

POLICY ISSUE
NOTATION VOTE

RESPONSE SHEET

TO: Brooke P. Clark, Secretary
FROM: Commissioner Caputo
SUBJECT: SECY-22-0072: Proposed Rule: Alternative Physical Security Requirements for Advanced Reactors (RIN 3150-AK19)

Approved X Disapproved _____ Abstain _____ Not Participating _____

COMMENTS: Below _____ Attached X None _____

Entered in STAR

Yes _____

No _____

Signature

Date

Commissioner Caputo's Comments on SECY-22-0072: Alternative Physical Security Requirements for Advanced Reactors

In SECY-22-0072, the staff provides a draft proposed rule for alternative physical security requirements for advanced reactors that follows the rulemaking plan approved in “Staff Requirements — SECY-18-0076 — Options and Recommendation for Physical Security for Advanced Reactors.”¹ As noted by Commissioner Burns in his vote on SECY-18-0076, “[p]roceeding with the rulemaking would provide incentive for advanced reactor designers to incorporate reactor attributes defined in the NRC’s Policy Statement on the Regulation of Advanced Reactors. It was a specific goal of the Commission to include attributes related to physical security when it updated the policy statement in 2008.”² I continue to support staff efforts to reduce reliance on operational requirements and staffing while encouraging the design process to resolve engineered security features early in the design process and assure that the necessary security protection is provided while reducing recurring operating costs.

The staff’s draft proposed rule would provide a well thought out set of alternatives to the prescriptive security requirements in part 73 for applicants for and holders of licenses to operate advanced power reactors for which designers have sought to resolve security features early in the design process. However, I believe that there is room to better incentivize developers to address these issues. In the course of this rulemaking, staff should work with stakeholders to accomplish this similar to the manner in which we allow applicants for early site permits to address emergency preparedness requirements in that review process. In developing the draft final rule for this, staff should propose options to the Commission for the manner and extent to which it should consider security matters resolved under § 52.63(a)(5) for a design certification that includes the review of those matters.

I note that in the draft proposed rule, the staff would require compliance with certain requirements until the docketing of a licensee’s certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel under § 50.82(a)(1) or § 52.110(a). This would have the effect of retaining those requirements past the licensee’s submittal of those certifications under oath or affirmation under § 50.4(b)(8) and (9) or § 52.3(b)(8) and (9) until the agency accomplishes the ministerial task of docketing those certifications. This deviates from the sunset provisions in § 50.54(hh)(2) and § 50.155(a)(1) that rely on the submittal of those certifications by a licensee under oath or affirmation. Reliance on the licensee’s submittal seems more appropriate in light of the lack of an acceptance review process for the certifications prior to their docketing. While the ministerial act of docketing the certifications is necessary for the removal of the authority to operate the reactor under § 50.82(a)(2) or § 52.110(b), § 50.9 and § 52.6 would provide an equivalent degree of protection as that ministerial act. In keeping with the Efficiency Principle of Good Regulation that “Regulatory activities should be consistent with the degree of risk reduction they achieve,” staff should align the sunset provisions of this rulemaking with those existing in § 50.54(hh)(2) and § 50.155(a)(1).

¹ SRM-SECY-18-0076 (Nov. 19, 2018) (ADAMS Accession No. ML18324A478).

² Commission Voting Record, “SECY-18-0076—Options and Recommendation for Physical Security for Advanced Reactors,” (Nov. 19, 2018) (ML18324A761).

I approve publication of the proposed rule, taking into account the attached comments and suggested edits to address typographic errors and inconsistencies in the *Federal Register* notice.

Finally, I join the Chair in recognizing the differing views presented in the non-concurrence package (NCP) provided for the Commission's consideration along with the draft proposed rule. The frank and open discussion of differing views is an important element of the agency's safety culture. I appreciate the staff's efforts involved in considering the differing views as well as the NCP submitter's commitment to the mission to follow through, document those views, and see that they are appropriately considered.

[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50, 52, and 73

[NRC-2017-0227]

RIN 3150-AK19

Alternative Physical Security Requirements for Advanced Reactors

[AXC edits](#)

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to provide certain alternative, risk-informed, performance-based physical security requirements for advanced reactors that would ~~provide result in~~ greater regulatory stability, predictability, and clarity in the licensing process and reduce the need for exemptions. The term "advanced reactors," as used in this rulemaking, refers to nuclear power reactors that are light-water small modular reactors or non-light-water reactors.

Commented [A1]: Edited to reduce redundancy.

Commented [A2]: *Passim*, staff is reminded that the latest version of the NRC Editorial Style Guide would require the use of a single space following the period at the end of each sentence.

Concurrently, the NRC is issuing for public comment a draft regulatory guide, DG-5072, "Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors." The NRC also developed DG-5071, "Target Set Identification and Development for Nuclear Power Reactors," which is withheld from public disclosure and can be made available to those members of the public with a need to know.

DATES: Submit comments by **[INSERT DATE 75 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the Commission is able to ensure consideration only for comments received before this date.

