RAIO-0819-66775

August 26, 2019

Docket No. 52-048

U.S. Nuclear Regulatory Commission
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SUBJECT: NuScale Power, LLC Supplemental Response to NRC Request for Additional Information No. 197 (eRAI No. 9051) on the NuScale Design Certification Application

REFERENCES:
1. U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 197 (eRAI No. 9051)," dated August 25, 2017
2. NuScale Power, LLC Response to NRC "Request for Additional Information No. 197 (eRAI No.9051)," dated October 18, 2017
3. NuScale Power, LLC Supplemental Response to NRC "Request for Additional Information No. 197 (eRAI No. 9051)," dated June 7, 2018

The purpose of this letter is to provide the NuScale Power, LLC (NuScale) supplemental response to the referenced NRC Request for Additional Information (RAI).

The Enclosure to this letter contains NuScale's supplemental response to the following RAI Question from NRC eRAI No. 9051:

- 16-27

This letter and the enclosed response make no new regulatory commitments and no revisions to any existing regulatory commitments.

If you have any questions on this response, please contact Rebecca Norris at 541-602-1260 or at rnorris@nuscalepower.com.

Sincerely,

Zackary W. Rad
Director, Regulatory Affairs
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Enclosure 1: NuScale Supplemental Response to NRC Request for Additional Information eRAI No. 9051

Enclosure 1:

NuScale Supplemental Response to NRC Request for Additional Information eRAI No. 9051

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Response to Request for Additional Information
Docket No. 52-048

eRAI No.: 9051
Date of RAI Issue: 08/25/2017

NRC Question No.: 16-27

Paragraph (a)(11) of 10 CFR 52.47 and paragraph (a)(30) of 10 CFR 52.79 state that a design certification (DC) applicant and a combined license (COL) applicant, respectively, are to propose technical specifications (TS) prepared in accordance with 10 CFR 50.36 and 50.36a. 10 CFR 50.36 sets forth requirements for TS to be included as part of the operating license for a nuclear power facility. The model standard technical specifications (STS) in the following documents provide NRC guidance on format and content of TS as acceptable means to meet 10 CFR 50.36 requirements. These documents may be accessed using the Agencywide Documents Access and Management Systems (ADAMS) by their accession numbers.

- NUREG-1431, "STS Westinghouse Plants," Revision 4 (ADAMS Accession Nos. ML12100A222 and ML12100A228)
- NUREG-1432, "STS Combustion Engineering Plants," Revision 4 (ADAMS Accession Nos. ML12102A165 and ML12102A169)
- NUREG-2194, "STS Westinghouse Advanced Passive 1000 (AP1000) Plants," Revision 0 (ADAMS Accession No. ML16111A132)

The NRC staff needs to evaluate technical differences in the proposed generic TS (GTS) from applicable provisions in these documents, which are referenced by the DC applicant in Design Control Document (DCD) Tier 2, Section 16.1, and the docketed rationale for each difference because conformance to STS provisions is used in the safety review as the initial point of guidance for evaluating the adequacy of the GTS to ensure adequate protection of public health

and safety, and the completeness and accuracy of the GTS Bases.

The staff reviewed the applicant's evaluation of the NuScale design and safety analyses against the four LCO selection crieria of 10 CFR 50.36(c)(2)(ii) as documented in the Technical Specifications Regulatory Conformance and Development (TSRCD), TR-1116-52011-NP, dated December 16, 2016 (ADAMS Accession No. ML17005A136). For NuScale SSCs determined to meet none of the criteria, the applicant is requested to augment that report by stating how the availability and testing of such SSCs are intended to be controlled by a NuScale Nuclear Power Plant COL holder. The response should cite the regulatory basis for the controls.

NuScale Response:

Supplemental Request for Information from Safety Evaluation Report
16.4.10.2 Section 5.4, Procedures

Subsection 5.4.1, Procedures

Because the Subsection 5.4.1 opening paragraph, and paragraphs a, b, c, d, and e are consistent with the W-STS, the staff concludes these paragraphs are acceptable.

