[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[Docket No. 52-048; NRC-2024-0065]

NuScale Power, LLC;

US600 Standard Design Certification and Standard Design Approval

AGENCY: Nuclear Regulatory Commission.

ACTION: Exemption; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) received a June 29, 2023, letter from NuScale Power, LLC (NuScale), which requested an exemption from the annual and 30-day reporting requirements described in NRC regulations for the US600 Standard Design Certification (DC) and Standard Design Approval (SDA), and the Emergency Core Cooling System (ECCS) Evaluation Model (EM) referenced within the request, unless and until that EM is incorporated in a facility license application. The NRC reviewed NuScale's request and determined to grant the exemption.

DATE: The exemption was issued on March 28, 2024.

ADDRESSES: Please refer to Docket ID **NRC-2024-0065** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website**: Go to https://www.regulations.gov and search for Docket ID **NRC-2024-0065**. Address questions about Docket IDs to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the "For Further Information Contact" section of this document.
- **NRC's Agencywide Documents Access and Management System (ADAMS)**: You may obtain publicly available documents online in the ADAMS Public

Documents collection at https://www.nrc.gov/reading-rm/adams.html. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room reference staff at 1-800-397-4209, at 301-415-4737, or by email to PDR.Resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.

- **NRC’s PDR**: The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Stacy Joseph, Senior Project Manager, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301 415 3256; email: Stacy.Joseph@nrc.gov.

SUPPLEMENTARY INFORMATION: The text of the exemption is attached.

Dated: April 1, 2024.

For the Nuclear Regulatory Commission.

/RA/

Brian W. Smith, Director,
Division of New and Renewed Licenses,
Office of Nuclear Reactor Regulation.

Attachment – Exemption.

NUCLEAR REGULATORY COMMISSION

Docket No. 52-048

NuScale Power, LLC

US600 Standard Design Certification and Standard Design Approval

I. Background

The NuScale Standard Plant Design Certification Application (DCA) was submitted to the NRC on January 6, 2017, pursuant to the requirements of title 10 of the *Code of Federal Regulations* (10 CFR), part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants" (ML17013A229). NuScale submitted the final version of its Standard Plant DCA, Revision 5, by letter dated July 29, 2020 (ML20225A044), and requested approval of the NuScale design as described in the NuScale DCA, under subpart E, "Standard Design Approvals," of 10 CFR part 52. By letter dated August 28, 2020 (ML20231A804), the NRC informed NuScale that the plant design meets the applicable requirements for the DC stage of licensing, and, on September 11, 2020, the SDA request was granted (ML20247J564). On January 19, 2023, the NRC amended its regulations to certify the NuScale standard design (88 FR 3287).

By letter dated June 29, 2023 (ML23180A151), NuScale requested an exemption from the reporting requirements of 10 CFR 50.46(a)(3)(iii) as applicable to

Topical Report “Loss-of-Coolant Accident Analysis Methodology,” TR-0516-49422-P-A, Revision 2 (Non-proprietary version: ML20189A644).

Section 50.46(a)(1)(i) in part provides requirements for models used in calculations regarding Emergency Core Cooling System (ECCS) performance following postulated loss of coolant accidents. Section 50.46(a)(3)(iii) requires that a holder of a standard DC or a holder of a SDA report any change or error found in such ECCS performance models, including the nature of the change or error and its estimated effect on the limiting ECCS analysis, at least annually. The regulation further requires that if the change or error is significant, a report is to be provided within 30 days and include a proposed schedule for reanalysis or other action needed to show compliance with § 50.46 requirements, and requires that the DC or SDA holder propose immediate steps to demonstrate compliance or bring plant design into compliance. A significant change or error is described in section 50.46(a)(3)(i) as one which results in a calculated peak fuel cladding temperature difference by more than 50 °F from the temperature calculated for the limiting transient using the last acceptable model, either alone or in combination with other changes and errors, such that the sum of the absolute magnitudes of the respective temperature changes is greater than 50 °F.

II. Request/Action

In a letter dated June 29, 2023 (ML23180A151), NuScale requested an exemption from both the annual and 30-day reporting requirements of 10 CFR 50.46(a)(3)(iii) as applicable to Topical Report “Loss-of-Coolant Accident Analysis Methodology,” TR-0516-49422-P-A, Revision 2 (ML20189A644). Revision 2 of that topical report documents an acceptable ECCS Evaluation Model (EM) and is incorporated by reference in the final safety analysis report supporting NuScale’s

US600 SDA and DC. NuScale stated that neither the US600 SDA, DC, nor the associated ECCS EM is currently referenced or anticipated to be referenced by an application for constructing or operating a nuclear facility. NuScale stated its intent to resume reporting changes and errors in the event that a future license application references the US600 SDA, DC, or TR-0516-49422-P-A, Revision 2.