ADDRESSES: You may submit comments by any of the following methods (unless this document describes a different method for submitting comments on a specific subject); however, the NRC encourages electronic comment submission through the Federal rulemaking website:

- **Federal rulemaking website:** Go to <https://www.regulations.gov> and search for Docket ID NRC-2017-0227. Address questions about NRC dockets to Dawn Forder; telephone: 301-415-3407; email: Dawn.Forder@nrc.gov. For technical questions contact the individuals listed in the FOR FURTHER INFORMATION CONTACT section of this document.

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

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

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: *Technical information:* Dennis Andrukat,

Office of Nuclear Material Safety and Safeguards, telephone: 301-415-3561, email: Dennis.Andrukat@nrc.gov; and Beth Reed, Office of Nuclear Reactor Regulation, telephone: 301-415-2130, email: Elizabeth.Reed@nrc.gov. Both are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Guidance information: Stacy Prasad, Office of Nuclear Security and Incident Response, telephone: 301-287-0726, email: Stacy.Prasad@nrc.gov; or Stanley Gardocki, Office of Nuclear Regulatory Research, telephone: 301-415-1067, email: Stanley.Gardocki@nrc.gov. Both are staff of the U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Please do not include any potentially classified or sensitive information in your email.

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 Website:** Go to <https://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 <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 (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to PDR.Resource@nrc.gov. For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the "Availability of Documents" section of this document.

- **NRC's PDR:** You may examine and purchase copies of public documents, by appointment, at the NRC's PDR, Room P1 B35, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. 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 8:00 a.m. and 4:00 p.m. (ET), Monday through Friday, except Federal holidays.

B. Submitting Comments

The NRC encourages electronic comment submission through the Federal rulemaking website (<https://www.regulations.gov>). 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 <https://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.

II. Background

A. Existing Physical Security Framework for Nuclear Power Reactors

The NRC has established physical security requirements for the protection of production and utilization facilities licensed under 10 CFR part 50, "Domestic Licensing of Production and Utilization Facilities," or 10 CFR part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." The NRC requires these licensees to design, implement, and maintain a physical protection program that provides high assurance¹ that operation of the facility is not inimical to the common defense and security and does not constitute an unreasonable risk to the public health and safety. To satisfy this performance objective, a licensee's physical protection program must protect against the design-basis threat (DBT) of radiological sabotage as set forth in § 73.1 of title 10 of the *Code of Federal Regulations* (10 CFR), "Purpose and scope." The physical security requirements that a licensee must implement to protect against the DBT of radiological sabotage are primarily set forth in 10 CFR part 73, "Physical Protection of Plants and Materials." The Commission-approved DBT describes the type, composition, and capabilities of an adversary that a licensee can reasonably be expected to defend against. Development of the DBT is based on threat assessments of the tactics, techniques, and procedures used by international and domestic terrorist groups and organizations.

¹ The Commission stated in staff requirements memorandum (SRM) "SRM-SECY-16-0073 – Options and Recommendations for the Force-On-Force Inspection Program in Response to SRM-SECY-14-0088," dated October 5, 2016, that "the concept of 'high assurance' of adequate protection found in the NRC security regulations is equivalent to 'reasonable assurance' when it comes to determining what level of regulation is appropriate." The Commission re-iterated this point in "SRM-SECY-18-0076 – Options and Recommendation for Physical Security for Advanced Reactors," dated November 19, 2018.

The physical security requirements for the protection of ~~commercial~~ nuclear power reactors against the DBT of radiological sabotage can be found in § 73.55, “Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage.” These requirements contain a mixture of performance-based and prescriptive security requirements that provide applicants and licensees with the flexibility to determine how to meet the established performance objective.

Commented [A3]: Deleted to reflect that the scope of 73.55 is not limited to commercial nuclear power reactors but instead covers nuclear power reactors. (See, 73.55(a). See, also, the title of the section as quoted in the remainder of this sentence.) The sole portion of 73.55 that is limited to commercial nuclear power reactors is 73.55(l) regarding facilities using mixed-oxide fuel assemblies containing up to 20 weight percent plutonium dioxide (PuO₂).

The focus of this proposed rule is on the physical security requirements related to protection against radiological sabotage for advanced reactors. The term “advanced reactors,” as used in this ~~proposed rule document~~, refers to ~~commercial~~ nuclear power reactors that are non-light-water reactors (non-LWRs) or small modular reactors (SMRs) as SMR is defined in § 171.5, “Definitions.”

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The current physical protection program for power reactors is designed to protect the plant features needed to provide fundamental safety functions, such as maintaining reactor core cooling to prevent significant core damage from the DBT of radiological sabotage. The loss of plant features providing these safety functions can lead to damage of a reactor core or spent nuclear fuel sabotage, with a potential subsequent release of radioactive materials. When compared to operating large LWRs, many of the advanced reactor designs have smaller power outputs and a correspondingly smaller inventory of fission products available for potential release. In comparison to large LWRs, some advanced reactor designs may include attributes that could result in smaller and slower releases of fission products following the loss of certain safety functions. Accordingly, some designs may warrant different methods for meeting the NRC’s physical security requirements, commensurate with the potential radiological consequences resulting from radiological sabotage.