In RAI 197-9051 (ML17237C008), Question 16-27, the staff requested that the applicant augment RCDR, Revision 0 (ML17005A136), by stating how the availability and testing of NuScale nonsafety-related SSCs, which NuScale has determined do not meet any of the four LCO selection criteria of 10 CFR 50.36(c)(2)(ii), are intended to be controlled by a NuScale Nuclear Power Plant COL holder, with reference to the regulatory basis for the controls. In its response (ML17291A299) to Question 16-27, the applicant indicated it did not plan to revise the RCDR as requested, and stated the following:

> Controls over availability and testing of equipment that does not satisfy the criteria of 10 CFR 50.36 for inclusion within the scope of the Technical Specifications are implemented in accordance with the descriptions in the FSAR (as defined in 10 CFR 50.59(a)(3)) by 10 CFR 50.59, 10 CFR 52 subparts B and C, and the "Processes for Changes and Departures" requirements expected to be incorporated in the NuScale design certification rulemaking.

The response indicated that "specific programs and procedures" for implementing the controls "are described in the FSAR," and cited the examples of Section 13.4, "Operational Programs,"

and Section 17.4, “Reliability Assurance Program (RAP).” The response also referred to the maintenance rule, 10 CFR 50.65, and to proposed COL action item 13.5-1, which states

> A COL applicant that references the NuScale Power Plant design certification will describe the site-specific procedures that provide administrative control for activities that are important for the safe operation of the facility consistent with the guidance provided in [Regulatory Guide] 1.33, Revision 3.

The staff determined that the nonsafety-related SSCs in question are unlikely to be within the scope of the above controls precisely because they are designated as not important to the safe operation of the facility. Consequently, the staff needed additional information about the intended controls for nonsafety-related SSCs.

In a February 21, 2018, public meeting teleconference, the staff and the applicant discussed the intended controls for the availability, maintenance, and operation of SSCs that are Nonsafety-related in the NuScale design. Equivalent SSCs in previous reactor designs are safety related and typically the subject of TS LCOs. The staff questioned whether the scope of GTS 5.4.1.a, which requires a COL holder for a NPM to establish, implement, and maintain applicable procedures recommended in RG 1.33, “Quality Assurance Program Requirements (Operation),” Revision 3, issued June 2013, will include procedures for these nonsafety-related SSCs. The staff suggested that a list of nonsafety-related SSCs may include the following:

- Control room and reactor building filtered ventilation systems
- Control room and reactor building ventilation system filters
- Control room ventilation system and emergency air bottle breathing air and passive temperature control system (control room habitability system)
- Control room envelope boundary integrity control and unfiltered inleakage testing
- Reactor building and radwaste building ventilation system isolation on high radiation signal from 00-RBV-RE-0510, 00-RBV-RE-0511, and 00-RBV-RE-0512 to mitigate a release of radioactivity
- Accident monitoring instrumentation for Type B and C variables, as defined by Revision 4 of Regulatory Guide 1.97, and supported by the safety display and indication system (SDIS)
- Offsite ac electrical power sources
- Onsite standby ac electrical power sources and support systems

- Onsite backup low voltage ac source and support systems
- Offsite and onsite ac electrical power distribution system
- Onsite dc electrical power sources, battery parameters, battery chargers, and dc to ac inverters
- Onsite dc electrical power distribution system
- Containment system instrumentation sensors not included in design reliability assurance program (D-RAP) (see FSAR Table 17.4-1)
- RCS instrumentation sensors not included in D-RAP (see FSAR Table 17.4-1)
- Diesel generator starting air, lube oil, and fuel oil storage and transfer
- Containment Flood and Drain System
- Containment Evacuation System
- Reactor Building Crane controls to preclude dropping a NPM in Mode 4
- Reactor Building Ventilation System for battery room hydrogen control
- CVCS, DWS, and BAS

The applicant agreed that procedures recommended in RG 1.33 would not address Nonsafety-related SSCs. In a letter dated March 19, 2018 (ML18078B311), and in a supplemental response (ML18158A530) to RAI 197-9051, Question 16-27, the applicant revised GTS Section 5.4 by adding a requirement for procedures for such nonsafety-related SSCs in paragraph 5.4.1.f, which states the following:

> 5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:
>
> f. Procedures that implement the availability and reliability controls applicable to structures, systems, or components as described in the owner-controlled requirements manual.

