

## NuScaleDCRaisPEm Resource

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**From:** Chowdhury, Prosanta  
**Sent:** Wednesday, April 11, 2018 4:31 PM  
**To:** Request for Additional Information  
**Cc:** Lee, Samuel; Cranston, Gregory; Bovol, Bruce; Karas, Rebecca; Travis, Boyce; NuScaleDCRaisPEm Resource  
**Subject:** Request for Additional Information No. 417 eRAI No. 9442 (05.04.07)  
**Attachments:** Request for Additional Information No. 417 (eRAI No. 9442).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.

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

**Hearing Identifier:** NuScale\_SMR\_DC\_RAI\_Public  
**Email Number:** 448

**Mail Envelope Properties** (BN7PR09MB26097894A1B5075CE29F725E9EBD0)

**Subject:** Request for Additional Information No. 417 eRAI No. 9442 (05.04.07)  
**Sent Date:** 4/11/2018 4:30:43 PM  
**Received Date:** 4/11/2018 4:30:48 PM  
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**Post Office:** BN7PR09MB2609.namprd09.prod.outlook.com

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	556	4/11/2018 4:30:48 PM
Request for Additional Information No. 417 (eRAI No. 9442).pdf		11846

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**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

## **Request for Additional Information No. 417 (eRAI No. 9442)**

Issue Date: 04/11/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 05.04.07 - Residual Heat Removal (RHR) System

Application Section: 5.4.3

### QUESTIONS

#### 05.04.07-6

10 CFR Part 50, Appendix A, GDC 34 requires in part that a system have the capability to transfer heat from the reactor such that fuel and pressure boundary design limits are not exceeded; this requirement is reflected in NuScale's PDC 34. For the NuScale design, the decay heat removal system (DHRS) serves this function.

FSAR Tier 2, Section 5.4.3.1 states that the design basis for the DHRS is to "remove post-reactor trip residual and core decay heat from operating conditions". During the course of interactions with NuScale regarding the return to power scenario as part of FSAR Section 15.0.6, NuScale has stated that the DHRS would be relied on for core cooling in the event of a select set of transient conditions involving a stuck rod. Such a scenario involves the DHRS removing core fission power, which is outside the design basis described in FSAR Section 5.4.3. Therefore, staff requests the applicant update the design basis description in Section 5.4.3.1 for the DHRS to include all scenarios for which DHRS is relied on to remove heat and/or core power. Additionally staff requests that the applicant provide a discussion somewhere in Section 5.4.3 describing the DHRS function during a return to power scenario, and either provide an appropriate system performance curve for the event (e.g. FSAR Figures 5.4.-13/14 and -15/16) or justify why the event is bounded by other design basis events. Further, staff requests that NuScale update PDC 34 to address fission power, or justify why PDC 34 adequately covers the existing design basis event spectrum.