III. Discussion

The regulation for which the exemption is sought has two reporting requirements. The first requirement is that changes or errors discovered in an acceptable EM and their effect on the limiting ECCS analysis shall be reported at least annually. The second requirement is that, if those changes or errors are significant, a report shall be provided within 30 days and include a schedule for providing reanalysis or other action needed to show compliance, and a proposal of immediate steps to bring the plant design into compliance. A significant change or error, as it relates to this regulation, is defined as one which results in a calculated peak fuel cladding temperature difference by more than 50°F from the last acceptable model.

As discussed below, the NRC staff reviewed this request and determined that it is appropriate to grant the exemption, in accordance with the regulations as the exemption does not present an undue risk to public health or safety, is consistent with the common defense and security, and special circumstances exist.

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR part 50, including 10 CFR 50.46(a)(3)(iii), when: (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) special circumstances are

present. As stated in the regulation, and as relevant to the requested exemption, special circumstances may exist if application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule (10 CFR 50.12(a)(2)(ii)).

The purpose of 10 CFR 50.46(a)(3)(iii) is to provide timely reporting to the NRC regarding the nature and estimated effect of any change or error in the limiting ECCS analysis. In its request, NuScale committed to perform necessary reporting to a reactor license applicant and the NRC if the US600 SDA, DC, or TR-0516-49422-P-A, Revision 2, is referenced by a future applicant. The staff notes that 10 CFR 50.46(a)(3)(ii) requires an applicant that seeks to construct or operate a facility using the design to make similar reports. Further, 10 CFR 50.46(a)(3)(i) requires a DC or SDA holder to estimate the effect of any change to or error in an acceptable EM or in the application of such a model to determine if the change or error is significant, ensuring that changes and errors would continue to be documented internally by the DC or SDA holders, and be available for NRC inspection. The staff also notes that 10 CFR 50.46(a)(3)(iii) requires not only that changes or errors in the ECCS EM be reported, but also that changes or errors in the application of the EM be reported. Since TR-0516-49422-P-A, Revision 2, was incorporated by reference into the approved SDA and DC for the design, in the event that the SDA or DC is referenced by a future applicant, compliance with 10 CFR 50.46(a)(3)(iii) would need to include both changes or errors in the ECCS EM, as well as changes or errors in the application of the EM.

No Undue Risk to Public Health and Safety

The purpose of 10 CFR 50.46(a)(3)(iii) is to provide for timely notification of the nature and estimated effect of any errors or changes in the limiting ECCS analysis. In the absence of any application to utilize the referenced design for constructing or

operating a nuclear facility, there is no undue risk to public health and safety. The requested exemption is administrative in nature and pertains only to the requirements for reporting in 10 CFR 50.46(a)(3)(iii). No new accident precursors would be created as a result of the requested exemption; therefore, neither the probability nor the consequences of postulated accidents would be increased. The reporting of any changes or errors in the limiting ECCS analysis would resume when an application for a license that references the US600 SDA, DCA or the associated ECCS EM is submitted to the NRC. The request for an exemption from the annual and 30-day reporting requirements therefore have no bearing on public health and safety and poses no undue risk to public health and safety.

Consistent with Common Defense and Security

The requested exemption is administrative in nature and pertains only to the requirements for reporting in 10 CFR 50.46(a)(3)(iii). In the absence of any application to utilize the referenced design, this exemption has no relation to security issues; therefore, the common defense and security is not impacted.

Special Circumstances

Special circumstances, in accordance with 10 CFR 50.12(a)(2), may be present relevant to the requested exemption. Specifically, 10 CFR 50.12(a)(2)(ii) states, in part, that special circumstances may exist if application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule.

The underlying purpose of 10 CFR 50.46(a)(3)(iii) is to ensure that the NRC receives timely notification of the nature and estimated effect of errors or changes in the limiting ECCS analysis for a design or facility. These requirements for holders of SDAs

and DCs were added to 10 CFR 50.46 in 2007 (72 FR 49352), with the Statements of Consideration noting that, "[c]onforming references to design approvals, design certifications, and licenses issued under part 52 were made to § 50.46, so that the NRC will be notified of changes to or errors in acceptable EMs, or the application of such models, that were used in licenses, certifications, and approvals issued under part 52." For designs that are not yet referenced in an application for constructing or operating a nuclear facility, the NRC staff's review of any changes or errors noted in the annual report is generally performed to confirm that the design continues to comply with the acceptance criteria in 10 CFR 50.46(b). Considering the ample margin in the US600 design relative to the ECCS acceptance criteria in 10 CFR 50.46(b), the NRC staff has reasonable assurance that reporting of changes or errors as part of the annual reporting requirement is not necessary to assure continued compliance with the applicable acceptance criteria.