B. Emerging Interest in Advanced Reactor Technology

Concurrent with large LWR deployment and design evolution, nuclear power reactor vendors have developed several different reactor designs that are either light-water SMRs with passive safety features or reactors that do not use light water as a coolant. This latter category is commonly referred to as non-LWR technology. Advanced reactor designs using non-LWR technology include liquid metal-cooled reactors, gas-cooled reactors, and molten-salt-cooled reactors. These advanced reactor designs could have rated thermal power outputs that range from low to very high and may apply modular construction concepts.

As advanced reactor designs evolved in the 1980s and early 1990s, the NRC considered the need for a revised regulatory regime specifically for these emerging technologies. The NRC issued its “Policy Statement on the Regulation of Advanced Nuclear Power Plants” on July 8, 1986 (51 FR 24643) ~~(Policy Statement)~~, to provide the “Commission’s policy regarding the review of, and desired characteristics associated with, advanced reactors.” ~~In this~~ ~~The~~ ~~Policy~~ ~~Statement,~~ ~~the~~ ~~NRC~~ identified attributes that developers should consider in advanced designs, including safety features that are highly reliable, the use of the defense-in-depth philosophy of maintaining multiple barriers against radiation release, and, as compared to large LWRs, less-complex heat removal systems, longer time constants before reaching safety system challenges, and reduced potential for severe accidents and their consequences.

On October 14, 2008, the NRC issued a revised “Policy Statement on the Regulation of Advanced Reactors” (73 FR 60612), describing attributes that should be

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considered in advanced designs to establish the acceptability or licensability of such designs, including designs that:

include considerations for safety and security requirements together in the design process such that security issues (e.g., newly identified threats of terrorist attacks) can be effectively resolved through facility design and engineered security features, and formulation of mitigation measures, with reduced reliance on human actions.

The Commission also observed the following ~~about the possible implementation of the Policy Statement:~~

Finally, the NRC also believes that it will be in the interest of the public as well as the design vendors and the prospective license applicants to address security issues early in the design stage to achieve a more robust and effective security posture for future nuclear power reactors.

Later, in SECY-10-0034, "Potential Policy, Licensing, and Key Technical Issues for Small Modular Nuclear Reactor Designs," dated March 28, 2010, the NRC identified potential ~~policy and licensing~~ issues for SMRs based on the preliminary design information supplied in pre-application interactions and discussions with SMR designers and the U.S. Department of Energy (DOE). The NRC noted that establishing physical security requirements and guidance for SMRs and non-LWRs was a key policy issue of high importance.

In SECY-11-0184, "Security Regulatory Framework for Certifying, Approving, and Licensing Small Modular Nuclear Reactors ~~(M110329)~~," dated December 29, 2011, the NRC staff reported that the current security regulatory framework is adequate for SMRs, including related elements of the nuclear fuel cycle. In the case of non-LWRs, the staff's assessment of the suitability of the current security regulatory framework was based on the limited information that was available at the time on reactor and fuel designs and operations of these technologies. Based on this information, the staff stated that it was not aware of any area in which the existing security regulatory framework would not

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apply to non-LWRs and that the staff would continue to assess the suitability and adequacy of the security and material control and accountability requirements for proposed non-LWR technologies in order to identify any regulatory gaps and potential technical or policy issues pertaining to certifying, approving, or licensing non-LWR technologies.

The staff also indicated in SECY-11-0184 that the alternative measures provision in § 73.55(r), "Alternative measures," allows SMR and non-LWR designers and potential applicants to propose alternative methods or approaches that provide a level of protection that is at least equal to that which would otherwise be provided by the specific security requirement in § 73.55 for which an alternative measure is being proposed. These alternative methods or approaches may include increased reliance on engineered systems that reduce the need to rely on operational requirements and staffing to meet regulatory requirements.

Since the issuance of SECY-11-0184, discussions with external stakeholders and within the NRC have turned to whether some type of generic regulatory action would be preferable to the case-by-case approach described in SECY-11-0184. Reactor designers and other stakeholders have raised concerns that the current prescriptive physical security requirements could impose unnecessary regulatory burden for SMRs and non-LWRs that is not commensurate with the risks posed by some of these designs. In response, the NRC assessed potential regulatory changes that would modify existing physical security requirements to make them commensurate with the risks associated with advanced reactor designs. In proposing revisions to physical security requirements for advanced reactors, the NRC considered the inherent features of many advanced reactor designs, such as lower fission product inventories and longer thermal time

constants, as well as safety and security features that could be incorporated into facility designs. As discussed previously, these types of attributes and design features have been mentioned in the Commission's Policy Statement to reduce reliance on human actions in responding to attempted acts of radiological sabotage. Initial interactions with the public related to a possible rulemaking involved meetings on the Nuclear Energy Institute (NEI) white paper, "Proposed Physical Security Requirements for Advanced Reactor Technologies," dated December 14, 2016. The NEI white paper suggested consequence-oriented criteria for determining when an advanced reactor design would be a candidate for alternative physical security requirements. The NRC subsequently prepared a draft white paper on potential changes to the physical security requirements for advanced reactors in November 2017.

