NuScaleDCRaisPEm Resource

From:	Cranston, Gregory
Sent:	Tuesday, December 18, 2018 2:14 PM
To:	Request for Additional Information
Cc:	Lee, Samuel; Karas, Rebecca; Drzewiecki, Timothy; Bavol, Bruce; Chowdhury, Prosanta; NuScaleDCRaisPEm Resource
Subject:	Request for Additional Information No. 513 eRAI No. 9643 (4.04)
Attachments:	Request for Additional Information No. 513 (eRAI No. 9643).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 by February 11, 2019, RAI to the NRC Document Control Desk.

If you have any questions, please contact me.

Thank you.

Hearing Identifier: NuScale_SMR_DC_RAI_Public
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From: Cranston, Gregory

Created By: Gregory.Cranston@nrc.gov

Recipients:
"Lee, Samuel" <Samuel.Lee@nrc.gov>
Tracking Status: None
"Karas, Rebecca" <Rebecca.Karas@nrc.gov>
Tracking Status: None
"Drzewiecki, Timothy" <Timothy.Drzewiecki@nrc.gov>
Tracking Status: None
"Bavol, Bruce" <Bruce.Bavol@nrc.gov>
Tracking Status: None
"Chowdhury, Prosanta" <Prosanta.Chowdhury@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. 513 (eRAI No. 9643)

Issue Date: 12/18/2018
Application Title: NuScale Standard Design Certification - 52-048
Operating Company: NuScale Power, LLC
Docket No. 52-048
Review Section: 04.04 - Thermal and Hydraulic Design
Application Section: 4.04

QUESTIONS

04.04-5

10 CFR 50.36(c)(2)(ii)(B) requires that a technical specification limiting condition for operation (LCO) be established for a "process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier."

In response to RAI 8773, Question 4.4-2 and RAI 9174, Question 16-37, NuScale provided updates to FSAR Section 4.4.5.2 and NuScale Generic Technical Specifications (GTS) LCO 3.4.1 to provide a surveillance of the reactor coolant system (RCS) flow during power ascension to confirm that the RCS loop resistance used in the thermal-hydraulic design and Chapter 15 transient and accident analyses remains bounding. Additionally, the updates to NuScale GTS Bases B.3.4.1 clarifies that:

For a given RCS flow resistance, RCS pressure and temperature in combination with THERMAL POWER establish the flow through the RCS including the reactor core.

NRC staff accepted these responses because they addressed the concern regarding potential sources of uncertainty impacting flow resistance (e.g., component misalignment, foreign material, analysis assumptions, etc.). The updated LCO 3.4.1 however, does not address the potential for secondary side perturbations and changes in axial flux shape to impact natural circulation characteristics (i.e., the thermal centers of the steam generator and reactor core). NRC staff expects that these factors affecting natural circulation also directly impact the amount of energy stored within the RCS, and that the loss-of-coolant accident (LOCA) analysis is sensitive to this parameter.

Accordingly, NRC staff requests that NuScale provide either:

(1) evidence that the current GTS provide adequate surveillance of NuScale Power Module (NPM) conditions such that operation within the bounds of the safety analysis is ensured, or

(2) modifications to NuScale GTS and GTS Bases to ensure that any changes to secondary side conditions or changes in axial flux shape do not result in operation of the NPM outside the bounds of the safety analysis.