NuScale's exemption request also includes a request for exemption from the 30-day reporting requirement pertaining to significant changes or errors and associated corrective actions. Timely notice to the NRC of significant underlying changes or errors and associated corrective actions is valuable because it enables the NRC staff to evaluate the continued ability of the SDA or DC to comply with the acceptance criteria in 10 CFR 50.46(b) in a timely manner. As discussed in the Statements of Consideration accompanying the 10 CFR Part 52 final rule (54 FR 15372), that rule was intended to achieve the early resolution of licensing issues, thereby enhancing the safety and reliability of nuclear power plants and reducing the complexity and uncertainty of the licensing process. As described previously, 10 CFR 50.46(a)(3)(i) requires a DC or SDA holder to estimate the effect of any change to or error in an acceptable EM or in the application of such a model to determine if the change or error is significant, ensuring

that changes and errors would continue to be documented internally by the DC or SDA holders, and be available for NRC inspection. If the NRC receives an application that references the NuScale DC, SDA, or TR-0516-49422-P-A, Rev. 2, NuScale, as the DC and SDA holder, will be required to resume the reporting requirements of 10 CFR 50.46(a)(iii). By complying with the 10 CFR 50.46(a)(i) requirement to internally document any changes or errors in the accepted EM or application of the model, the applicant and the NRC would still be able to achieve resolution of such issues early in the licensing process and continue to reduce uncertainty in the licensing process, thereby achieving the underlying purpose of the rule. The staff also notes that an applicant to construct or operate a plant utilizing the DC or SDA design would be responsible for providing an acceptable analysis of the ECCS in its application to the NRC.

Therefore, for the above stated reasons, the NRC staff finds that NuScale's compliance with the reporting requirements, prior to the submittal of any application to utilize the referenced design, is not necessary to achieve the underlying purpose of the rule, and that special circumstances for the requested exemption from the annual and 30-day reporting requirements in 50.46(a)(3)(iii) are present under 10 CFR 50.12(a)(2)(ii).

Eligibility for Categorical Exclusion from Environmental Review

With respect to the exemption's impact on the quality of the human environment, the NRC staff has determined that the exemption from reporting that was requested by NuScale is eligible for categorical exclusion as identified in 10 CFR 51.22(c)(25), in that:

(i) There is no significant hazards consideration;

The criteria for determining whether there is no significant hazards consideration are found in 10 CFR 50.92. The proposed action involves only a change regarding the requirements for the submission of reports on errors or changes in the ECCS analysis and EM for the US600 DC and SDA, neither of which has yet been referenced by an applicant or licensee seeking to utilize either design or to utilize the referenced EM. The reporting of changes or errors would have no bearing on the operation of any operating reactor, or any existing application to construct or operate a reactor, prior to the submittal of an application to utilize either design. Therefore, there is no significant hazards consideration because granting the proposed exemption would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite;

The proposed action involves only a change to reporting requirements and does not have any bearing on the operation of any operating reactor, or any application to construct or operate a reactor, and does not involve any changes in the types or any significant increase in the amounts of effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative public or occupational radiation exposure;

Since the proposed action involves only a change to reporting requirements and does not have any bearing on the operation of any operating reactor, or any application

to construct or operate a reactor, the exemption does not contribute to any significant increase in occupational or public radiation exposure.

(iv) There is no significant construction impact;

The proposed action involves only a change to reporting requirements, which is administrative in nature. This DC and SDA have not yet been referenced by any applicant to construct or operate a reactor. Accordingly, the proposed action does not involve any construction impact.

(v) There is no significant increase in the potential for or consequences from radiological accidents;

The proposed action involves only a change to reporting requirements and does not have any bearing on the operation of an operating reactor, or any application to construct or operate a reactor, and it therefore does not impact the probability or consequences of radiological accidents. In the future, if an application to construct or operate a reactor utilizing the SDA or DC design, or referencing the applicable EM, is submitted, the reporting requirements would be triggered, and the NRC's consideration of the requested licensing action would necessarily include consideration of those reports in evaluating the potential for or consequences of radiological accidents.

(vi) The requirements from which an exemption is sought involve:

(1) Reporting requirements;

The exemption request involves submitting the annual and 30-day reports required by 10 CFR 50.46(a)(3)(iii);

and

(2) Scheduling requirements;

The proposed exemption relieves that applicant from submitting the required reports until NRC receives a request to reference the NuScale US600 DC, SDA or Topical Report TR-0516-49422-P-A, Revision 2 (ML20189A644). If an application to use

the US600 SDA, DC, or TR-0516-49422-P-A, Revision 2, is referenced in a license application, NuScale will then be required to submit the reports required by regulation to the NRC.

Based on the discussion above, the NRC staff concludes that the exemption request meets the requirements in 10 CFR 51.22(c)(25) and is eligible for categorical exclusion from environmental review.

IV. Conclusion

For the reasons discussed in Section III.B above, the NRC concludes that NuScale's requested exemption from the annual and 30-day reporting requirements in 10 CFR 50.46(a)(3)(iii) satisfies the applicable requirements in 10 CFR 50.12 and should be granted. The exemption from the annual and 30-day reporting requirements is effective upon issuance.

Dated March 28, 2024

For The Nuclear Regulatory Commission.

/RA/

Brian Smith, Director,
Division of New and Renewed Licenses,
Office of Nuclear Reactor Regulation.