C. Rulemaking Activity

On August 1, 2018, the staff submitted SECY-18-0076, "Options and Recommendation for Physical Security for Advanced Reactors," presenting alternatives and a recommendation to the Commission on possible changes to the regulations and guidance related to physical security for advanced reactors. The staff evaluated the advantages and disadvantages of each alternative and recommended a limited-scope rulemaking to further assess and, if appropriate, develop a limited set of alternative security requirements that licensees of certain advanced reactor designs could implement. The staff also recommended developing necessary guidance to address performance criteria used to determine an advanced reactor applicant's eligibility for using one or more of the alternative physical security requirements. In SRM-SECY-18-0076, dated November 19, 2018, the Commission approved the staff's recommendation

to initiate a limited-scope rulemaking and to interact with stakeholders to identify specific requirements within existing regulations that would play a diminished role in providing physical security for advanced reactors while at the same time contributing significantly to capital and/or operating costs. The Commission also directed the staff to use exemptions until the final rule is implemented.

In response to SRM-SECY-18-0076, on July 16, 2019, the NRC published a *Federal Register* notice of the issuance of the regulatory basis for this rulemaking, "Regulatory Basis for the Physical Security of Advanced Reactors," for a 30-day public comment period. The regulatory basis summarized the current physical security framework for protecting large LWRs against radiological sabotage, described regulatory issues that have motivated the NRC to pursue rulemaking, evaluated various alternatives to address physical security for advanced reactors, and identified the background documents related to these issues. In the *Federal Register* notice that issued the regulatory basis, the NRC requested feedback from the public on specific questions related to the eligibility criterion (referred to as "performance criteria" in the regulatory basis), offsite licensee response approach, and cumulative effects of regulation (CER).

Non-Concurrence Process (NCP):

On April 28, 2022, during the NRC's internal review of this proposed rule, a staff member from the NRC's Office of Nuclear Security and Incident Response submitted a formal non-concurrence. This NCP, identified as NCP-2022-003, was reviewed and closed without requiring changes to the proposed rule.

D. Public Comments on Regulatory Basis

The public comment period closed on August 15, 2019, and the NRC received nine comment letters from six commenters, including three members of the public, one non-governmental organization, one potential NRC applicant, and one industry group. The letters provided various points of view; suggestions for clarifications, additions, and deletions; and comments outside the scope of this rulemaking. In general, the industry group commenter and the potential NRC applicant expressed support for the concept of alternative physical security requirements for advanced reactors, while the public and non-governmental organization commenters did not support the potential alternatives discussed in the regulatory basis document.

The public comment documents are available as indicated in the “Availability of Documents” section of this document. As stated in the *Federal Register* notice that issued the regulatory basis, the NRC is not providing formal written responses to the comments received on the regulatory basis.

As a result of SRM-SECY-18-0076, and in consideration of the public comments received on the regulatory basis, the NRC is proposing this limited-scope rule to provide a clear set of alternative performance-based physical security requirements for advanced reactors licensed under 10 CFR part 50 or 10 CFR part 52. This proposed rule would reduce the need for advanced reactor applicants and licensees to request alternative measures or exemptions from current physical security requirements. This proposed rule also would provide benefits for advanced reactor applicants by establishing greater regulatory stability, predictability, and clarity in the licensing process while maintaining a level of security commensurate with the risk associated with these facilities.

E. Public Interactions During Proposed Rule Development.

The NRC engaged with stakeholders throughout the development of the proposed rule by holding public meetings, issuing draft versions of preliminary proposed rule language, and requesting public feedback. These interactions included discussions on the draft regulatory guidance. The following table shows the public interactions conducted during the proposed rule development.

INTERACTION	DATE	TOPIC
NEI White Paper	December 14, 2016	NEI white paper, "Proposed Physical Security Requirements for Advanced Reactor Technologies"
Public Meeting	December 13, 2017	NRC draft white paper, November 2017
Public Meeting	August 8, 2019	NRC's request for additional potential alternatives
Public Meeting	December 12, 2019	NRC's initial proposed rule approach and path forward
Stakeholder Letter	January 10, 2020	NEI letter regarding additional input for the rule
Public Meeting	February 20, 2020	Periodic Advanced Reactor Stakeholder meeting; NRC's proposed rule approach, guidance development, and screening of public comments
Draft Guidance	April 10, 2020	NEI 20-05, Draft A submission
Preliminary Proposed Rule Language	April 13, 2020	Initial release of preliminary proposed rule language that incorporated public comments
Draft Guidance	April 13, 2020	NEI 20-05, Draft B submission
Public Meeting	April 22, 2020	Initial preliminary proposed rule language and draft guidance
Preliminary Proposed Rule Language	September 14, 2020	Release of revised preliminary proposed rule language
Draft Guidance	September 17, 2020	NRC letter to NEI regarding May 2020 comments
Draft Guidance	March 2, 2021	NRC comments on NEI 20-05, Draft B
Public Meeting	April 21, 2021	Eligibility criteria, unmitigated terminology, and NRC's review of NEI 20-05, Draft B
Public Meeting	May 14, 2021	Eligibility criteria
Draft Guidance	May 14, 2021	NEI 20-05, Draft D submission

