

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50, 52, and 73

[Docket No. NRC-2017-0227]

RIN 3150-AK19

Physical Security for Advanced Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Regulatory basis; public meeting, and request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is requesting comment on a regulatory basis to support a rulemaking that would amend the NRC's regulations to develop specific physical security requirements for advanced reactors, which refers to light-water small modular reactors and non-light-water reactors. The NRC is proposing a limited-scope rulemaking that would provide a clear set of alternative, performance-based requirements and guidance for advanced reactor physical security that would reduce the need for exemptions to current physical security requirements when applicants request permits and licenses. This rulemaking would provide additional benefits for advanced reactor applicants by establishing greater regulatory stability, predictability, and clarity in the licensing process. The NRC plans to hold a public meeting to discuss the regulatory basis and facilitate public participation.

DATES: Submit comments by **August 15, 2019**. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only

for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2017-0227**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: Carol.Gallagher@nrc.gov. For technical questions, contact the individuals listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **E-mail comments to:** Rulemaking.Comments@nrc.gov. If you do not receive an automatic e-mail reply confirming receipt, then contact us at 301-415-1677.

- **Fax comments to:** Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.

- **Mail comments to:** Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.

- **Hand deliver comments to:** 11555 Rockville Pike, Rockville, MD 20852, between 7:30 a.m. and 4:15 p.m. (Eastern Time) Federal workdays; telephone: 301-415-1677.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Ilka T. Berrios, Office of Nuclear Material Safety and Safeguards; telephone: 301-415-2404; e-mail: Ilka.Berrios@nrc.gov; or William Reckley, Office of New Reactors; telephone: 301-415-7490; e-mail: William.Reckley@nrc.gov. Both are staff of the U.S. Nuclear Regulatory Commission,

Washington, DC 20555-0001.

SUPPLEMENTARY INFORMATION:

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I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID **NRC-2017-0227** when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <http://www.regulations.gov> and search for Docket ID **NRC-2017-0227**.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://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 (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The regulatory basis document is available in ADAMS under Accession No. ML19099A017.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

B. Submitting Comments

Please include Docket ID **NRC-2017-0227** in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <http://www.regulations.gov> as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

Please note that the NRC will not provide formal written responses to each of the comments received on the regulatory basis. However, the NRC will consider all comments received in the development of the proposed rule.

II. Discussion

In 2018, the staff submitted SECY-18-0076, "Options and Recommendation for Physical Security for Advanced Reactors," dated August 1, 2018, (ADAMS Accession No. ML18170A051), presenting alternatives and a recommendation to the Commission

on possible changes to the regulations and guidance related to physical security for advanced reactors (light-water small modular reactors and non-light-water reactors). The staff evaluated the advantages and disadvantages of each alternative and recommended a limited-scope rulemaking to further assess and, if appropriate, revise a limited set of NRC regulations. The staff also recommended developing necessary guidance to address performance criteria for which the alternative requirements may be applied for advanced reactor license applicants. In the Staff Requirements Memorandum (SRM)-SECY-18-0076, dated November 19, 2018, (ADAMS Accession No. ML18324A478), the Commission approved the staff's recommendation to initiate a limited-scope rulemaking.

As a result, the NRC is considering rulemaking for advanced reactors that could be licensed under part 50 of title 10 of the *Code of Federal Regulations* (10 CFR), "Domestic Licensing of Production and Utilization Facilities," or 10 CFR part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." This limited-scope rulemaking would apply the insights from advances in designs and safety research; retain the NRC's overall security regulations framework; and provide alternatives and guidance related to specific physical security requirements. For the purposes of this limited-scope rulemaking, the term advanced reactors will refer only to light-water small modular reactors and non-light-water reactors.

