

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Saturday, August 05, 2017 1:51 PM
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Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Lupold, Timothy; Scarbrough, Thomas; Vera Amadiz, Marieliz
Subject: Request for Additional Information No. 149, RAI 8955 (3.9.6)
Attachments: Request for Additional Information No. 149 (eRAI No. 8955).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.

If you have any questions, please contact me.

Thank you.

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Request for Additional Information No. 149 (eRAI No. 8955)

Issue Date: 08/05/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 03.09.06 - Functional Design Qualification and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints

Application Section: 3.9.6

QUESTIONS

03.09.06-13

The NRC regulations in 10 CFR 50.55a require that nuclear power plant applicants and licensees satisfy the ASME OM Code incorporated by reference with specified conditions for the PST and IST programs. The following questions relate to the FSAR description of the NuScale PST and IST programs in satisfying the ASME OM Code:

A. NuScale FSAR Tier 2, Section 3.9.6.3, "Inservice Testing Program for Valves," and other portions of Section 3.9.6 state that valves in the NuScale Power Plant design will be grouped for analysis or testing in accord with the ASME OM Code. NuScale FSAR Tier 2, Section 3.9.6.3, "Inservice Testing Program for Valves," and other portions of Section 3.9.6 state that valves in the NuScale Power Plant design will be grouped for analysis or testing in accord with the ASME OM Code. The 2012 Edition of the ASME OM Code includes specific provisions for valve grouping of motor-operated valves (MOVs), safety and relief valves, and check valves. NuScale FSAR Tier 2, Section 3.9.6 specifies the implementation of the ASME OM Code (2012 Edition).

Describe the plans to group other valve types in accordance with the ASME OM Code.

03.09.06-14

B. NuScale FSAR Tier 2, Section 3.9.6.3.4, "Pressure Isolation Valve Leak Testing," states that the NuScale Power Plant design does not contain any pressure isolation valves (PIVs) which perform a specific function identified in paragraph ISTA-1100, "Scope," in Subsection ISTA, "General Requirements," of the ASME OM Code. NuScale FSAR Tier 1, Figure 2.1-1, "Containment System (Isolation Valves)," identifies the containment isolation valves (CIVs) in the NuScale Power Plant. In addition to specific CIVs in series, the manner in which tandem CIVs with two internal obturators are addressed for high pressure isolation is not clear in the NuScale FSAR. Although PIVs are applied only to the reactor coolant system (RCS) for typical light-water-reactors, the NuScale Power Plant design includes the need to isolate potentially high pressure of the containment vessel.

Describe the design aspects of the NuScale Power Plant that eliminates the need for PIVs to isolate the RCS or containment vessel.

03.09.06-15

C. NuScale FSAR Tier 2, Section 3.9.6.3.6, "Inservice Testing Program for Safety and Relief Valves," states that the safety and relief valves in the IST program and their testing provisions are specified in a table attached to NuScale FSAR Tier 2, Section 3.9.6. In addition, Section 3.9.6.3.6 states that all of the valves are grouped per the NuScale Power Module (NPM) to meet the "intent" of Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," of the ASME OM Code. The purpose of the term "intent" is not clear in the NuScale FSAR.

Clarify the NuScale FSAR as to whether the grouping of the safety and relief valves in the NuScale Power Plant design will satisfy the provisions of Mandatory Appendix I of the applicable edition of the ASME OM Code as incorporated by reference in 10 CFR 50.55a.

03.09.06-16

D. NuScale FSAR Tier 2, Section 3.9.6.5, "Relief Requests and Alternative Authorizations to the OM Code," states that no relief requests to the ASME OM Code are anticipated for the NuScale Power Plant design. Section 3.9.6.5 states that the NuScale Power Plant consists of up to 12 NPMs licensed under a single operating license. Section 3.9.6.5 indicates that the NuScale definition of Modes of Operation (see NuScale Design Certification Application, Part 4, "Generic Technical Specifications," Table 1.1-1, "Modes") differ from those defined in the ASME OM Code. References to a Mode called transition are specified in other locations of the IST program description in NuScale FSAR Tier 2. NuScale FSAR Tier 2, Table 3.9-15 on page 3.9-66 states that in cases where the performance of a valve full-stroke exercise test is limited to transitions (defined in NuScale technical specifications as the reactor mode when the reactivity condition is less than $0.95 k_{eff}$) or refueling outages, a table footnote is provided which justifies this determination. The ASME OM Code does not define a plant condition of transition in determining the specified IST intervals.

Describe the plans to satisfy requirements to perform the preservice and inservice testing specified in the ASME OM Code without requests for relief or alternatives to the ASME OM Code in light of the differences in terminology and operating conditions for the NuScale Power Plant design. For example, define the use of the term transition as part of the IST program, and describe the plan to request relief from or an alternative to the ASME OM Code in accordance with 10 CFR 50.55a(z) regarding use of this term. In addition, clarify the proposed COL Item 3.9-5 in response to this request.