

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Wednesday, March 21, 2018 2:51 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Franovich, Rani; Bovol, Bruce; Karas, Rebecca; Burja, Alexandra; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 395 eRAI No. 9416 (15.02.06)
Attachments: Request for Additional Information No. 395 (eRAI No. 9416).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.

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Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-1647

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Request for Additional Information No. 395 (eRAI No. 9416)

Issue Date: 03/21/2018

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

15.02.06-1

The transient and accident analyses in 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 are not exceeded during any condition of normal operation, including anticipated operational occurrences. Design-Specific Review Standard (DSRS) Section 15.2.6, "Loss of Nonemergency AC Power to the Station Auxiliaries," provides guidance for meeting the requirements of several GDC, including GDC 15. In doing so, it guides the reviewer to evaluate the values of system parameters and initial core and system conditions as input to the model.

Some of the bias conditions listed in FSAR Tier 2, Table 15.2-18, "Input Parameters Loss of Non-Emergency AC Power - Limiting Cases," do not appear to be consistent with the limiting bias conditions in engineering calculation (EC)-0000-2908, Revision 1, "Loss of Non-Emergency AC Power to the Station Auxiliaries Analysis," which supports the FSAR Section 15.2.6 analysis. In particular, the initial RCS temperature and initial SG pressure for the RCS overpressure case are not consistent between the FSAR and the EC. Please confirm whether the bias conditions in FSAR Tier 2, Table 15.2-18 are accurate. If so, justify the difference relative to the EC. If not, update the FSAR as appropriate.

15.02.06-2

The transient and accident analyses in FSAR Tier 2, Chapter 15 serve, in part, to demonstrate compliance with the GDC. DSRS Section 15.2.6 provides guidance for meeting the requirements of GDC 10, 13, 15, and 26. To meet these requirements, DSRS Section 15.2.6 states that the most limiting plant system single failure, as defined in the "Definitions and Explanations" of 10 CFR Part 50, Appendix A, must be assumed in the analysis and must satisfy the positions of RG 1.53, "Application of the Single-Failure Criterion to Nuclear Power Plant Protection Systems."

FSAR Section 15.2.6.2 states that no single failure caused more severe consequences for the RCS pressure and MCHFR cases but does not provide justification for the statement. Justify why no single failure is more limiting for RCS pressure and MCHFR, and update the FSAR as appropriate.

15.02.06-3

The transient and accident analyses in FSAR Tier 2, Chapter 15 serve, in part, to demonstrate compliance with the GDC. DSRs Section 15.2.6 provides guidance for meeting the requirements of GDC 10, 13, 15, and 26. To meet these requirements, DSRs Section 15.2.6 states that the most limiting plant system single failure, as defined in the "Definitions and Explanations" of 10 CFR Part 50, Appendix A, must be assumed in the analysis and must satisfy the positions of RG 1.53, "Application of the Single-Failure Criterion to Nuclear Power Plant Protection Systems."

FSAR Tier 2, Section 15.2.6, "Loss of Non-emergency Power to the Station Auxiliaries," discusses that the failure of a feedwater isolation valve (FWIV) to close is limiting for steam generator (SG) pressure. However, FSAR Tier 2, Table 15.2-16, "Loss of Non-Emergency AC Power - SG Peak Pressure - Sequence of Events," does not appear to reflect the failure of a FWIV to close, as the table indicates that FWIVs are fully closed at 14 seconds. Therefore, it is unclear whether the results do, in fact, consider the most limiting plant system single failure. Please address this discrepancy, and update the FSAR as appropriate.