

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Monday, April 30, 2018 4:52 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Franovich, Rani; Karas, Rebecca; Thomas, Matt; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 443 eRAI No. 9450 (15.02.07)
Attachments: Request for Additional Information No. 443 (eRAI No. 9450).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. 443 (eRAI No. 9450)

Issue Date: 04/30/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15.02.07 - Loss of Normal Feedwater Flow

Application Section:

QUESTIONS

15.02.07-1

10 CFR 50, Appendix A, General Design Criterion (GDC) 15, "Reactor coolant system design," requires the reactor coolant system 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 are not exceeded during any condition of normal operation, including anticipated operational occurrences.

To meet the requirements of GDC 15, the applicant should use suitably conservative parameters in the analytical model, as specified by NuScale's Design-Specific Review Standard (DSRS) Section 15.2.7, DSRS Acceptance Criterion 3.

In Final Safety Analysis Report (FSAR) Tier 2, Table 15.2-22, "Input Parameters Loss of Feedwater - Limiting Cases," the applicant reports the initial values used for input into the limiting loss of feedwater (LOFW) events. However, the applicant does not justify the use of the biased parameters and the staff cannot understand why some parameters have been biased the way they have. For example, for the limiting reactor coolant system (RCS) pressure event, the applicant reports that the initial RCS temperature and RCS pressure are biased low; however, the staff understands that biased high RCS temperature and pressure typically maximize peak RCS pressure. Similarly, the pressurizer level is reported to be biased high for the limiting minimum critical heat flux ratio (MCHFR) event; however, the staff understands that a low initial pressurizer level typically leads to a more limiting MCHFR. Another example is the steam generator (SG) tube heat transfer. The applicant currently adds 30% uncertainty to this in the limiting RCS pressure case; however, the staff understands that to conservatively maximize RCS pressure, the applicant should assume the minimal amount of heat being transferred through the SG, i.e. conservative low bias. The staff also found during its audit that tube plugging and fouling were assumed to be minimal, and for the reason mentioned above, the staff does not understand how this conservatively maximizes RCS pressure.

The staff request the applicant to provide justification in the FSAR for the input parameters used in each LOFW event.