Public Meeting	August 17, 2021	Eligibility criteria, target set terminology, and guidance
Public Meeting	September 16, 2021	Three eligibility criteria
Public Meeting	September 29, 2021	Target set process, three eligibility criteria, consequence analysis
Public Meeting	October 19, 2021	Single eligibility criterion and revised target set process
Draft Guidance	November 24, 2021	NRC letter ceasing review of NEI 20-05
Preliminary Proposed Rule Language	December 14, 2021	Release of revised preliminary proposed rule language
Public Meeting	January 20, 2022	Revised preliminary proposed rule language and key guidance elements

III. Discussion

A. Scope

This proposed rule would establish certain risk-informed and performance-based alternative physical security requirements that eligible advanced reactor applicants and licensees could elect to implement. The physical security requirements under § 73.55 for which alternative security requirements have not been developed would remain in effect and applicable to SMR and non-LWR power reactors.

This proposed rule does not include alternatives for large LWRs, fuel cycle facilities, or non-power production and utilization facilities. Large LWRs were not included in the scope of this proposed rule because a physical security regulatory framework and provisions for requesting alternative measures already exist for those reactors under § 73.55(r). Additionally, licensees for existing large LWRs have not requested changes to the existing physical protection program to adopt the proposed consequence-based alternatives. The current fleet of operating nuclear power reactors, consisting entirely of large LWRs, would continue to be regulated by the current established framework for physical security in § 73.55 and appendices B and C to 10 CFR part 73.

Fuel cycle facilities and non-power production and utilization facilities are not subject to 10 CFR 73.55 and therefore were not included in the scope of this proposed rule.

B. Objective

In accordance with the rulemaking plan approved by the Commission in SRM-SECY-18-0076, this limited-scope proposed rule would retain the current overall security framework in § 73.55 to protect against radiological sabotage. This proposed rule would create specific voluntary, risk-informed, and performance-based alternative physical security requirements for SMR and non-LWR power reactors licensed under 10 CFR part 50 or 10 CFR part 52. These alternative physical security requirements would 1) enhance regulatory effectiveness by providing greater stability, predictability, and clarity in the licensing process for implementing physical security for advanced reactors; 2) reduce requests for exemptions from certain physical security requirements; 3) consider technological advancements in reactor designs and their associated design features impacting the possible loss of safety functions from malicious acts and any resulting consequences; and 4) provide alternatives for meeting certain physical security requirements under § 73.55 commensurate with the potentially lower risks posed by advanced reactors.

The current fleet of large LWRs protects against the DBT of radiological sabotage by preventing significant core damage and spent fuel sabotage. However, this requirement may not be appropriate for all SMRs or non-LWRs. Accordingly, this proposed rule would add a new technology-inclusive requirement for advanced reactors to protect against the DBT of radiological sabotage. This new provision would require that an advanced reactor licensee's physical protection program be designed to prevent a significant release of radionuclides from any source. The proposed rule would establish certain alternative physical security requirements available to those advanced reactor applicants and licensees who can meet this performance standard and the

proposed eligibility criterion. The proposed eligibility criterion would be based on demonstrating that the consequences of a postulated radiological release are below prescribed dose reference values.

C. Licensing

There are differences between non-LWR and SMR designs, and large LWR designs. These include potentially smaller reactor core sizes, lower power densities, lower probability of severe accidents, slower accident progression, different source term characteristics, and smaller offsite consequences of accidents. These differences have led DOE, designers, potential operators, and the NRC to examine the physical security requirements necessary to safely operate such advanced reactors.

The NRC anticipates that some advanced reactor vendors and applicants may design their facilities and site protective strategy to account for reliance on passive features, active engineered systems, and automation to achieve security functions with less reliance on human actions. Based on these design features, advanced reactor applicants may seek alternative measures for achieving security functions that differ substantially from the approach at the existing fleet of large LWRs. Without this proposed rule, applicants for or holders of advanced reactor licenses likely would request alternative measures or exemptions from certain physical security requirements. This is because the current regulatory framework does not establish alternative requirements for varying types and sizes of advanced reactors and an eligibility criterion authorizing these applicants to use alternative requirements.

This proposed rule would establish voluntary alternatives to certain prescriptive physical security requirements under § 73.55 for advanced reactor licensees. These

alternative physical security requirements would continue to provide high assurance of adequate protection in the event of a security-initiated event. Although the exemption process could also result in relief from requirements that may not be necessary for a specific applicant or licensee, regulating by exemption generally provides less opportunity for public engagement and can lead to less regulatory certainty and increased costs for the NRC and the applicant or licensee. Proceeding by rulemaking rather than exemptions therefore supports the NRC's principles of good regulation, including openness, clarity, and reliability.

