

## NuScaleDCRaisPEm Resource

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**From:** Chowdhury, Prosanta  
**Sent:** Wednesday, April 11, 2018 5:10 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. 419 eRAI No. 9502 (15)  
**Attachments:** Request for Additional Information No. 419 (eRAI No. 9502).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

**Hearing Identifier:** NuScale\_SMR\_DC\_RAI\_Public  
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**Options**

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## Request for Additional Information No. 419 (eRAI No. 9502)

Issue Date: 04/11/2018

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

15-4

General Design Criterion (GDC) 10, "Reactor design," in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, requires that the reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits (SAFDLs) are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences (AOOs).

To confirm whether margin to the SAFDLS is met for the Chapter 15 events, the staff needs to understand whether appropriate initiating events and single failures have been considered in the analyses.

Final Safety Analysis Report (FSAR) Section 15.0.0.6.6, Treatment of Non-safety-related systems, states that the application assumes the worst single failure of a control system unless the following conditions are met:

- a single failure in the nonsafety-related system does not impact DBEs.
- a detectable, non-coincident, random independent failure does not disable the system.
- the system is capable of functioning under the licensing assumptions for the event being analyzed.

The staff notes the non-loss of coolant accident (LOCA) topical report, TR-0516-49416, which is incorporated by reference into the FSAR, states, "...if operation of the control system leads to a less severe plant response, then the actions of the control system are not simulated for the transient of interest. Conversely, if operation of the control system causes the event consequences to be more severe, the [plant control system (PCS)] is assumed to operate as designed. Under no circumstances is the control system assumed to malfunction, since such an occurrence would be considered an initiating event."

The staff requests the applicant reconcile the apparent difference between FSAR Section 15.0.0.6.6 and the non-LOCA topical report and identify if any FSAR Section 15 events assume the worst possible failure of a control system. If FSAR Section 15.0.0.6.6 contains the appropriate language, the staff further requests how bullets two and three above are evaluated.