

## NuScaleDCRaisPEm Resource

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**Sent:** Friday, July 07, 2017 2:56 PM  
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**Cc:** NuScaleDCRaisPEm Resource; Lee, Samuel; Chowdhury, Prosanta; Lupold, Timothy; Baval, Bruce; Hansing, Nicholas  
**Subject:** Request for Additional Information No. 87, RAI 8914  
**Attachments:** Request for Additional Information No. 87 (eRAI No. 8914).pdf

Attached please find NRC staff's request for additional information concerning review of the NuScale Design Certification Application.

Please submit your 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.

Gregory Cranston, Senior Project Manager  
Licensing Branch 1 (NuScale)  
Division of New Reactor Licensing  
Office of New Reactors  
U.S. Nuclear Regulatory Commission  
301-415-0546

**Hearing Identifier:** NuScale\_SMR\_DC\_RAI\_Public  
**Email Number:** 104

**Mail Envelope Properties** (3bfd7fa29c7545d0bc7885d3059dba32)

**Subject:** Request for Additional Information No. 87, RAI 8914  
**Sent Date:** 7/7/2017 2:55:34 PM  
**Received Date:** 7/7/2017 2:55:35 PM  
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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	522	7/7/2017 2:55:35 PM
Request for Additional Information No. 87 (eRAI No. 8914).pdf		115996

**Options**

**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

## Request for Additional Information No. 87 (eRAI No. 8914)

Issue Date: 07/07/2017

Application Title: NuScale Standard Design Certification - 52-048

Operating Company: NuScale Power, LLC

Docket No. 52-048

Review Section: 05.02.01.01 - Compliance With the Codes and Standards Rule, 10 CFR 50.55a

Application Section: 5.2

### QUESTIONS

#### 05.02.01.01-1

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

##### Issue 1

For the NuScale SMR design, it is identified that the components and code classes are listed in Table 3.2-1, and the ASME Code of record for the NuScale DCD is the 2013 Edition with no Addenda.

The NuScale DCD commits to design per the ASME Code, but does not make similar statements for construction activities. The DCD will ultimately be incorporated by a COL applicant. Staff expects the applicant to make statements regarding construction in accordance with the ASME Code. These statements may be made in the same way the NuScale DCD commits to design in accordance with the ASME Code, or they may be designated a COL action item, which should state:

"A COL applicant referencing the NuScale design will be expected to ensure that the construction practices are in accordance with the ASME Code, Section III, (including inspection and examination methods) and consistent with the design of the NuScale DCD. If the ASME Code edition differs from that specified in the NuScale FSAR, the COL applicant must identify in its application the portions of the later editions and addenda for NRC staff review and approval."

#### 05.02.01.01-2

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

##### Issue 2

For the NuScale SMR DCD review, revise DCD Section 5.2.1.1 to add a statement that identifies the following:

- Construction and welding of structures, systems, and components shall be in accordance with ASME Boiler and Pressure Vessel Code, Section III, "Rules for Construction of Nuclear Facility Components."
- The NuScale SMR is designed and provides access to enable the performance of Inservice Inspection requirements specified in ASME Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," and must meet the preservice examination requirements set forth in the editions and addenda of Section XI and the ASME BPV Code incorporated by reference in paragraph (a)(1)(ii) of 10 CFR 50.55a applied to the construction of the component.
- Inspections of structures, systems, and components constructed in accordance with ASME Section III shall be in accordance with ASME Boiler and Pressure Vessel Code, Section V, "Non Destructive Examination."
- Qualification of Welding Procedures and Welding Operators shall be in accordance with ASME Boiler and Pressure Vessel Code Section IX, "Welding and Brazing Qualifications."

- Specifications for construction base materials and welding materials shall be in accordance with ASME Boiler and Pressure Vessel Code, Section II, "Material Specifications."
- The NuScale SMR is designed and provides access to enable the performance of inservice testing of pumps and valves in accordance with 10 CFR 50.55a(f)(3)(iii)(B) and (f)(3)(iv)(B).

### 05.02.01.01-3

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

#### Issue 3

DCD Tier 2, Section 5.2.1.1 states that the ASME B&PV Code and OM Code selected "meets or exceeds" the requirements of 10 CFR 50.55a. Provide a description for how the code selected exceeds the requirement to use a Code edition and addenda listed in 10 CFR 50.55a.

### 05.02.01.01-4

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

#### Issue 4

DCD Tier 2, Section 5.2 states that the RCPB for each NPM is consistent with the RCPB definition provided in 10 CFR 50.2. The definition provided by the applicant requires some clarification. Specifically:

The applicant indicates that the RCPB "includes the pressure retaining components that are part of the RCS and connected to the RCS, up to and including...."

This wording should be revised to indicate the RCPB includes the components that are part of the RCS or connected to the RCS, up to and including...."

### 05.02.01.01-5

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

#### Issue 5

10 CFR 50.55a(d) and 10 CFR 50.55a(e) provide requirements for Quality Group B and C components. DCD Tier 2, Section 5.2.1.1 discusses meeting 10 CFR 50.55a, GDC 1, and GDC 30 for RCPB components designated as Class 1, but does not discuss Quality Group B or Quality Group C components. Provide description for these other components regarding compliance with 50.55a.

#### 05.02.01.01-6

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) Section 50.55a, certain systems and components of the NuScale Small Modular Reactor (SMR) design are to meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The requirement ensures that facilities will also meet the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 1 such that structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. As part of the applicant's use of the ASME Code, ASME Code Cases may be invoked. The staff has identified the following issues in regards to the applicant's use of the Codes and Standards Rule, 10 CFR 50.55a, and ASME Code Cases.

#### Issue 7

10 CFR 50.55a(z) permits the use of alternatives to the requirements of 10 CFR 50.55a. The alternatives must be submitted and authorized prior to implementation. DCD Tier 2, Section 5.2.1.1 does not contain any discussion of proposed alternatives to compliance with 10 CFR 50.55a. However, other portions of the DCD, such as Tier 2, Section 5.2.2.4.1 describe noncompliances with 10 CFR 50.55a. Please provide a discussion of proposed alternatives to compliance with 10 CFR 50.55a within DCD Tier 2, Section 5.2.1.1 and provide technical justification for these noncompliances to demonstrate there is an acceptable level of quality and safety with the proposed alternative.