D. New or Modified Requirements in 10 CFR Part 73

10 CFR 73.55(a)(5) – Watts Bar, Unit 2 – remove and reserve

Although not specific to the scope of this rulemaking, the NRC is proposing to remove the requirements under paragraph (a)(5) of § 73.55 that relate to the Tennessee Valley Authority's Watts Bar Nuclear Plant, Unit 2 as a construction permit holder. This paragraph is no longer necessary as ~~Unit 2~~[the Tennessee Valley Authority](#) now has an operating license [for this facility](#) and no longer holds a construction permit.

10 CFR 73.55(b)(3) – General requirements revised to address advanced reactors

Currently, commercial nuclear power reactors licensed under 10 CFR part 50 and 10 CFR part 52 must protect against the DBT of radiological sabotage. The existing fleet of large LWRs meets this objective by preventing significant core damage and spent fuel sabotage. This proposed rule would not change this requirement for large LWRs.

The NRC anticipates that many of the non-LWR designs will not have reactor cores similar to those of the existing fleet of LWRs. Therefore, the objective of preventing significant core damage may not be appropriate for these types of advanced reactors, although they would still need to protect against the DBT of radiological sabotage. Accordingly, this proposed rule would add a new technology-inclusive requirement to the introductory text of paragraph (b)(3) of § 73.55 to require that a non-LWR advanced reactor licensee's physical protection program be designed to prevent a significant release of radionuclides from any source.

Although SMRs are defined as LWRs for the purpose of this rule and may therefore have reactor cores similar to those of the existing fleet of LWRs, the NRC is proposing to apply this technology-inclusive requirement of preventing a significant release of radionuclides from any source to SMRs as well as to non-LWRs. While there would likely be differences between non-LWR and SMR designs, both types of designs could potentially result in smaller and slower releases of fission products following the loss of certain safety functions when compared to large LWRs.

In this context, the phrase "a significant release of radionuclides from any source" would encompass a postulated security-initiated event that would cause a release to the environment exceeding that analyzed in the design basis accident licensing basis. This would ensure that a licensee's physical protection program considers and protects against significant release from all areas with high radiological inventories, including reactor cores and spent fuel pools common to LWRs, as well as other physical locations with radiological inventories in non-LWR designs that need to be protected from a DBT adversary (e.g., waste processing and storage systems).

10 CFR 73.55(s) - Alternative physical security requirements

The proposed rule would establish new § 73.55(s) to contain the alternative physical security requirements, found in § 73.55(s)(2). These alternative physical security requirements could be used by advanced reactor applicants and licensees who meet the proposed general requirements in § 73.55(s)(1).

10 CFR 73.55(s)(1) – General requirements

Proposed § 73.55(s)(1)(i) would establish that an applicant for or holder of a license for an advanced reactor under 10 CFR part 50 or 10 CFR part 52 may elect one or more of the alternative physical security requirements specified in proposed § 73.55(s)(2).

Proposed § 73.55(s)(1)(ii) would establish that, to be eligible to use the alternative physical security requirements in § 73.55(s)(2), the applicant or licensee must demonstrate that the consequences of a postulated radiological release that results from a postulated security-initiated event do not exceed the offsite dose reference values defined in §§ 50.34, “Contents of applications; technical information,” and 52.79, “Contents of applications; technical information in final safety analysis report.”

Proposed § 73.55(s)(1)(iii) would establish that the applicant or licensee must identify the specific alternative physical security requirement(s) it intends to implement as part of its physical protection program and demonstrate how the requirements set forth in § 73.55 are met when the selected alternatives are used. The applicant or licensee would be free to choose any combination of the proposed physical security alternatives under proposed § 73.55(s)(2). The applicant or licensee would not be

required to elect all of the alternatives, nor would it be restricted to only invoking a single alternative.

Proposed § 73.55(s)(1)(iv) would require that an applicant or licensee perform a technical analysis to evaluate the potential offsite radiological consequences from a postulated security-initiated event to demonstrate eligibility to use the alternative physical security requirements. The technical analysis would not need to be submitted to the NRC for review and approval but would be subject to audit or inspection. This proposed provision also would require the licensee to maintain the analysis until the ~~NRC docket~~ submittal of the licensee's certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel required by § 50.82(a)(1) or § 52.110(a).

10 CFR 73.55(s)(2) – Specific alternative physical security requirements

This proposed rule would provide new physical security requirements, in proposed § 73.55(s)(2), that are voluntary alternatives to selected existing requirements in § 73.55 for an applicant or licensee satisfying the provisions of proposed ~~§ 73.55(s)(1).~~ The proposed requirements in § 73.55(s)(2) would include alternatives for armed responders, interdiction and neutralization, physical barriers, onsite secondary alarm stations, and vital areas that would provide flexibility in how applicants and licensees would design their physical protection program to meet the requirements of proposed § 73.55(b)(3) for protecting against the DBT of radiological sabotage. These proposed alternative physical security requirements are intended to provide greater regulatory stability, predictability, and clarity in the licensing process, reduce the need for applicant or licensee requests for exemptions or alternatives to current physical security

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requirements, and reduce resources that would otherwise be required to review specific exemptions in accordance with the provisions of § 73.5, "Specific exemptions," or alternative measures under the provisions of § 73.55(r), "Alternative measures."

