

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Friday, March 23, 2018 4:35 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Murray, Demetrius; D'Agostino, Amy; Kent, Lauren; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 399 eRAI No. 9399 (18)
Attachments: Request for Additional Information No. 399 (eRAI No. 9399).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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From: Chowdhury, Prosanta

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Request for Additional Information No. 399 (eRAI No. 9399)

Issue Date: 03/23/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 18 - Human Factors Engineering

Application Section:

QUESTIONS

18-35

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(a)(8) requires an applicant for a design certification to provide a final safety analysis report (FSAR) that must include the information necessary to demonstrate compliance with any technically relevant portions of the Three Mile Island requirements set forth in 10 CFR 50.34(f), except paragraphs (f)(1)(xii), (f)(2)(ix), and (f)(3)(v). Section 10 CFR 50.34(f)(2)(iii) requires an applicant to "Provide, for Commission review, a control room design that reflects state-of-the-art human factor principles prior to committing to fabrication or revision of fabricated control room panels and layouts." Chapter 18, "Human Factors Engineering," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," and NUREG-0711, "Human Factors Engineering Program Review Model," identify criteria the staff uses to evaluate whether an applicant meets the regulation. The applicant stated in the FSAR, Tier 2, Section 18.0, "Human Factors Engineering - Overview," that its human factors engineering (HFE) program incorporates accepted HFE standards and guidelines including the applicable guidance provided in NUREG-0711, Revision 3.

Criteria in Section 11.4.3.7 (1-7), of NUREG-0711 addresses "Data Analysis and HED Identification." The staff requests that NuScale provide clarification in the following areas:

1. Criterion 2 states that, "The applicant should discuss the method by which data is analyzed across trials, and include the criteria used to determine successful performance for a given scenario." In Section 4.7 of the V&V IP, the applicant states, "Data are analyzed for each scenario across multiple trials. The method of analysis, consistency of measure assessing performance, and criteria used to determine successful performance for a given scenario is determined by the HFE Design Team." While the applicant commits to analyzing data across trials, no information regarding the methodology is provided. Please describe the method(s) that will be used to analyze data across trials and the criteria that will be used to determine successful performance.
2. Criterion 4 states, "When interpreting test results, the applicant should allow a margin of error to reflect the fact that actual performance may be slightly more variable than observed validation-test performance." In the FSAR, Section 18.10.2.3.7, the applicant states, "Expert judgment is employed to infer a margin of error from the observed performance or data analysis. This allows for the possibility that actual performance may be slightly more variable than ISV test results." Please clarify the following:

- Identify the qualifications of the personnel who will be providing the expert judgment
 - Discuss the process by which the expert judgment is derived (e.g. what information is considered) and how it is used in interpreting test results
3. Criterion 5 states, “The applicant should verify the correctness of the analyses of the data. This verification should be done by individuals or groups other than those who performed the original analysis, but may be from the same organization.” In the FSAR, Section 18.10.2.3.7, the applicant states, “Integrated system validation data analysis is reviewed to verify the correctness of the analyses of the data. Data and data-analysis tools (e.g., equations, measures, spreadsheets, expert opinions, resulting HEDs) are documented and available for review and subsequent audit and application during HFE program elements design integration or human performance monitoring.”

Please clarify the individual(s) or group(s) that will carry out this verification and how they are independent from those who conducted the original analysis.