The NRC's current physical security regulations for nuclear power plants were developed to address the risk of radiological consequences from radiological sabotage of a nuclear power plant that uses special nuclear material and the theft or diversion of special nuclear material from these facilities. This rulemaking will focus on the threats from radiological sabotage. Potential threats related to theft and diversion of special nuclear material are outside the scope of this limited-scope rulemaking, but may be

considered in future projects.¹ Given that the current fleet of nuclear power plants consists of large light-water reactors, NRC regulations were developed in the context of security challenges related to large light-water reactors. These regulations do not take into account advances in designs and engineered safety features, and their applications to advanced reactors.

The regulatory basis summarizes the current physical security framework for large light-water reactors against radiological sabotage, describes regulatory issues that have motivated the NRC to pursue rulemaking, evaluates various alternatives to address physical security for advanced reactors, and identifies the background documents related to these issues. In the regulatory basis, the term advanced reactors refers to light-water small modular reactors and non-light-water reactors. As defined in § 170.3, the term *Small modular reactors* refers to a nuclear reactor (or module) designed to produce heat energy up to 1,000 megawatts thermal or electrical energy up to approximately 300 megawatts electric per module that the Commission licensed under the authority granted by Section 103 of the Atomic Energy Act of 1954, as amended, and pursuant to the provisions of § 50.22, “Class 103 licenses; for commercial and industrial facilities.”

The NRC is requesting comment on the regulatory basis to support consideration of a rulemaking that would provide alternatives and guidance related to specific physical security requirements for advanced reactors. The NRC will consider the comments received on the regulatory basis as it develops this proposed rule.

¹ Many non-light-water reactor designs are expected to use higher assay low-enriched uranium (i.e., between 5- and 20-percent enrichments) and fuel forms other than the traditional uranium dioxide pellets used for light-water reactors. Different fuel forms introduce the possible need to develop new approaches to material control and accounting practices and protections against theft and diversion throughout the fuel cycle, including at reactor facilities. Future interactions between the staff and stakeholders will cover these and other issues related to higher assay low-enriched uranium and the nuclear fuel cycle.

This limited-scope rulemaking aims to retain the current overall security requirements framework in § 73.55, “Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage,” to protect against radiological sabotage, while providing alternatives for advanced reactors to specific physical security-related regulations.

The physical security measures established under current NRC regulations are technology-inclusive. Under this limited-scope rulemaking, the NRC would apply a similar, technology-inclusive approach for advanced reactors to accommodate a variety of facility designs, systems, and purposes. The technical basis for offering an alternative for the physical security requirements for advanced reactors is the combination of inherent reactor characteristics and demonstration of security incorporated into the advanced reactor designs that reduces reliance on human actions to mitigate attempted acts of radiological sabotage.

The limited-scope rulemaking would target the identified requirements that rely on human actions for interdiction and post-attack command and control. Specifically, the limited-scope rulemaking would focus on establishing a performance-based approach and associated criteria to assess advanced reactor attributes, as described in the Policy Statement on the Regulation of Advanced Reactors, published in the *Federal Register* (FR) on October 14, 2008 (73 FR 60612), to determine whether alternatives to the prescribed minimum number of armed responders currently defined in § 73.55(k)(5)(ii) and the prescriptive requirements defined in § 73.55(i)(4)(iii) for an onsite secondary alarm station are applicable. The NRC is aware of the safety improvements expected to be generally found in advanced reactors due to their incorporation of simplified, inherent, and passive features. These features may result in smaller and slower fission product releases following a loss of safety functions from malfunctions and from many malicious acts.

The advantages of pursuing a limited-scope rulemaking related to advanced reactor physical security include:

- Promote regulatory stability, predictability, and clarity.
- Reduce the need for future applicants to propose alternatives or request exemptions from physical security requirements.
- Recognize technology advancements and design features associated with the NRC-recommended attributes of advanced reactors.
- Replace prescriptive regulations with risk-informed, performance-based requirements.

