

NuScaleDCRaisPEm Resource

From: Chowdhury, Prosanta
Sent: Wednesday, April 25, 2018 4:55 PM
To: Request for Additional Information
Cc: Lee, Samuel; Cranston, Gregory; Kent, Lauren; Scheetz, Maurin; NuScaleDCRaisPEm Resource
Subject: Request for Additional Information No. 434 eRAI No. 9427 (13.05.02.01)
Attachments: Request for Additional Information No. 434 (eRAI No. 9427).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

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
"Kent, Lauren" <Lauren.Kent@nrc.gov>
Tracking Status: None
"Scheetz, Maurin" <Maurin.Scheetz@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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Options

Priority: Standard
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Reply Requested: No
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Request for Additional Information No. 434 (eRAI No. 9427)

Issue Date: 4/25/2018

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 13.05.02.01 - Operating and Emergency Operating Procedures

Application Section: SRP 13.5.2.1

QUESTIONS

13.05.02.01-17

REGULATORY BASIS REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(a)(8) requires an applicant for a design certification to provide an FSAR (Final Safety Analysis Report) which includes 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), with certain exceptions. Section 10 CFR 50.34(f)(2)(ii) requires an applicant to "Establish a program, to begin during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, ... "

TMI Action Plan Item I.C.1, a Post-TMI requirement approved by the Commission for implementation, requires the preparation of emergency procedure technical guidelines for development of the Emergency Operating Procedures (EOPs). Preparation of the technical guidelines is conducted in accordance with NUREG-0737, "Clarification of TMI Action Plan Requirements," and NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability," which also specify submittal of the technical guidelines to the NRC for review and approval.

Meeting the requirements of TMI Action Plan Item I.C.1 as prescribed in NUREG-0737, Section I.C.1, and Supplement 1 to NUREG-0737, Section 7, is acceptance criteria in SRP 13.5.2.1, "Operating and Emergency Operating Procedures." Design-specific Generic Technical Guidelines (GTGs), otherwise referred to as the Emergency Operating Guidelines (EOGs), will be used by COL applicants to develop their Plant-Specific Technical Guidelines (P-STGs), from which their EOPs will be developed, and are the responsibility of the DC applicant.

By letter dated November 30, 2017 (ADAMS Accession No. ML17334B822) NuScale submitted technical report TR-1117-57216, "NuScale Generic Technical Guidelines," for docketing.

ISSUE

[[

]]. Because there is a possibility for design basis events to [[
]], NRC staff is concerned that scenarios exist where an incomplete reactor trip could occur coincident with a CIS (e.g., [[
]], and operators are precluded from [[

]]. The [[

]]. In this type of scenario, it appears that the NuScale GTGs do not provide direction to bring the power module to a safe shutdown condition. NRC staff is questioning whether the Reactivity Safety Function can be met following a reactor trip with the power module not in a safe shutdown state in the event of a control rod malfunction coincident with a CIS.

INFORMATION NEEDED

NRC staff requests that NuScale describe the indications and process used by the operators to bring the module to a safe shutdown condition in the event of an incomplete reactor trip with a CIS present, and to update the NuScale GTGs (flowcharts and basis) accordingly.

13.05.02.01-18

REGULATORY BASIS REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(a)(8) requires an applicant for a design certification to provide an FSAR (Final Safety Analysis Report) which includes 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), with certain exceptions. Section 10 CFR 50.34(f)(2)(ii) requires an applicant to "Establish a program, to begin during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, ... "

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Meeting the requirements of TMI Action Plan Item I.C.1 as prescribed in NUREG-0737, Section I.C.1, and Supplement 1 to NUREG-0737, Section 7, is acceptance criteria in SRP 13.5.2.1, "Operating and Emergency Operating Procedures." Design-specific Generic Technical Guidelines (GTGs), otherwise referred to as the Emergency Operating Guidelines (EOGs), will be used by COL applicants to develop their Plant-Specific Technical Guidelines (P-STGs), from which their EOPs will be developed, and are the responsibility of the DC applicant.

By letter dated November 30, 2017 (ADAMS Accession No. ML17334B822) NuScale submitted technical report TR-1117-57216, "NuScale Generic Technical Guidelines," for docketing.

ISSUE

The Reactivity Safety Function flowchart in Section 5.2 of the NuScale GTGs depicts the logic and specifies the operator actions necessary to assess and maintain the Reactivity Safety Function. [[

]], then the downstream DWS Isolation Sub-function logic of RD-2 and RD-3 would appear to be unnecessary, because the plant would have operated as designed with no operator action needed, culminating in a green endpoint on the flowchart, signifying that the Reactivity Safety Function was met.

INFORMATION NEEDED

NRC staff requests that NuScale: (1) explain the DWS Isolation Sub-function logic, and (2) make any necessary changes to the associated logic in technical report TR-1117-57216, to ensure the completeness and accuracy of the NuScale GTGs (flowcharts and basis).

13.05.02.01-19

REGULATORY BASIS REQUIREMENTS

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 52.47(a)(8) requires an applicant for a design certification to provide an FSAR (Final Safety Analysis Report) which includes 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), with certain exceptions. Section 10 CFR 50.34(f)(2)(ii) requires an applicant to "Establish a program, to begin during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, ... "

TMI Action Plan Item I.C.1, a Post-TMI requirement approved by the Commission for implementation, requires the preparation of emergency procedure technical guidelines for development of the Emergency Operating Procedures (EOPs). Preparation of the technical guidelines is conducted in accordance with NUREG-0737, "Clarification of TMI Action Plan Requirements," and NUREG-0737, Supplement 1, "Requirements for Emergency Response Capability," which also specify submittal of the technical guidelines to the NRC for review and

approval.

Meeting the requirements of TMI Action Plan Item I.C.1 as prescribed in NUREG-0737, Section I.C.1, and Supplement 1 to NUREG-0737, Section 7, is acceptance criteria in SRP 13.5.2.1, "Operating and Emergency Operating Procedures." Design-specific Generic Technical Guidelines (GTGs), otherwise referred to as the Emergency Operating Guidelines (EOGs), will be used by COL applicants to develop their Plant-Specific Technical Guidelines (P-STGs), from which their EOPs will be developed, and are the responsibility of the DC applicant.

By letter dated November 30, 2017 (ADAMS Accession No. ML17334B822) NuScale submitted technical report TR-1117-57216, "NuScale Generic Technical Guidelines," for docketing.

ISSUE

The Reactivity Safety Function flowchart in Section 5.2 of the NuScale GTGs depicts the logic and specifies the operator actions necessary to assess and maintain the Reactivity Safety Function. [[

]].

The Containment Integrity (CI) Safety Function flowchart in Section 5.1 of the NuScale GTGs depicts the logic and specifies the operator actions necessary to assess and maintain the Containment Integrity Safety Function. [[

]]. NRC staff is questioning why the logic associated with decision point CV-3 resides on the CI Safety Function flowchart rather than the Reactivity Safety Function flowchart, given that concern is one of reactivity and not containment integrity.

INFORMATION NEEDED

NRC staff requests that NuScale: (1) explain why CV-3 decision point logic is included on the CI Safety Function flowchart and not the Reactivity Safety Function flowchart, and (2) make any necessary changes to technical report TR-1117-57216, to ensure the completeness and accuracy of the NuScale GTGs (flowcharts and basis).