

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Wednesday, May 2, 2018 3:45 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Schmidt, Jeffrey; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 459 eRAI No. 9523 (15)
Attachments: Request for Additional Information No. 459 (eRAI No. 9523).pdf

Attached please find NRC staff's request for additional information (RAI) concerning review of the NuScale Design Certification Application.

Please submit your technically correct and complete 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
U.S. Nuclear Regulatory Commission
301-415-1647

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Request for Additional Information No. 459 (eRAI No. 9523)

Issue Date: 05/02/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15 - Introduction - Transient and Accident Analyses

Application Section:

QUESTIONS

15-14

10 CFR Part 50 Appendix A, General Design Criterion (GDC) 34, "Residual heat removal," and NuScale's Primary Design Criterion (PDC) 34, in FSAR Section 3.1.4.5, state:

A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

The long-term cooling technical report, TR-0916-51299, supports Final Safety Analysis Report (FSAR) Section 15.0.5, "Long Term Decay and Residual Heat Removal," when the emergency core cooling system (ECCS) is used for long term decay heat removal following either a non-loss of coolant accident (LOCA) or LOCA event up to 72 hours. The primary acceptance criteria for the analysis are 1) Collapsed liquid level is maintained above the active fuel and 2) fuel cladding temperature is maintained at an acceptable level such that the specified acceptable fuel design limits (SAFDLs) are preserved.

The staff notes that in Section 5.3 of TR-0916-51299, "Demonstration of Results," that no non-LOCA cases for minimum cooldown appear to have been evaluated as was the case for LOCAs. The staff notes that reactor coolant system (RCS) conditions following a non-LOCA transient such as turbine trip or loss of normal feedwater would yield different RCS conditions than a LOCA upon reaching the inadvertent actuation block (IAB) release threshold. Therefore, the staff is requesting additional information or justification as to why a non-LOCA minimum cooldown case was not evaluated. If one has been evaluated, the staff is requesting the applicant update TR-0916-51299 as appropriate. If non-LOCA minimum cooldown case(s) has been evaluated or need to be evaluated, the applicant should address the effect of IAB setpoint uncertainty on the resulting long term cooling acceptance criteria.