III. Specific Request for Comment

The NRC is seeking comments and supporting rationale from the public on the following questions:

- (1) Is it feasible to define performance criteria related to offsite consequences for advanced reactors with attributes as defined in the Policy Statement on the Regulation of Advanced Reactors, that could be used to determine the applicability of alternative, performance-based physical security requirements while maintaining adequate protection of plant equipment and personnel by the overall physical security program?
- (2) If feasible to define performance criteria to determine the applicability of alternative, performance-based requirements for a limited scope of physical security regulations, are the possible criteria, as proposed in Section 4.5 of the regulatory basis, reasonable and sufficient to ensure that the resultant physical

security programs provide reasonable assurance of adequate protection of public health and safety or would other criteria be more appropriate? (Respondents should describe suggested alternatives.)

- (3) It is anticipated that engineered safety features may result in a slow accident progression that could allow for reliance on offsite licensee response to support the prevention of offsite consequences for advanced reactors with attributes as defined in the Policy Statement. The staff expects that future discussions will involve evaluating the feasibility of reliance on these resources for security response and to help recover facilities and mitigate events. What types of engineering, administrative, and programmatic controls should be considered in any future evaluations of this approach?

IV. Cumulative Effects of Regulation

The cumulative effects of regulation (CER) describes the challenges that licensees or other impacted entities (such as State agency partners, Tribal and local governments) may face while implementing new regulatory positions, programs, and requirements (e.g., rules, generic letters, backfits, inspections). The CER is an organizational challenge that results from a licensee or impacted entity implementing a number of complex positions, programs, or requirements within a limited implementation period and with available resources (which may include limited available expertise to address a specific issue). The NRC has implemented CER enhancements to the rulemaking process to facilitate public involvement throughout the rulemaking process. Therefore, the NRC is specifically requesting comments on the cumulative effects that may result from this proposed rulemaking. In developing comments on the regulatory basis, consider and provide comments on the following questions:

1. In light of any current or projected CER challenges, what should be a reasonable effective date, compliance date, or submittal date(s) from the time the final rule is published to the actual implementation of any proposed requirements, including changes to programs, procedures, and the facility?

2. If CER challenges currently exist or are expected, what should be done to address them? For example, if more time is required for subsequent implementation of the new requirements, what period of time is sufficient?

3. Do other (NRC or other agency) regulatory actions (e.g., orders, generic communications, license amendment requests, and inspection findings of a generic nature) influence the subsequent implementation of the proposed rule's requirements?

4. Are there unintended consequences? Does the regulatory basis create conditions that would be contrary to the regulatory basis' purpose and objectives? If so, what are the unintended consequences, and how should they be addressed?

V. Plain Writing

The Plain Writing Act of 2010 (Pub. L. 111-274) requires Federal agencies to write documents in a clear, concise, and well-organized manner. The NRC has written this document to be consistent with the Plain Writing Act as well as the Presidential Memorandum, "Plain Language in Government Writing," published June 10, 1998 (63 FR 31883). The NRC requests comment on this document with respect to the clarity and effectiveness of the language used.

VI. Public Meeting

The NRC plans to hold a public meeting during the public comment period for this document. The public meeting will provide a forum for the NRC to discuss the issues and questions with external stakeholders regarding the regulatory basis to support a proposed rulemaking that would provide alternatives and guidance related to specific physical security requirements for advanced reactors. The NRC does not intend to provide detailed responses to comments or other information submitted during the public meeting.

The public meeting will be noticed on the NRC's public meeting Web site at least 10 calendar days before the meeting. Stakeholders should monitor the NRC's Public Meeting Schedule Web page for additional information about the public meeting at <http://meetings.nrc.gov/pmns/mtg>.

The NRC will post a notice for the public meeting and may post additional material related to this action to the Federal Rulemaking Web site at <http://www.regulations.gov> under Docket ID **NRC-2017-0227**.

Dated at Rockville, Maryland, this 10th day of July 2019.

For the Nuclear Regulatory Commission.

/ RA /

Patricia K. Holahan, Director,
Division of Rulemaking,
Office of Nuclear Materials Safety and Safeguards.