RAIO-0618-60714

June 29, 2018

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. 466 (eRAI No. 9482) on the NuScale Design Certification Application

REFERENCE: U.S. Nuclear Regulatory Commission, "Request for Additional Information No. 466 (eRAI No. 9482)," dated May 04, 2018

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

The Enclosures to this letter contain NuScale's response to the following RAI Question from NRC eRAI No. 9482:

- 06.02.01.01.A-20

The response to questions 06.02.01.01.A-18 and 06.02.01.01-A-19 will be provided by August 1, 2018.

Enclosure 1 is the proprietary version of the NuScale Response to NRC RAI No. 466 (eRAI No. 9482). NuScale requests that the proprietary version be withheld from public disclosure in accordance with the requirements of 10 CFR § 2.390. The enclosed affidavit (Enclosure 3) supports this request. Enclosure 2 is the nonproprietary version of the NuScale response.

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

If you have any questions on this response, please contact Paul Infanger 541-452-7351 or at pinfanger@nuscalepower.com.

Sincerely,

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

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Omid Tabatabai, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A

Enclosure 1: NuScale Response to NRC Request for Additional Information eRAI No. 9482, proprietary

Enclosure 2: NuScale Response to NRC Request for Additional Information eRAI No. 9482, nonproprietary

Enclosure 3: Affidavit of Zackary W. Rad, AF-0618-60715

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

Enclosure 1:

NuScale Response to NRC Request for Additional Information eRAI No. 9482, proprietary

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

Enclosure 2:

NuScale Response to NRC Request for Additional Information eRAI No. 9482, nonproprietary

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.: 9482
Date of RAI Issue: 05/04/2018

NRC Question No.: 06.02.01.01.A-20

The reactor pressure vessel (RPV) operating conditions and subsequent CNV response to a primary system release DBE are sensitive to the uncertainty of the SIET test data that were used to develop the NRELAP5 steam generator (STG) model. The applicant is requested to justify that the RPV input parameters (T-hot, T-ave, and pressurizer pressure) used for the containment safety analyses are conservatively biased to bound the STG model uncertainty. In addition, provide the technical bases for selecting the limiting T-hot, T-ave, and pressurizer pressure conditions for the containment analysis, and elaborate on their consistency with technical specifications, safety analysis limits, and trip set points, with an initial reactor power at 102 percent of the rated power. Table 5-1 of the Containment Response Analysis Methodology Technical Report (TR-0516-49084-P, Rev. 0) lists the conservative initial conditions for a primary system release event for containment analyses. The table identifies the primary reactor coolant's average temperature (T-ave) value of {{ }}$^{2(a),(c)}$. If {{ }}$^{2(a),(c)}$ is the uncertainty in T-ave, please confirm if it is already included in the T-ave value of {{ }}$^{2(a),(c)}$. Please provide or make available for audit any applicable engineering calculation reports to support the development of the RPV input parameters and uncertainties inquired in this RAI question, with respect to containment peak pressure calculations.

NuScale Response:

TR-0516-49084, Table 5-1 lists NPM initial conditions that are used in the containment response analysis methodology. The table includes the following RCS parameter values assumed in the containment response analysis, along with these uncertainty allowances relative to the nominal value:

Parameter	CNV analysis value	Uncertainty
Primary T-ave	{{ }}$^{2(a),(c)}$	
Primary Pressure	{{ }}$^{2(a),(c)}$	

Each of the assumed initial condition values used in the containment response analysis includes the listed uncertainty allowance and is biased in a manner that maximizes mass and energy release into containment {{

}}[2(a),(c)].

The {{ }}[2(a),(c)] lists the range for each of these parameters, along with the basis for the listed range. The maximum value of the range listed in Table 2-2 is used as the assumed initial value in the CNV analysis, since it maximizes the stored energy in the primary to conservatively evaluate the containment response.

NuScale establishes the steady state primary conditions as a function of power level for three different primary flow rates, minimum, maximum, and best-estimate flow. These three different flow rates have three corresponding sets of primary temperatures. The minimum and maximum flow cases create the bounding flow rates for the operation of a NuScale Power Module. The T-ave used in the containment response methodology bounds the temperature values for minimum, maximum, and best-estimate flow. Uncertainty in steam generator thermal performance is included in the minimum and maximum flow conditions by modifying the total heat transfer coefficient through the steam generator tubes. Steam generator thermal performance only affects primary conditions by altering the thermal center of the steam generator, which has a minor effect on primary flow rate. The steady state primary side conditions are not sensitive to the steam generator thermal performance as normal plant control systems modify the pressurizer heater power, dissolved boron concentration, or control rod position to reach the desired setpoints for primary pressure and temperature.

