

NuScaleDCRaisPEm Resource

From: Cranston, Gregory
Sent: Saturday, August 05, 2017 1:58 PM
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Cc: NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Lupold, Timothy; Scarbrough, Thomas; Vera Amadiz, Marieliz
Subject: RE: Request for Additional Information No. 150, RAI 8956 (3.9.6)
Attachments: Request for Additional Information No. 150 (eRAI No. 8956).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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Hearing Identifier: NuScale_SMR_DC_RAI_Public
Email Number: 172

Mail Envelope Properties (8c97b32cb91647cd8fac1c3e3fe813e3)

Subject: RE: Request for Additional Information No. 150, RAI 8956 (3.9.6)
Sent Date: 8/5/2017 1:58:14 PM
Received Date: 8/5/2017 1:58:17 PM
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Files	Size	Date & Time
MESSAGE	555	8/5/2017 1:58:17 PM
Request for Additional Information No. 150 (eRAI No. 8956).pdf		100546

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

Request for Additional Information No. 150 (eRAI No. 8956)

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

03.09.06-17

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 tables with examples for the NuScale PST and IST programs in satisfying the ASME OM Code:

A. NuScale FSAR Tier 2, Table 3.9-15, "NuScale Power Plant Inservice Testing Plan (Example Plan to be used in development of COL IST Plan)," states on page 3.9-64 that some preservice testing may be completed in the factory prior to shipping the reactor module to the site. Similarly, NuScale FSAR Tier 2, Section 3.9.3.3, "Pump and Valve Operability Assurance," states that active valves are subject to factory tests to demonstrate operability prior to installation. ASME OM Code, paragraph ISTA-2000, "Definitions," specifies a preservice test as a test performed after completion of construction activities related to the component and before first electrical generation by nuclear heat, or in an operating plant, before the component is initially placed in service. Similarly, paragraph ISTA-2000 in the ASME OM Code defines the preservice test period as the period of time following completion of construction activities related to the component and before first electrical generation by nuclear heat, in which component and system testing takes place, or in an operating plant prior to the component being initially placed in service. The statement in NuScale FSAR Tier 2, Table 3.9-15 that preservice testing may be completed in the factory does not satisfy the provisions of the ASME OM Code.

Describe the plans to satisfy the ASME OM Code provisions for preservice testing, or the plans to request relief from or an alternative to the ASME OM Code provisions in accordance with 10 CFR 50.55a(z).

03.09.06-18

B. NuScale FSAR Tier 2, Table 3.9-16, "Example Inservice Testing Valve Table Index," on page 3.9-67 states in a note that the seat tightness determination is performed as part of the performance test for Category C pressure relief devices, and may be performed as a method of close exercise testing for check valves. The note then indicates that pressure relief devices and check valves are further classified as Category A only if there is a safety analysis criteria existing for valve seat leakage such as for pressure relief devices or check valves performing containment isolation functions or reactor coolant system pressure isolation functions. ASME OM Code, Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants," paragraph ISTC-1300, "Valve Categories," defines Category A valves as valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their required function(s), as specified in paragraph ISTA-1100; and Category B valves as valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function(s), as specified in paragraph ISTA-1100.

Describe the basis for leakage categorization of valves to satisfy the provisions for the ASME OM Code, with a request for relief from or an alternative to the ASME OM Code if necessary.

03.09.06-19

C. NuScale FSAR Tier 2, Table 3.9-16 on page 3.9-68 includes an Exercise Test category of ET to exercise a Category A or B valve full-stroke to its safety function position(s) per the requirements of paragraph ISTC-3510, "Exercising Test Frequency," of the ASME OM Code. The IST tables in the NuScale FSAR do not indicate a planned application of the ET category.

Describe the intended application of this Exercise Test category.

03.09.06-20

D. NuScale FSAR Tier 2, Table 3.9-18, "Condensate and Feedwater System Valves in the Example Inservice Testing Program," on page 3.9-70 specifies that leak testing of the Group 2 (flow control valve / air operated) valves FW-FCV-1006 and 2006 is performed per the plant technical specifications.

Describe the manner in which the leak testing provisions and frequency specified in the ASME OM Code will be satisfied for these valves and other valves in the NuScale IST program that reference leak testing per the technical specifications, or request an alternative to the ASME OM Code as necessary.

03.09.06-21

E. NuScale FSAR Tier 2, Table 3.9-18 specifies in Note 5 on page 3.9-70 that certain valves will satisfy paragraph ISTC-3550, "Valves in Regular Use," of the ASME OM Code. A similar note appears in other example IST tables in the NuScale FSAR. Paragraph ISTC-3550 includes specific provisions that the analysis of observations otherwise required for testing will be made during exercising and recorded in accordance with the applicable exercise test frequency.

Clarify that these ASME OM Code provisions apply when satisfying the IST provisions as described in Note 5 in Table 3.9-18 and other applicable locations in the example IST tables.

03.09.06-22

F. NuScale FSAR Tier 2, Table 3.9-20, "Decay Heat Removal System Valves in the Example Inservice Testing Program," on page 3.9-74 specifies the decay heat removal (DHR) valves as OM Category B and also includes testing for Category C valves (identified as SRV exercise testing in the table). The table also includes an open safety function for these DHR valves.

Describe the basis for the OM category, exercise testing, and safety function for these DHR valves.

03.09.06-23

G. NuScale FSAR Tier 2, Table 3.9-21, "Emergency Core Cooling System Valves in the Example Inservice Testing Program," in Note 1 on page 3.9-76 states that the reactor vent valves (RVVs) and reactor recirculation valves (RRVs) do not have specific leakage criteria. Note 1 also states that the associated pilot valve bodies form part of the reactor coolant and containment boundaries and are subject to technical specification leakage requirements and Appendix J Type B testing, respectively.

Describe the manner in which the leak tight integrity of each RVV and RRV (including their four valve components) will be demonstrated to satisfy the provisions of the ASME OM Code, including Appendix I.

03.09.06-24

H. NuScale FSAR Tier 2, Table 3.9-23, "Safety and Relief Valves in the Example Inservice Testing Program," on page 3.9-78 specifies that the Reactor Safety Valves (RSVs) RCS-PSV-0003A and 0003B are ASME OM Code, Category C valves without leakage testing provisions.

Describe the basis for omitting leakage testing provisions to verify the capability of the RSVs to maintain their close position and to return to the closed position following their actuation, including the ASME OM Code provisions in ISTC-5240 and Appendix I.