§ 73.55(s)(2)(i) – Alternative requirement for armed responders

The proposed physical security alternative in § 73.55(s)(2)(i) would permit a licensee to be relieved from the current requirement for the minimum number of armed responders in § 73.55(k)(5)(ii). Under this proposal, a licensee would be permitted to design a physical protection program that potentially could have fewer than ten onsite armed responders, including no onsite armed responders, if appropriate. This alternative would give an advanced reactor licensee the flexibility to determine and use the number of onsite armed responders necessary to meet the requirements of proposed § 73.55(b)(3). The number of onsite armed responders may be reduced to zero if the licensee also implements the alternative requirements under proposed § 73.55(s)(2)(ii) that would allow the licensee to rely on law enforcement or other offsite armed responders to fulfill the interdiction and neutralization functions to protect against the DBT of radiological sabotage. Licensees would use existing methods, such as those currently used by operating reactor licensees, for determining the necessary number of onsite armed responders.

For an applicant or licensee that designs its physical protection system to rely on onsite armed responders to perform interdiction and neutralization to achieve the performance objective and requirements of § 73.55(b), "General performance objective and requirements," the proposed physical security alternative only provides relief from

the prescriptive requirement for the minimum number of armed responders; all other existing requirements associated with onsite armed personnel would continue to apply.

§ 73.55(s)(2)(ii) – Alternative requirements for interdiction and neutralization

The proposed physical security alternative in § 73.55(s)(2)(ii) would permit a licensee, if appropriate, to rely on law enforcement or other offsite armed responders, rather than using onsite licensee security personnel, to fulfill the interdiction and neutralization functions required by § 73.55(b)(3)(i). Use of this alternative would be available only if a licensee were to have no onsite armed responders.

The current requirement in § 73.55(b)(3)(i) states that the physical security program must ensure that the capabilities to detect, assess, interdict, and neutralize threats, up to and including the DBT of radiological sabotage, are maintained at all times. An advanced reactor applicant or licensee that demonstrates it meets proposed § 73.55(s)(1) without relying on an onsite armed response force may use this alternate approach for meeting the requirements for the interdiction and neutralization capabilities required by § 73.55(b)(3)(i). Such an applicant or licensee may, under proposed § 73.55(s)(2)(ii), rely on law enforcement responders (local, State or Federal) or other ~~offsite~~-armed responders (e.g., licensee proprietary or contract security personnel who are positioned ~~offsite~~outside of the protected area), rather than using ~~onsite~~-armed responders continuously within the protected area to fulfill the interdiction and neutralization capabilities required in § 73.55(b)(3)(i).

The proposed rule would not relieve a licensee from the responsibility to interdict and neutralize threats up to and including the DBT of radiological sabotage; rather, it would provide a licensee with an alternative method of fulfilling these responsibilities.

Applicants and licensees relying on law enforcement responders to carry out the interdiction and neutralization capabilities would be relieved from the majority of the training and qualification requirements in appendix B, "General Criteria for Security Personnel," to 10 CFR part 73, except for the performance evaluation program requirements in Section VI.C.3. The proposed rule would not create any NRC regulatory jurisdiction over, or requirements for, law enforcement responders.

Associated requirements for security response personnel in current § 73.55(k)(3) through (7); § 73.55(k)(8)(ii); 10 CFR part 73, appendix B, section VI (except for section VI.C.3); and 10 CFR part 73, appendix C, section II.B.3.c.(iv) would not be applicable where a licensee's design of its physical protection system would require no armed responders ~~onsite continuously within the protected area~~ and the licensee would rely on law enforcement to fulfill the interdiction and neutralization functions required by § 73.55(b)(3)(i). For example, a licensee approved to implement the proposed alternative in § 73.55(s)(2)(ii) would be relieved from the requirement in § 73.55(k)(8)(ii) to ~~self~~-initiate response actions to interdict and neutralize threats when relying on law enforcement to initiate the response actions to interdict and neutralize threats in accordance with the requirements of part 73, appendix C, section II, the safeguards contingency plan, and the licensee's response strategy. The licensee would continue to be required to detect and assess the threat and then communicate threat information to law enforcement.

The proposed requirements in § 73.55(s)(2)(ii)(A)(1) through (5) would establish specific requirements to ensure that the use of law enforcement or other ~~offsite~~-armed responders to fulfill the interdiction and neutralization functions would still enable the licensee to protect against the DBT of radiological sabotage. Consistent with the

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existing regulatory framework in § 73.55, the requirement in proposed § 73.55(s)(2)(ii)(A)(1) would reiterate a licensee's responsibility to detect, assess, interdict, and neutralize threats up to and including the DBT of radiological sabotage. As discussed below, allowing a licensee to rely on law enforcement responders to fulfill the interdiction and neutralization capability does not relieve the licensee of this responsibility and therefore remains consistent with the existing regulatory framework.

