

November 01, 2017

Docket No. 52-048

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Rockville, MD 20852-2738

SUBJECT: NuScale Power, LLC Response to NRC Request for Additional Information No. 231 (eRAI No. 9100) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 231 (eRAI No. 9100)," dated September 20, 2017

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

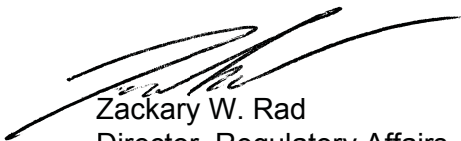
The Enclosure to this letter contains NuScale's response to the following RAI Questions from NRC eRAI No. 9100:

- 20.01-8
- 20.01-9

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 Steven Mirsky at 240-833-3001 or at smirsky@nuscalepower.com.

Sincerely,



Zackary W. Rad
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Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 9100



Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 9100

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

eRAI No.: 9100

Date of RAI Issue: 09/20/2017

NRC Question No.: 20.01-8

NEI-12-06, Rev. 2, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Section 3.2.1.3, "Initial Conditions," explains that plant equipment that is contained in structures with designs that are robust for the applicable hazard(s) is available. The Technical Report (TR)-0816-50797-P, Rev. 0, "Mitigation Strategies for Extended Loss of AC Power Event," Section 5.6.3, "System Response to an Extended Loss of Alternating Current Power," discussed that the highly reliable direct current (DC) power system (EDSS) batteries and the associated distribution system are assumed to survive the BDBEE and remain fully available during the extended loss of alternating current (ac) power (ELAP).

FSAR Tier 2 Section 20.1, "Mitigating Strategies for Beyond Design-Basis External Events," explains that the four (4) ultimate heat sink (UHS) level instruments are powered by EDSS and monitoring of the UHS pool level will occur in Phase 3 of Beyond Design-Basis External Events (BDBEE). Additionally, TR-0816-50797-P, Rev. 0, "Mitigation Strategies for Extended Loss of AC Power Event," Section 5.6, "Highly Reliable Direct Current Power System," explains that the EDSS-common (EDSS-C) batteries are designed to supply required loads for a minimum of 72 hours. In addition, FSAR Tier 2 Table 20.1-1, "Core Cooling Parameters," and Table 20.1-2, "Containment Parameters," lists parameters being monitored for core and containment cooling during a BDBEE condition.

QUESTION: The staff requires clarification regarding the power source for the above mentioned UHS instruments beyond 72 hours, i.e. in BDBEE. What is the power source for the UHS instruments beyond 72 hours in a BDBEE? Additionally, the staff requires clarification regarding whether power is needed for monitoring core and containment cooling parameters provided in Tables 20.1-1 and 20.1-2 in a BDBEE scenario after 72 hours.

NuScale Response:

As described in TR-0816-50797-P, Mitigation Strategies for Extended Loss of AC Power Event, the EDSS-C batteries initially provide power to UHS instruments through the plant protection system during an ELAP. Power will remain available from the EDSS-C to power the UHS level instruments for a minimum of 72 hours, but not indefinitely. When the EDSS-C batteries are



depleted, each UHS level instrument uses its instrument-specific backup battery power supply. Backup batteries are designed for easy replacement to indefinitely power UHS monitoring level instruments.

The key safety functions listed in the first columns of Tables 20.1-1 and 20.1-2 are established within 72 hours. After these functions are established, UHS level (via SFP level indication) is the only parameter required to be maintained to ensure core cooling and containment are provided. As such, only the SFP level indicators require power beyond 72 hours.

Impact on DCA:

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

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

eRAI No.: 9100

Date of RAI Issue: 09/20/2017

NRC Question No.: 20.01-9

NEI-12-06, Rev. 2, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Section 3.2.2, "Minimum Baseline Capabilities," explains that areas requiring access for instrumentation monitoring or equipment operation may require lighting as necessary to perform essential functions.

Technical Report (TR)-0816-50797-P, Rev. 0, "Mitigation Strategies for Extended Loss of AC Power Event," Section 5.6, "Highly Reliable Direct Current Power System," states that the highly reliable DC power system (EDSS) is the source of power to the main control room (MCR) emergency lighting. FSAR Tier 2 Section 9.5.3.2, "System Description," states that the EDSS-common (EDSS-C) batteries in either division are capable of maintaining MCR emergency lighting for a minimum of 72 hours following a design basis event.

QUESTION: If emergency lighting in the MCR beyond 72 hours is required, please identify the power source for the emergency lighting in the MCR beyond 72 hours in a BDBEE scenario.

NuScale Response:

The NuScale Power Plant design does not require emergency lighting in the MCR beyond 72 hours following a design basis event; therefore, there is no power source for MCR emergency lighting beyond 72 hours in a beyond design basis external event scenario.

Impact on DCA:

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