

## NuScaleDCRaisPEm Resource

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**From:** Chowdhury, Prosanta  
**Sent:** Tuesday, May 1, 2018 11:14 AM  
**To:** Request for Additional Information  
**Cc:** Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Schmidt, Jeffrey; NuScaleDCRaisPEm Resource  
**Subject:** Request for Additional Information No. 447 eRAI No. 9508 (15)  
**Attachments:** Request for Additional Information No. 447 (eRAI No. 9508).pdf

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

The NRC Staff recognizes that NuScale has preliminarily identified that the response to one or more questions in this RAI is likely to require greater than 60 days. NuScale is expected to provide a schedule for the RAI response by email within 14 days.

If you have any questions, please contact me.

Thank you.

Prosanta Chowdhury, Project Manager  
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. 447 (eRAI No. 9508)**

Issue Date: 05/01/2018

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

15-7

10 CFR 50 Appendix A, GDC 34, Residual heat removal, and NuScale's 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."

As discussed in FSAR Section 15.0.5, there are two systems to remove decay heat: the DHRS and the ECCS. The Long Term Cooling technical report, TR-0916-51299, which addresses long term decay heat removal after ECCS actuation, and supports the FSAR Chapter 15 analyses, states, "...during long-term cooling, maintaining a collapsed liquid level in the riser above the core and demonstrating cladding temperatures remain acceptably low indicate that MCHFR is not challenged."

The RCS water mass is a function of the reactor power and there may be an initial power in which the water level drops below the riser after a reactor trip. If the RCS level drops below the riser, but not low enough to actuate the ECCS, it is unclear to the staff if fuel cladding temperatures would remain low enough to preserve the SAFDLs consistent with PDC 34. The staff is requesting the applicant address this potential scenario involving the interruption of continuous RCS natural circulation and, if necessary, demonstrate that cladding temperature remains acceptable low indicating that MCHFR is not challenged in a similar manner to that evaluated in the LTC report. If credit is taken for degraded DHRS heat removal capability (i.e., intermittent RCS natural circulation) the applicant should provide experimental data which validates the degraded DHRS heat removal capability.