)(25) states the interface requirements for those portions of the plant for which the application does not seek certification must be sufficiently detailed to allow completion of the FSAR. In coordination with this requirement, the NRC staff's guidance as delineated in RG 1.206 Section C.III.1.4, "Combined License Action or Information Items," states that COL applicants should identify or uniquely designate the information provided in the application, including the FSAR to address the COL action or information items.

Provide the following information/clarification to ensure that those COL Items as described in the NuScale FSAR provide acceptable action items for the COL applicant to adequately address the applicable PRHA such that the evaluation included in the respective PRHA meets the pertinent GDC 4 requirements.

- The scope of the COL Item 3.6-2 only address high-energy lines in the Reactor Pool Bay and does not include moderate-energy lines. Is there moderate-energy line in the Reactor Pool Bay? If yes, expand the COL Item to include the applicable moderate-energy lines.
- COL Item 3.6-3 states that a COL applicant will finalize the stress analysis and the environmental analysis of the high-energy lines outside the Reactor Pool Bay. The applicant is requested to explain why the dynamic analysis for the high-energy lines outside the Reactor Pool Bay is not needed.
- COL Item 3.6-4 states that a COL applicant will finalize the stress analysis of the high-energy lines outside the NPM if needed to identify and mitigate the consequences of potential breaks. It implies that this COL Item is applicable to all those plant areas outside the NPM (e.g., outside of the Reactor Building, Control Building, or Radioactive Waste Building, outside the Reactor Pool Bay etc.). However, the NRC staff noted that some of those plant areas are within the scope of COL Items 3.6-1, 3.6-2, and 3.6-3. The applicant is requested to clarify the scope of COL Item 3.6-4.