UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 17, 2021

Matthew W. Sunseri, Chairman
Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: IN RESPONSE TO DRAFT FINAL RULE, "EMERGENCY PREPAREDNESS FOR SMALL MODULAR REACTORS AND OTHER NEW TECHNOLOGIES"

Dear Mr. Sunseri:

Thank you for your letter dated November 16, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21316A252). In the letter, you provided the Advisory Committee on Reactor Safeguards (ACRS) summary conclusions and recommendations regarding the draft final rule, "Emergency Preparedness for Small Modular Reactors and Other New Technologies" (EP for SMRs and ONTs). The letter was in response to the discussions on the draft *Federal Register* notice containing the draft final rule language (ADAMS Accession No. ML21285A034) and draft Regulatory Guide (RG) 1.242, "Performance-Based Emergency Preparedness for Small Modular Reactors, Non-Light-Water Reactors, and Non-Power Production or Utilization Facilities" (ADAMS Accession No. ML21285A035), that took place during the ACRS's 690th meeting on November 2-5, 2021. The NRC staff benefited from its interactions with the ACRS on this topic and we appreciate the members' valuable insights.

The NRC staff provides the following responses to the ACRS recommendations in your November 16, 2021 letter:

1. *ACRS Recommendation:* Revise proposed Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.47(f) to not exclude the Federal Emergency Management Agency (FEMA) from being involved in reviewing emergency plans under this rule regardless of the boundaries of the emergency planning zone (EPZ) to ensure applicable offsite agencies are capable to coordinate with onsite nuclear emergency organizations.

   NRC Staff's Response: The NRC staff agrees that regardless of the boundary of the EPZ, ensuring applicable offsite agencies are capable of coordinating with onsite emergency organizations is of great importance. Section 50.160(b)(1)(iii)(C) and 50.160(b)(1)(iv)(A)(*5*) of the draft final rule would require all applicants and licensees to establish and maintain effective communications and provide site familiarization training to offsite response organizations that would have a need to respond to the facility in the event of an emergency.

Section 50.160(b)(1)(iii)(C) of the draft final rule requires a drill and exercise program to demonstrate effective communications between the onsite emergency response organization and offsite organizations such as fire departments, rescue squads, medical dispatch; and local law enforcement that have responsibilities for responding during emergencies. Section C.6.e of RG 1.242 provides guidance on this requirement. Section C.7 of RG 1.242 provides implementation guidance for draft paragraph (b)(1)(iv)(A)(*5*) of 10 CFR 50.160. This means that applicable offsite agencies are provided the training and would have the capability to coordinate with onsite nuclear emergency organizations regardless of the boundary of the EPZ.

The graded approach to EP used in this draft final rule is commensurate with the relative radiological risk, source term, and potential hazards of SMRs and ONTs, among other considerations. This approach is consistent with the radiological risk for other facilities that do not require a formal offsite EP program, such as research and test reactors and independent spent fuel storage installations. In these cases, the FEMA review is not required because State, local, and Tribal government organizations do not need to provide for predetermined, prompt protective measures or take specialized actions in response to an event. Similarly, if the NRC determines that a formal offsite EP program is not required for a reasonable assurance finding for a specific SMR or ONT, then a FEMA finding and determination regarding reasonable assurance would not be needed. However, the NRC will still require formal coordination with offsite organizations as previously described.

Based on the above discussion, the NRC staff believes that the current requirements in Section 50.160 of the draft final rule and the supporting regulatory guide accomplish the objective of the recommendation proposed by the ACRS to “ensure applicable offsite agencies are capable to coordinate with onsite nuclear emergency organizations” and no change in the draft final rule language is required.

2. Revise RG 1.242 to:

   a. *ACRS Recommendation:* Include additional clarifying guidance related to selection criteria for the spectrum of events to consider for determination of the source term that is to be applied for EPZ sizing.

      NRC Staff’s Response: The siting and design review of an application determines the adequacy of a facility’s source term and relevant licensing basis events. The licensing basis events include a spectrum of events, from design basis events to beyond design basis events. In order to demonstrate compliance with siting and safety requirements, an applicant will provide the basis for source terms and releases for the licensing basis events relevant to the facility. These events then become candidates used to determine the radiological releases in the EPZ size determination analysis. The guidance in draft RG 1.242 is broad in order to accommodate different licensing frameworks and technology types. The guidance in RG 1.242, Section A-3.1, identifies technology-inclusive considerations that should be included in event selection but does not provide specific guidance or examples, which would be speculative at this time.

b. *ACRS Recommendation:* Clearly indicate that for sites licensed for transportable and mobile reactors the license application review and associated proposed emergency plan must be set for the maximum number of modules, new arrivals, active, and shutdown or spent units. This ensures the emergency plan considers the cumulative on-site effect of all units during the full life cycle of the licensed site.

   NRC Staff's Response: The regulations in the draft final rule will account for the maximum number of licensed reactor modules at the site. An applicant may apply for licenses for all modules contemplated for the site at one time, in a single application. The NRC issues individual licenses for reactors, notwithstanding the number of reactor modules at a site. If a licensee plans to add an additional module at the site, beyond those specified in the original application and licensed by the NRC, then a new license application would be required. The licensee would be required to include a hazard analysis for additional proposed reactor module(s) in a new application. In addition, the licensee must update its hazard analyses for the existing reactor modules to reflect the additional reactor module as required under 10 CFR 50.160(b)(1)(i) and 10 CFR 50.54(q)(2)(ii) of the draft final rule. These provisions require a licensee to maintain the effectiveness of its emergency plan. Similarly, if a nonnuclear facility is added to a reactor site or to a contiguous or nearby site after the NRC licenses the reactor, then the licensee must update its hazard analysis. Draft RG 1.242 states that the hazard analysis should "identify and characterize the site-specific hazards posed by multi-modular and nuclear units and contiguous or nearby facilities that could complicate the SMR, non-LWR, or NPUF's emergency response (e.g., nature of the challenge in terms of timing, severity, and persistence)." Appendix A to RG 1.242 also states that applicants "should consider internal and external initiating events, multi-module and multiunit accidents and interactions, and all sources of radioactive material whose release may result in the need to take prompt protective actions." As sources of radioactive material, shutdown or spent reactor units would be included in the hazard analysis.

c. *ACRS Recommendation:* Include conforming changes regarding the changes made in response to Recommendation 1, above.

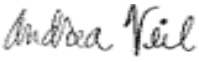
   NRC Staff's Response: Based on the above discussions in the NRC staff's responses to ACRS Recommendations 1 and 2, the NRC staff's position is that the current requirements in the draft final EP for SMRs and ONTs rule and the supporting draft Regulatory Guide require no conforming changes.

The NRC staff appreciates the ACRS' review and valuable input on this proposed draft final rule and associated guidance document.

Sincerely,

Signed by Gavrilas, Mirela
on 12/17/21

Mirela Gavrilas, Director
Office of Nuclear Security and Incident Response



Signed by Veil, Andrea
on 12/17/21

Andrea D. Veil, Director
Office of Nuclear Reactor Regulation

cc: Chairman Christopher T. Hanson
Commissioner Jeff M. Baran
Commissioner David A. Wright
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LETTER, DRAFT FINAL RULE, “EMERGENCY PREPAREDNESS FOR SMALL MODULAR REACTORS AND OTHER NEW TECHNOLOGIES,” DATED DECEMBER 17, 2021.

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