RAIO-1017-56378

October 03, 2017

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 137 (eRAI No. 8973) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 137 (eRAI No. 8973)," dated August 05, 2017

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

The Enclosure to this letter contains NuScale's response to the following RAI Questions from NRC eRAI No. 8973:

- 03.08.04-18
- 03.08.04-19

The response schedule for the remaining questions of RAI No. 137, eRAI 8973 were provided in an email to NRC (Greg Cranston) dated September 12, 2017.

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 Marty Bryan at 541-452-7172 or at mbryan@nuscalepower.com.

Sincerely,

Zackary W. Rad
Director, Regulatory Affairs
NuScale Power, LLC

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A
Marieliz Vera, NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 8973

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NuScale Response to NRC Request for Additional Information eRAI No. 8973

NuScale Power, LLC
1100 NE Circle Blvd., Suite 200 Corvalis, Oregon 97330, Office: 541.360.0500, Fax: 541.207.3928
www.nuscalepower.com

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

eRAI No.: 8973
Date of RAI Issue: 08/05/2017

NRC Question No.: 03.08.04-18

10 CFR 50, Appendix A, GDC 1, 2, and 4, provide requirements to be met by SSC important to safety. In accordance with these requirements, DSRS Section 3.8.4 provides review guidance pertaining to the design of seismic Category I structures, other than the containment.

Appendix 3B.2.1 for the RXB, indicates the use of W shapes and Tube Steel in the RXB. Describe in the FSAR the locations where these W shapes and Tube Steel are used.

NuScale Response:

FSAR Section 3.8.4.1.1 is revised to describe the locations of the W shapes and tube steel, used in the reactor building. W shapes are used as beams and columns for the steel platforms located at top of steel (TOS) elevations 35'-6 3/4", 61'-10 3/8", and 85'-10 3/4". Tube steel is used in the steel partition walls and in the floors located at elevations 62’-0” and 86’-0”.

Impact on DCA:

FSAR Tier 2, Section 3.8.4.1.1 has been revised as described in the response above and as shown in the markup provided in this response.

The typical thickness for the main structural interior and exterior concrete walls is 5 feet. The primary floor slabs are 3 feet thick with embedded reinforced concrete T-beams. All of the exterior and major building walls line up with each other from floor to floor. Reinforced concrete pilaster columns are encased within the exterior walls of the RXB. Several buttress elements and stiffener walls are located around the exterior and interior of the structure. The basemat foundation thickness is 10 feet; the foundation top of concrete is EL. 24'-0". The reactor pool area and spent fuel pool area is elevated so that the top of the steel (TOS) liner is at EL. 25'-0" (TOC is 24'-11.75".) The refueling pool area has a top of concrete elevation of 18'-11.75" for a TOS elevation of 19' 0".

RAI 03.08.04-18

W shapes are used as beams and columns for the steel platforms located at TOS elevations 35'-6 3/4", 61' - 10 3/8", and 85' - 10 3/4". Tube steel is used in the steel partition walls and in the floors located at elevations 62'-0" and 86'-0".

The RXB has five primary floors. These floors are listed below. The associated figure provides an isometric view showing the primary walls on that floor.

Floor No. 1 - TOC Elevation 24'-0" (TOC for basemat foundation), Figure 3.8.4-1

Floor No. 2 - TOC Elevation 50'-0", Figure 3.8.4-2

Floor No. 3 - TOC Elevation 75'-0", Figure 3.8.4-3

Floor No. 4 - TOC Elevation 100'-0" ground floor, Figure 3.8.4-4

Floor No. 5 - TOC Elevation 126'-0", Figure 3.8.4-5

Reactor Building Crane Rail - TOC Elevation 145' 6", Figure 3.8.4-6

Roof - TOC Elevation 181'-0" , Figure 3.8.4-7

The RXB is centrally located with respect to other key buildings. The CRB is to the east, the RWB to the west, and [[two Turbine Generator Buildings are to the north and south]]. Above grade, the RXB and the CRB are separated by a distance of approximately 34 feet between the centerline of the walls. There is a tunnel provided between the RXB and the CRB. This tunnel is part of the CRB.

The RWB is approximately 25 feet west of the RXB above grade. There are no safety-related utilities between the RXB and RWB.

3.8.4.1.2 Control Building

A general discussion of the CRB and the major features and components is provided in Section 1.2.2.2. Architectural drawings, including plan and section views are provided in Figure 1.2-21 through Figure 1.2-27.

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The section views in Figures 3B-14 and 3B-42 show wall portions that do not appear to be included in the SAP model section views in Figures 3B-15 and 3B-43, respectively. Clarify and/or correct the inconsistencies between these figures, as applicable.

NuScale Response:

Figure 3B-14 and Figure 3B-42 show SAP2000 model sections through the RXB at various cutting depths with only select elements visible. They were produced to convey wall thicknesses and element numbers for certain building sections. Figure 3B-15 and Figure 3B-43 are building sections meant to convey reinforcement patterns in specific elements. As discussed in an August 17, 2017 meeting, with NRC, in the regions of the minor interior walls there exist some variances, if these figures are compared directly.

Impact on DCA:
There are no impacts to the DCA as a result of this response.