This added provision provides reasonable assurance that appropriate written procedures will be established, implemented, and maintained to satisfy the availability and reliability requirements for SSCs within the scope of the owner-controlled requirements manual.

Establishment of an owner-controlled requirements manual by a COL holder is assured by COL action item 16.1-2, which Revision 2 of DCA Part 2, Tier 2, Section 16.1.1, describes as follows:

> A COL applicant that references the NuScale Power Plant design certification will prepare and maintain an owner-controlled requirements manual that includes owner-controlled limits and requirements described in the Bases of the Technical Specifications or as otherwise specified in the FSAR.

However, for the staff to complete the evaluation of Section 5.4, the applicant needs to submit a description of the contents, including the covered SSCs, of the owner-controlled requirements manual, and add a statement to DCA Part 2 that incorporates the owner-controlled requirements manual into DCA Part 2, so that changes to it will clearly be subject to the requirements of 10 CFR 50.59. In a November 6, 2018, public meeting teleconference (ML18337A019), the applicant stated it would informally communicate to the staff the DCA Part 2 locations of passages that describe the owner-controlled requirements manual. **Pending verification of these references in DCA Part 2, the staff is tracking the adequacy of the owner-controlled requirements manual descriptions therein, as an open item under RAI 197-9051, Question 16-27.**

Additional Subsequent Clarification from Staff

During informal discussion the staff on 8/15/2019, staff requested that each of the structures, systems, components (SSC), and functions identified in the bulleted list in the SER be addressed and a discussion of their consideration for inclusion in the owner-controlled requirements manual be provided. The staff emphasized the need for assurance that the listed nonsafety-related SSC and functions are subject to adequate procedural controls. The staff requested a supplement to RAI 16-27 providing this response.

NuScale Response:

Additional Regulatory Controls

10 CFR 50.36 defines the content required for Technical Specifications (TS). This RAI requests an explanation of the 'regulatory controls' that apply to SSCs and functions that do not meet the criteria for being included in the TS.

Other than limited portions of the SSC and functions already included in the proposed TS, the SSCs and functions listed in the SER Open Item RAI discussion are either safety-related and not risk significant, or nonsafety-related and not risk significant.

No safety or regulatory basis exists to add additional controls on the systems listed in the RAI. As with existing plants, the regulations in 10 CFR 50 and 10 CFR 52 define the controls applicable to these systems. The NuScale design includes features that have similar names and functions to those included in large light water reactor designs, but they do not perform the same function as those in large existing nuclear plants.

During review of the DCA, NuScale agreed to some limited and specific contents for the owner-controlled requirements manual (OCRM). The specific OCRM contents are described in the Part 2, Tier 2 final safety analysis report (FSAR) and Part 4, Volume 2, Bases of the NuScale DCA.

This led to a request by staff for the addition of paragraph 5.4.1.f to the Administrative Controls in the proposed TS. However this paragraph is inconsistent with the regulations and precedent for controls on SSC and functions other than those listed in the existing standard TS.

To better align with the existing STS and regulatory paradigm, TS 5.4.1.f is being removed from the proposed generic TS.

NuScale disagrees with the need to include additional content in the OCRM because the SSCs and functions listed in the RAI are either safety-related and not risk-significant, or nonsafety-related and not risk-significant (with the exception of the reactor building crane and module lifting assembly as addressed below.)