The nominal operating RCS pressure is 1850 psia and an analysis range of {{ }}[2(a),(c)] is established around the nominal RCS pressure to allow for normal control system deadband and system/sensor measurement uncertainty. This is the basis for the primary pressure value listed in TR-0516-49084, Table 5-1, and the identified uncertainty.

NuScale documents {{ }}[2(a),(c)] are available in the containment and ventilation audit eRR folder for staff review.

Impact on DCA:

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

Enclosure 3:

Affidavit of Zackary W. Rad, AF-0618-60715

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

NuScale Power, LLC

AFFIDAVIT of Zackary W. Rad

I, Zackary W. Rad, state as follows:

1. I am the Director, Regulatory Affairs of NuScale Power, LLC (NuScale), and as such, I have been specifically delegated the function of reviewing the information described in this Affidavit that NuScale seeks to have withheld from public disclosure, and am authorized to apply for its withholding on behalf of NuScale.
2. I am knowledgeable of the criteria and procedures used by NuScale in designating information as a trade secret, privileged, or as confidential commercial or financial information. This request to withhold information from public disclosure is driven by one or more of the following:
    a. The information requested to be withheld reveals distinguishing aspects of a process (or component, structure, tool, method, etc.) whose use by NuScale competitors, without a license from NuScale, would constitute a competitive economic disadvantage to NuScale.
    b. The information requested to be withheld consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), and the application of the data secures a competitive economic advantage, as described more fully in paragraph 3 of this Affidavit.
    c. Use by a competitor of the information requested to be withheld would reduce the competitor's expenditure of resources, or improve its competitive position, in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.
    d. The information requested to be withheld reveals cost or price information, production capabilities, budget levels, or commercial strategies of NuScale.
    e. The information requested to be withheld consists of patentable ideas.
3. Public disclosure of the information sought to be withheld is likely to cause substantial harm to NuScale's competitive position and foreclose or reduce the availability of profit-making opportunities. The accompanying Request for Additional Information response reveals distinguishing aspects about the method by which NuScale develops its containment response analysis.

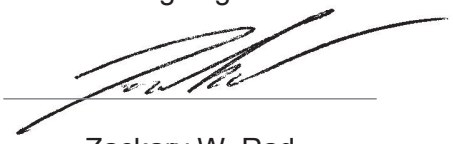
    NuScale has performed significant research and evaluation to develop a basis for this method and has invested significant resources, including the expenditure of a considerable sum of money.

    The precise financial value of the information is difficult to quantify, but it is a key element of the design basis for a NuScale plant and, therefore, has substantial value to NuScale.

    If the information were disclosed to the public, NuScale's competitors would have access to the information without purchasing the right to use it or having been required to undertake a similar expenditure of resources. Such disclosure would constitute a misappropriation of NuScale's intellectual property, and would deprive NuScale of the opportunity to exercise its competitive advantage to seek an adequate return on its investment.

4. The information sought to be withheld is in the enclosed response to NRC Request for Additional Information No. 466, eRAI No. 9482. The enclosure contains the designation "Proprietary" at the top of each page containing proprietary information. The information considered by NuScale to be proprietary is identified within double braces, "{{ }}" in the document.
5. The basis for proposing that the information be withheld is that NuScale treats the information as a trade secret, privileged, or as confidential commercial or financial information. NuScale relies upon the exemption from disclosure set forth in the Freedom of Information Act ("FOIA"), 5 USC § 552(b)(4), as well as exemptions applicable to the NRC under 10 CFR §§ 2.390(a)(4) and 9.17(a)(4).
6. Pursuant to the provisions set forth in 10 CFR § 2.390(b)(4), the following is provided for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld:
    a. The information sought to be withheld is owned and has been held in confidence by NuScale.
    b. The information is of a sort customarily held in confidence by NuScale and, to the best of my knowledge and belief, consistently has been held in confidence by NuScale. The procedure for approval of external release of such information typically requires review by the staff manager, project manager, chief technology officer or other equivalent authority, or the manager of the cognizant marketing function (or his delegate), for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside NuScale are limited to regulatory bodies, customers and potential customers and their agents, suppliers, licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or contractual agreements to maintain confidentiality.
    c. The information is being transmitted to and received by the NRC in confidence.
    d. No public disclosure of the information has been made, and it is not available in public sources. All disclosures to third parties, including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or contractual agreements that provide for maintenance of the information in confidence.
    e. Public disclosure of the information is likely to cause substantial harm to the competitive position of NuScale, taking into account the value of the information to NuScale, the amount of effort and money expended by NuScale in developing the information, and the difficulty others would have in acquiring or duplicating the information. The information sought to be withheld is part of NuScale's technology that provides NuScale with a competitive advantage over other firms in the industry. NuScale has invested significant human and financial capital in developing this technology and NuScale believes it would be difficult for others to duplicate the technology without access to the information sought to be withheld.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 29, 2018.



Zackary W. Rad