November 13, 2019 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 Submittal of Changes to Final Safety Analysis Report, Section 12.2, "Radiation Sources"

**REFERENCES:** Letter from NuScale Power, LLC to Nuclear Regulatory Commission, "NuScale Power, LLC Submittal of the NuScale Standard Plant Design Certification Application, Revision 3," dated August 22, 2019 (ML19241A315)

During a November 7, 2019, public teleconference with Prosanta Chowdhury, NRC Project Manager, and NRC Staff, NuScale Power, LLC (NuScale) discussed potential updates to Final Safety Analysis Report (FSAR), Section 12.2, "Radiation Sources." As a result of this discussion, NuScale changed Section 12.2. The Enclosure to this letter provides a mark-up of the FSAR pages incorporating revisions to Section 12.2, in redline/strikeout format. NuScale will include this change as part of a future revision to the NuScale Design Certification Application.

This letter makes no regulatory commitments or revisions to any existing regulatory commitments.

If you have any questions, please feel free to contact Nadja Joergensen at 541-452-7338 or at njoergensen@nuscalepower.com.

Sincerely,

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

Distribution: Samuel Lee, NRC, OWFN-8H12
Gregory Cranston, NRC, OWFN-8H12
Getachew Tesfaye, NRC, OWFN-8H12
Michael Dudek, NRC, OWFN-8H12

Enclosure: Changes to NuScale Final Safety Analysis Report Section 12.2 "Radiation Sources"

**Enclosure:**

Changes to NuScale Final Safety Analysis Report Section 12.2 “Radiation Sources”

**NuScale Power, LLC**
1100 NE Circle Blvd., Suite 200 Corvallis, Oregon 97330 Office 541.360-0500 Fax 541.207.3928
www.nuscalepower.com

**Table 12.2-23: In-Core Instrument Source Term Input Assumptions**

| Component (Quantity) | Material |
|---|---|
| Emitter (4) | Rh-103 |
| Signal wire (4) | Inconel 600 |
| Insulation (1) | $Al_2O_3$ |
| Outer sheath (1) | Inconel 600 |
| Inner sheath (6) | Inconel 600 |
| Thermocouple: type K chromel-alumel (2) | Chromel<br>Alumel |
| **Parameter** | **Value** |
| Number of irradiation cycles | 1-30 |
| Neutron flux | 2.30E+14 n/cm$^2$-sec |

## Table 12.2-24: In-Core Instrumentation Gamma Spectra

| In-Core Instrumentation - Gamma Spectra (gamma/sec/assembly~~kg~~) | | | | |
|---|---|---|---|---|
| **Energy Group** | **Energy Boundaries (MeV)** | **Cycle 1** | **Cycle 30~~1~~** | **~~Cycle 1~~** |
| | | **Discharge** | **3 Day Decay** | **~~30 Day Decay~~** |
| 1 | 2.00E-02 - 3.50E-02 | 2.06E+13 | ~~1.21~~1.57E+11 | ~~9.43E+10~~ |
| 2 | 3.50E-02 - 5.00E-02 | 9.86E+12 | ~~6.75~~8.17E+10 | ~~5.27E+10~~ |
| 3 | 5.00E-02 - 7.50E-02 | 1.22E+13 | ~~6.13~~7.01E+10 | ~~4.76E+10~~ |
| 4 | 7.50E-02 - 1.25E-01 | 1.14E+13 | ~~2.47~~2.45E+11 | ~~2.19E+11~~ |
| 5 | 1.25E-01 - 1.75E-01 | 4.27E+12 | ~~4.21~~4.62E+10 | ~~3.47E+10~~ |
| 6 | 1.75E-01 - 2.50E-01 | 3.70E+12 | ~~2.13~~3.65E+10 | ~~1.62E+10~~ |
| 7 | 2.50E-01 - 4.00E-01 | 6.22E+12 | ~~8.19~~4.73E+11 | ~~4.23E+11~~ |
| 8 | 4.00E-01 - 9.00E-01 | 3.20E+13 | ~~1.13E+13~~9.49E+12 | ~~8.70E+12~~ |
| 9 | 9.00E-01 - 1.35E+00 | 2.88E+12 | ~~2.21E+12~~1.13E+13 | ~~2.17E+12~~ |
| 10 | 1.35E+00 - 1.80E+00 | 2.68E+12 | ~~4.42~~3.75E+10 | ~~3.19E+10~~ |
| 11 | 1.80E+00 - 2.20E+00 | 3.31E+12 | ~~3.93~~3.79E+08 | ~~1.79E+07~~ |
| 12 | 2.20E+00 - 2.60E+00 | 1.27E+11 | ~~5.39~~4.54E+06 | ~~4.13E+06~~ |
| 13 | 2.60E+00 - 3.00E+00 | 1.18E+11 | ~~1.46~~1.44E+08 | ~~3.51E+06~~ |
| 14 | 3.00E+00 - 3.50E+00 | 2.10E+10 | ~~8.03~~6.72E+06 | ~~6.03E+06~~ |
| 15 | 3.50E+00 - 4.00E+00 | 9.09E+06 | ~~2.17~~1.98E+05 | ~~8.62E+04~~ |
| 16 | 4.00E+00 - 4.50E+00 | 2.59E+06 | 1.17E+03 | ~~1.15E 10~~ |
| 17 | 4.50E+00 - 5.00E+00 | 9.23E+05 | - | ~~-~~ |
| 18 | 5.00E+00 - 1.00E+01 | 4.31E+08 | - | ~~-~~ |