

December 08, 2017

Docket No. PROJ0769

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 Non-Loss-of-Coolant Accident Analysis Methodology Topical Report, TR-0516-49416

REFERENCES: 1. Letter from NuScale Power, LLC to U.S. Nuclear Regulatory Commission, "NuScale Power, LLC Submittal of Topical Report "Critical Heat Flux Correlations", TR-0116-21012, Revision 1", dated November 2017 (ML17335A089)

2. NuScale Topical Report, "Non-Loss-of-Coolant Accident Analysis Methodology," TR-0516-49416, Revision 1, dated August 2017 (ML17222A827)

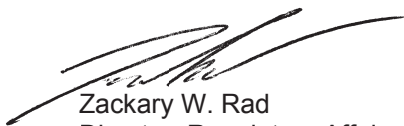
In Reference 1, NuScale Power, LLC submitted a change to the Critical Heat Flux (CHF) Correlations topical report to incorporate a new CHF correlation, NSP4. This submittal provides conforming changes to the Non-Loss-of-Coolant Accident Analysis Methodology topical report (Reference 2). The Enclosure to this letter provides a mark-up of the topical report pages incorporating revisions in redline/strikeout format. NuScale will include these changes as part of a future revision to the NuScale Non-Loss-of-Coolant Accident Analysis Methodology topical report.

Enclosure 1 is the proprietary version of the Non-Loss-of-Coolant Accident Analysis Methodology topical report mark-ups. 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. The topical report TR-0516-49416, "Non-Loss-of-Coolant Accident Analysis Methodology," contained export controlled information. The markup pages enclosed for TR-0516-49416 are labeled "Export Controlled," although these markup pages do not contain any export controlled information. Enclosure 2 is the nonproprietary version of the Non-Loss-of-Coolant Accident Analysis Methodology topical report markups.

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

Please feel free to contact Darrell Gardner at 980-349-4829 or at dgardner@nuscalepower.com if you have any questions.

Sincerely,



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

Distribution: Gregory Cranston, NRC, OWFN-8G9A
Samuel Lee, NRC, OWFN-8G9A
Rani Franovich, NRC, OWFN-8G9A

Enclosure 1: "Non-Loss-of-Coolant Accident Analysis Methodology," TR-0516-49422, Revision 1,
proprietary version

Enclosure 2: "Non-Loss-of-Coolant Accident Analysis Methodology," TR-0516-49422, Revision 1, non-
proprietary version

Enclosure 3: Affidavit of Zackary W. Rad, AF-1217-57521

Enclosure 1:

“Non-Loss-of-Coolant Accident Analysis Methodology,” TR-0516-49422, Revision 1, proprietary version

Enclosure 2:

“Non-Loss-of-Coolant Accident Analysis Methodology,” TR-0516-49422, Revision 1, non-proprietary version

pressure increases. {{

}}^{2(a),(c)}

In the NuScale design, for a given reactor module operating condition, reactor power, core inlet temperature and system flow rate are tightly coupled. As described in Section 7.1, ranges in these parameters are considered as part of biasing the system transient analysis steady state initial conditions. The NRELAP5 system analysis methodology for determining the limiting CHF cases for downstream subchannel analysis is primarily dependent on the limiting initialization. The CHF cases are evaluated at the minimum flow initialization. Other initial conditions are forced to the limiting initialization for a given transient progression to ensure the maximum power, primary pressure and core inlet fluid temperature are simultaneously reached prior to reactor trip system actuation. For example, in the case of a heatup event, the RCS will increase in temperature, causing a pressurizer insurge and subsequent increase in pressure. The limiting CHF scenario is the transient progression that results in the highest core outlet temperature at the time of reactor trip on high pressure, which is generally the faster heatups where the pressurizer initialization is biased to delay the high pressure trip.

For some transients, a spectrum of cases is analyzed from the limiting initialization. {{

}}^{2(a),(c)}

After the system transient analysis calculations are performed and assessed, for events that require subchannel analysis, one or more cases are identified as limiting for MCHFR. For the limiting case(s) selected, the required system transient parameters are

11.0 References

1. U.S. Nuclear Regulatory Commission, "Transient and Accident Analysis Methods," Regulatory Guide 1.203, December 2005.
2. NuScale Power, LLC, "LOCA Evaluation Model," TR-0516-49422-P, Revision 0.
3. NuScale Power, LLC, "NuScale Topical Report: Quality Assurance Program Description for the NuScale Power Plant," NP-TR-1010-859-NP-A, Revision 3.
4. *U.S. Code of Federal Regulations*, "General Design Criteria for Nuclear Power Plants," Appendix A, Part 50 Chapter I, Title 10, "Energy," (10 CFR 50 Appendix A).
5. *U.S. Code of Federal Regulations*, "Contents of applications; technical information," Section 52.47, Part 52 Chapter I, Title 10, "Energy," (10 CFR 52.47).
6. NuScale Power, LLC, "Subchannel Analysis Methodology," TR-0915-17564-P, Revision 01.
7. NuScale Power, LLC, "NuScale Power Critical Heat Flux Correlations-NSP2," TR-0116-21012-P, Revision 01.
8. NuScale Power, LLC, "Accident Source Term Methodology," TR-0915-17565-P, Revision 12.
9. U.S. Nuclear Regulatory Commission, "Standard Review Plan, Radiological Consequences of the Failure of Small Lines Carrying Primary Coolant Outside Containment," NUREG-0800, Chapter 15, Section 15.6.2, Rev. 2, July 1981.
10. NuScale Power, LLC, "Steady State Core Thermal-Hydraulics and Primary System Stability," TR-0516-49417-P, Revision 0.
11. S.M. Modro et al., "Multi-Application Small Light Water Reactor Final Report," Idaho National Engineering and Environmental Laboratory, INEEL/EXT-04-01626, December 2003.
12. Electric Power Research Institute, "RETRAN-3D — A Program for Transient Thermal-Hydraulic Analysis of Complex Fluid Flow Systems," Volumes 1 -5, EPRI NP-7450-A, Revision 10, September 2014.
13. Moghanaki, S. K. and Rahgoshay, M., "Pressurizer Modeling: Using Different Thermodynamic Models and Comparing Results with RELAP Code Results," Applied Mechanics and Materials (Volumes 423-426), pp. 1444-1448, 2013.
14. U.S. Nuclear Regulatory Commission, "Combined License Applications for Nuclear Power Plants," Regulatory Guide 1.206, June 2007.



LO-1217-57520

Enclosure 3:

Affidavit of Zackary W. Rad, AF-1217-57521

NuScale Power, LLC

AFFIDAVIT of Zackary W. Rad

I, Zackary W. Rad, state as follows:

- (1) I am the Director of 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 report reveals distinguishing aspects about the process by which NuScale develops its Non-LOCA accident analysis methodology.

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 enclosure entitled Changes to "Non-Loss-of-Coolant Accident Analysis Methodology" Topical Report. 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 December 08, 2017.



Zackary W. Rad