



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001**

March 29, 2018

The Honorable Kristine L. Svinicki
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT – 650th MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, FEBRUARY 8-9, 2018

Dear Chairman:

During its 650th meeting, February 8-9, 2018, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters and completed the following reports and memoranda:

REPORTS

Reports to Kristine L. Svinicki, Chairman, NRC, from Michael L. Corradini, Chairman, ACRS:

- “NuScale Power Exemption Request from 10 CFR Part 50, Appendix A, General Design Criterion 27, ‘Combined Reactivity Control Systems Capability’,” dated February 21, 2018
- “Biennial Review and Evaluation of the NRC Safety Research Program,” dated February 26, 2018

MEMORANDA

Memoranda to Victor M. McCree, Executive Director for Operations, NRC, from Andrea D. Veil, Executive Director, ACRS:

- “Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for February 2018,” dated February 21, 2018
- “Regulatory Guide,” dated February 21, 2018
 - RG 1.158, Revision 1, “Qualification of Safety-Related Vented Lead-Acid Storage Batteries for Nuclear Power Plants” (no review)
 - RG 1.189, Revision 3, “Fire Protection for Nuclear Power Plants” (no review)

HIGHLIGHTS OF KEY ISSUES

1. NuScale Design Certification Application Request for Exemption from General Design Criterion 27

The Committee completed its report on the NRC staff's publicly available draft Commission Paper SECY-18-XXX, "NuScale Power Exemption Request from 10 CFR PART 50, Appendix A, General Design Criterion [GDC] 27, 'Combined Reactivity Control Systems Capability'." The Committee met with the staff and representatives of NuScale.

Following certain design basis event scenarios, the NuScale reactor may return to critical at a thermal power above decay heat levels. These scenarios assume that one of the sixteen control rods fails to insert, that there is a loss of offsite AC power, and that the non-safety boron injection system is unavailable. If the moderator temperature coefficient is sufficiently negative then recriticality would occur due to decreases in reactor coolant temperature. Based on these conditions and assumptions, the reactor would remain critical until an alternate means of reactivity control is actuated.

The staff has historically interpreted the intent of GDC 27 to require that the reactor be reliably controlled and achieve and maintain a safe, stable condition, including subcriticality beyond the short-term, using only safety-related equipment following a design basis event with margin for stuck rods. The staff informed NuScale that an exemption to GDC 27 would be required and that consideration of such an exemption entails policy issues under the purview of the Commission. The staff plans to evaluate whether the NuScale design meets the underlying purpose of GDC 27 by assessing the results of NuScale's safety analyses of the assumed scenarios against the established specified acceptable fuel design limits.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated February 21, 2018, with the following conclusion and recommendation. The proposed criteria, which the staff will use to determine the acceptability of NuScale's GDC 27 exemption request, are reasonable provided the following recommendations and the enhancements outlined in our letter report are addressed: 1) Evaluate the overall risk and not just the frequency of the challenge and 2) Risk considerations should be based on the facility rather than an individual module.

2. Biennial Review and Evaluation of the NRC Safety Research Program

The Committee completed its biennial review and evaluation of the NRC safety research program. In its evaluation of NRC research activities, the Committee considered the need, scope, and balance of the reactor safety research program; progress of ongoing activities; how well RES anticipates research needs and how it is positioned for a changing environment; prioritization and identification of new research needs; and long-term planning.

Committee Action

The Committee issued a report to the NRC Chairman on this matter, dated February 26, 2018, transmitting the ACRS report entitled, "Review and Evaluation of the NRC Safety Research Program." The final report will be issued as NUREG-1635, Volume 13.

RECONCILIATION OF ACRS COMMENTS AND RECOMMENDATIONS

- The Committee considered the Executive Director for Operations' response of December 22, 2017, to the November 16, 2017 ACRS letter, "State-of-the-Art Reactor Consequence Analysis (SOARCA) Project, Sequoyah Integrated Deterministic and Uncertainty Analyses." The Committee was satisfied with the Executive Director for Operations' response.
- The Committee considered the Executive Director for Operations' response of November 21, 2017, to the October 20, 2017 ACRS letter, "Safety Evaluation of the NuScale Power, LLC Topical Report TR-0116-20852-P, 'Applicability of AREVA Fuel Methodology for the NuScale Design,' Revision 1." The Committee was satisfied with the Executive Director for Operations' response.

SCHEDULED TOPICS FOR THE 651st ACRS MEETING

The following topics are scheduled for the 651st ACRS meeting, to be held on March 8-10, 2018:

- APR1400 - PLUS7 Fuel Topical Report
- Regulatory Guide 1.232, Advanced Reactor Design Criteria
- Topical Report ANP-10333P, Revision 0, "AURORA-B: An Evaluation Model for Boiling Water Reactors; Application to Control Rod Drop Accident (CRDA)"

Sincerely,

/RA/

Michael Corradini
Chairman

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Michael Corradini
Chairman

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