

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Friday, December 29, 2017 12:00 PM
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Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Karas, Rebecca; Schmidt, Jeffrey; Nolan, Ryan; Franovich, Rani
Subject: Request for Additional Information No. 315 RAI No. 9237 (15.06.03)
Attachments: Request for Additional Information No. 315 (eRAI No. 9237).pdf

Attached please find NRC staff's request for additional information 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.

The NRC Staff recognizes that NuScale has preliminarily identified that the response to the question in this RAI is likely to require greater than 60 days.

If you have any questions, please contact me.

Thank you.

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Division of New Reactor Licensing
Office of New Reactors
U.S. Nuclear Regulatory Commission
301-415-0546

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Request for Additional Information No. 315 (eRAI No. 9237)

Issue Date: 12/29/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 15.06.03 - Radiological Consequences of Steam Generator Tube Failure (PWR) 07/1981

Application Section: 15.6.3

QUESTIONS

15.06.03-3

GDC 1 requires structures, systems, and components important to safety to be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. In addition, 10 CFR 50.2 defines safety-related as structures, systems and components that are relied upon to remain functional during and following design basis events to assure: (1) the integrity of the reactor coolant pressure boundary; (2) the capability to shut down the reactor and maintain it in a safe shutdown condition; or (3) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in § 50.34(a)(1) or § 100.11 of this chapter, as applicable.

FSAR Tier 2, Section 15.6.3, "Steam Generator Tube Failure (Thermal Hydraulic)," credits the nonsafety-related secondary main steam isolation valve (MSIV) to provide isolation of the faulted steam generator when single failure criteria is applied (i.e. MSIV fails to close). FSAR Tier 2, Section 10.3.3 states:

"The nonsafety-related secondary MSIVs downstream of the MSIVs are credited as backup isolation components in the event that an MSIV fails to close. Although not safety-related, the secondary MSIVs are designed to close under postulated worst-case conditions and are included in technical specification surveillance requirements to ensure their reliability and operability. Thus, consistent with the position established in NUREG-0138, Issue Number 1, the secondary MSIVs ensure that the blowdown is limited if a steamline were to break upstream of the MSIV."

NUREG-0138, Issue Number 1, states that GDC 1 permits flexibility in the acceptance level for safety-related equipment. NUREG-0138, Issue Number 1 also fully documents that its position is only applicable to spontaneous failures of secondary system piping not part of the primary system boundary, and where the potential for a release of fission products is significantly lower compared to a breach of the primary system boundary. As a steam generator tube rupture is a breach of the primary system boundary which bypasses multiple fission product barriers, provide additional justification as to why NUREG-0138, Issue Number 1 applies and/or provide a dose analysis which demonstrates the applicable accident dose limits are met with the single failure of the MSIV and the failure of the secondary, non-safety-related MSIV to close.