

February 27, 2017

Mr. Thomas Bergman
Vice President, Regulatory Affairs
NuScale Power, LLC
1100 Circle Boulevard, Suite 200
Corvallis, OR 97330

SUBJECT: ACCEPTANCE LETTER FOR THE REVIEW OF TOPICAL REPORT
TR-0915-17564, "SUBCHANNEL ANALYSIS METHODOLOGY," REVISION 0
(PROJ0769)

Dear Mr. Bergman:

By letter dated October 31, 2016, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16305A444), NuScale Power, LLC (NuScale), submitted Topical Report (TR)-0915-17564, Revision 0, "Subchannel Analysis Methodology," to the U.S. Nuclear Regulatory Commission (NRC) staff for review. In the October 31, 2016, letter, you indicated that the TR describes NuScale's methodology for using the previously NRC-approved VIPRE-01 computer code for NuScale's design certification application and design analysis work involving steady-state and transient subchannel analyses and fuel temperature calculations. Furthermore, you also requested the NRC staff to review and approve this methodology.

The NRC staff has reviewed the topical report and concluded that the information delineated in the enclosure to this letter is necessary to enable the NRC staff to conduct its detailed technical review.

In order to accept the topical report for review, the NRC staff requests that NuScale supplement the TR to address the information requested in the enclosure within 15 days of the date of this letter. If the TR is subsequently accepted for review, you will be advised of any further information needed to support the NRC staff's detailed technical review by separate correspondence.

The information requested and associated time frame in this letter were discussed with Steven Pope of your staff on February 21 2017.

T. Bergman

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If you have any questions, please contact the Project Manager, Bruce Bovol, at (301) 415-6715 or Bruce.Bovol@nrc.gov.

Sincerely,

/RA/

Samuel Lee, Chief
Licensing Branch 1
Division of New Reactor Licensing
Office of New Reactors

Enclosure:
Request for Supplementary Information

Project No.: PROJ0769

cc: NuScale DC ListServ

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17564, "SUBCHANNEL ANALYSIS METHODOLOGY," REVISION 0 (PROJ0769)

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***via email**

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REQUEST FOR SUPPLEMENTAL INFORMATION

Docketing issue

In addition to Part 50 Appendix K requirements, 10 CFR 52.47, "Contents of Applications; Technical Information," (a)(2) also requires

A description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished,

and 10 CFR 52.47(c)(2) states

An application for certification of a nuclear power reactor design that differs significantly from the light-water reactor designs described in paragraph (c)(1) of this section or uses simplified, inherent, passive, or other innovative means to accomplish its safety functions must provide an essentially complete nuclear power reactor design except for site-specific elements such as the service water intake structure and the ultimate heat sink, and must meet the requirements of 10 CFR 50.43(e).

Further, from 10 CFR 50.43(e)

Applications for a design certification, combined license, manufacturing license, or operating license that propose nuclear reactor designs which differ significantly from light-water reactor designs that were licensed before 1997, or use simplified, inherent, passive, or other innovative means to accomplish their safety functions, will be approved only if: (1)(i) The performance of each safety feature of the design has been demonstrated through either analysis, appropriate test programs, experience, or a combination thereof; (ii) Interdependent effects among the safety features of the design are acceptable, as demonstrated by analysis, appropriate test programs, experience, or a combination thereof; and (iii) Sufficient data exist on the safety features of the design to assess the analytical tools used for safety analyses over a sufficient range of normal operating conditions, transient conditions, and specified accident sequences, including equilibrium core conditions; or

The NRC staff needs to assess the VIPRE -01 capability. Therefore, NuScale is requested to submit the following in electronic format:

- VIPRE -01 24-channel “basemodel” input model for both the steady-state MCHFR analysis and the transient analyses presented in the TR. The input models for the transient analyses would then contain the appropriate transient boundary conditions (inlet flow and temperature, outlet pressure, core power level, shape and peaking factors).
- The dynamic linked library that contains the NSP2 DNBR model.
- To supplement the justification in the TR that the boundary conditions calculated by N-RELAP5 are adequate for use in VIPRE-01, for the limiting transient described in the TR, provide the N-RELAP5 calculated values of the core pressure drop as a function of time (in addition to the core inlet flow and temperature given that are included in the VIPRE-01 input model). Also, provide the axial locations for which the core pressure drop is defined, specified in relation to the axial noding of the VIPRE-01 input model.