Additionally and as noted in the SER, the FSAR provides a COL Item 16.1-2 which requires a COL applicant to prepare and maintain the OCRM that addresses the contents previously included in the FSAR and proposed Bases.

Specific SSCs and Functions Listed in SER Open Item

The FSAR describes the designs, functions, and quality criteria applicable to the SSCs and functions listed in the SER Open Item. Consistent with similar non-TS, uncredited SSCs and functions in existing plants, the regulatory controls imposed by including those descriptions in the FSAR provide adequate regulatory control over them.

DCA Part 2, Tier 1 includes ITAAC and design commitments for many of the listed SSCs and functions which will result in their inclusion in the appendix to 10 CFR 52 that will be issued with issuance of the NuScale design certification. Inclusion of this Tier 1 information in an appendix to 10 CFR 52 will ensure commission approval of any changes to the described design or functions.

Detailed descriptions and discussions of the SSCs and their functions are provided in the DCA Part 2, Tier 2, FSAR. Each of these SSCs and functions were classified according to nuclear

safety classification, seismic category, and quality group as described in FSAR Chapter 3. Classification was based on a consideration of both safety-related function (consistent with the definition of safety-related in 10 CFR 50.2) and risk-significance determined as part of the D-RAP as described in FSAR section 17.4. The classification of SSCs are provided in FSAR Table 3.2-1. Adequacy of the design and appropriateness of the classifications are discussed in the individual FSAR locations. The associated safety evaluations further evaluate the application of regulatory and risk criteria and document the conclusion of those reviews.

The FSAR describes not only the design and function, but the use and operation of the facility SSCs. These descriptions are provided to the extent appropriate for the design and importance of the listed systems. Procedures are required to be developed and maintained consistent with the FSAR including aspects related to SSC use, function, and operation. The quality assurance program described in Part 10 of the DCA reinforces these requirements as described by 10 CFR 50 Appendix B, “V. Instructions, Procedures, and Drawings” that requires activities affecting quality to be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances. This requirement applies to activities that implement the licensing basis for operation of the plant consistent with the descriptions provided in the FSAR.

Inclusion of descriptions of the listed SSCs and functions in the FSAR ensures their design, maintenance, and operation will be maintained or evaluated before change. The requirement to construct and operate a nuclear plant in conformity with the application is a condition of each operating license.

Regulatory controls to assure and enforce continued conformance with the FSAR and compliance are also provided in a number of applicable requirements including 10 CFR 50.54, 10 CFR 50.59, 10 CFR 50.71, and controls applicable to changes or other deviations from an approved design certification when issued as an appendix to 10 CFR 52. These regulatory controls provide further assurance that the facility will be maintained and operated in a manner consistent with the descriptions in the FSAR.

Note that the reactor building crane and module lifting adapter are a special circumstance. ITAAC and design commitments are described in section 3.10 of Part 2, Tier 1, "Reactor Building Crane," ensuring commission approval of any changes to the design or function. The design, maintenance, and inspection requirements, the operational limits are further described in FSAR section 9.1.5. Additionally, COL Item 9.1-7 requires a COL applicant to provide a description of the program governing heavy loads.

Based on the above, adequate controls are provided for the listed SSCs and functions to ensure that a facility that references the NuScale design certification will be constructed, maintained, and operated consistent with the descriptions in the FSAR.

Impact on DCA:

The Technical Specifications have been been revised as described in the response above and as shown in the markup provided in this response.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Written procedures shall be established, implemented, and maintained covering the following activities:

a. The applicable procedures recommended in Regulatory Guide 1.33, Revision 3, June 2013;

b. The emergency operating procedures required to implement the requirements of NUREG-0737 and NUREG-0737, Supplement 1;

c. Quality assurance for effluent and environmental monitoring;

d. Fire Protection Program implementation; and

e. All programs specified in Specification 5.5.~~; and~~

~~f. Procedures that implement the availability and reliability controls applicable to structures, systems, or components as described in the owner controlled requirements manual.~~