

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Tuesday, May 1, 2018 4:37 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Burja, Alexandra; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 455 eRAI No. 9473 (15.02.06)
Attachments: Request for Additional Information No. 455 (eRAI No. 9473).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

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Created By: Prosanta.Chowdhury@nrc.gov

Recipients:

"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"Cranston, Gregory" <Gregory.Cranston@nrc.gov>
Tracking Status: None
"Franovich, Rani" <Rani.Franovich@nrc.gov>
Tracking Status: None
"Karas, Rebecca" <Rebecca.Karas@nrc.gov>
Tracking Status: None
"Burja, Alexandra" <Alexandra.Burja@nrc.gov>
Tracking Status: None
"NuScaleDCRaisPEm Resource" <NuScaleDCRaisPEm.Resource@nrc.gov>
Tracking Status: None
"Request for Additional Information" <RAI@nuscalepower.com>
Tracking Status: None

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Request for Additional Information No. 455 (eRAI No. 9473)

Issue Date: 05/01/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15.02.06 - Loss of Non-Emergency AC Power to the Station Auxiliaries

Application Section:

QUESTIONS

15.02.06-4

The transient and accident analyses in Final Safety Analysis Report (FSAR) Tier 2, Chapter 15 serve, in part, to demonstrate compliance with the general design criteria (GDC) in Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix A. GDC 15 requires that the reactor coolant system (RCS) and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary (RCPB) are not exceeded during any condition of normal operation, including anticipated operational occurrences (AOOs).

Design-Specific Review Standard (DSRS) for NuScale Small Modular Reactor Section 15.0, "Introduction—Transient and Accident Analyses," provides guidance for meeting the requirements of several NRC regulations, including GDC 15. DSRS Section 15.0 specifies that pressure in the reactor coolant and main steam systems should be maintained below 110 percent of the design values in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Furthermore, DSRS Section 15.0 guides the reviewer to evaluate key plant parameters (e.g., core flow) considered in the safety evaluation.

The FSAR Section 15.2.6 analyses, and most FSAR Chapter 15 analyses, assume a biased-low initial RCS flow rate. This assumption appears conservative for the calculation of minimum critical heat flux ration (MCHFR), as reduced RCS flow would reduce heat transfer. However, the staff notes that a biased-low initial RCS flow rate may not lead to limiting pressure responses because of reduced heat transfer capability. For the FSAR Section 15.2.6 analyses and all other Chapter 15 analyses that challenge RCS and/or steam generator (SG) pressure, justify the use of a biased-low initial RCS flow rate for the limiting RCS and SG pressure cases, or alternatively, update the limiting pressure cases to use the most limiting RCS flow rate. Update any affected sections in FSAR Chapter 15 as appropriate based on the response to this request.