Proposed § 73.55(s)(2)(ii)(A)(2) would establish that a licensee must provide adequate delay ~~for threats up to and including the DBT of radiological sabotage~~ to enable law enforcement or other armed responders located offsite sufficient time to respond to the site and to interdict and neutralize ~~those~~ threats ~~up to and including the DBT of radiological sabotage~~. In other words, the cumulative delay time would need to be equal to or greater than the ~~security bounding~~reasonable assurance of protection time² for a specific SMR or non-LWR site.

The proposed requirement in § 73.55(s)(2)(ii)(A)(3) would require a licensee to provide necessary information about the site and make available periodic training to law enforcement or other offsite armed responders to support site-specific preparedness to fulfill the interdiction and neutralization functions in safeguards contingency events at the licensee's site (i.e., within the owner controlled area, the protected area(s), vital areas, and other site facilities). Neither the NRC nor licensees can compel law enforcement to participate in the periodic training; however, the proposed requirements would ensure

² See Regulatory Guide 5.76, "Physical Protection Programs at Nuclear Power Reactors (Safeguards Information)," dated July 2009 (Safeguards LAN and Electronic Safe number NS105997 (non-public)). The criteria for an acceptable delay time would be adjusted based on the outcome of SECY-20-0070, "Technical Evaluation of the Security Bounding Time Concept for Operating Nuclear Power Plants," as appropriate.

that licensees make the necessary information and training available to law enforcement.

The proposed requirement in § 73.55(s)(2)(ii)(A)(4) would establish a requirement for a licensee relying on law enforcement or other offsite armed responders to fulfill the interdiction and neutralization functions to describe in its security contingency plan the role that law enforcement or the other offsite armed responders will play in the licensee's protective strategy. This would require a licensee to identify and plan for the role of law enforcement or other offsite armed responders in a safeguards contingency event. In accordance with the requirements of § 73.55(c)(5), a licensee ~~shall~~must establish, maintain, and implement a safeguards contingency plan that describes how the criteria set forth in appendix C, section II, to 10 CFR part 73 will be implemented. In applying this alternative, the licensee would address the role that law enforcement or other ~~offsite~~ armed responders would fulfill as a substitute for what would otherwise be the duty and responsibility of ~~onsite~~ armed responders continuously within the protected area associated with implementing contingency responses to safeguards events.

The proposed requirement of § 73.55(s)(2)(ii)(A)(5) would establish that a licensee must identify criteria and measures to compensate for the degradation or absence of law enforcement or other ~~offsite~~ armed responders and propose suitable compensatory measures that meet the requirements of § 73.55(o)(2) and (3) to address this degradation. Unlike ~~onsite~~ armed responders for currently operating power reactors, which who are required by current regulations to be available at the site continuously within the protected area for response, a licensee that would rely upon law enforcement or other ~~offsite~~ armed responders must consider the potential that offsite response may be impeded by events outside of or independent from the safeguards event at the site.

While the existing requirement in § 73.55(o), "Compensatory measures," is specific to security systems and equipment performing required functions, the addition of the proposed alternative in § 73.55(s)(2)(ii) creates the new potential for degradation or unavailability of the personnel relied on to perform security functions such as interdiction and neutralization. The proposed requirement would rely on the requirements in § 73.55(o)(2) and (3) for establishing suitable compensatory measures to address degradation or loss of interdiction and neutralization functions.

A licensee would be relieved from the requirements in § 73.55(k)(3) through (7), § 73.55(k)(8)(ii), 10 CFR part 73, appendix B, section VI (except for section VI.C.3.), and 10 CFR part 73, appendix C, section II.B.3.c.(iv) with respect to law enforcement responders, when the licensee relies on the law enforcement responders to fulfill the interdiction and neutralization functions required by § 73.55(b)(3)(i). When an applicant or licensee relies on other ~~offsite~~-armed responders for interdiction and neutralization, the applicant or licensee would be relieved from the location-related requirements in § ~~73.55(k)(5)(iii)~~ and 10 CFR part 73, appendix C, section II.B.3.c.(iv), because the armed responders would be housed outside a facility's protected area. One requirement from which a licensee would not be relieved would be the performance evaluation program requirements related to armed response personnel in 10 CFR part 73, appendix B, section VI.C.3. A licensee would be required to satisfy these performance evaluation program requirements for all armed response personnel, including law enforcement. The performance evaluation program requirements would continue to apply because implementation of the performance evaluation program provides assurance of the effectiveness of the requirements proposed in § 73.55(s)(2)(ii)(A)(1) through (4) when a licensee relies on law enforcement or other ~~offsite~~-armed responders to perform the

contingency response and interdiction and neutralization functions that protect the site against the DBT of radiological sabotage. The implementation of a performance evaluation program would provide assurance that any vulnerabilities or weaknesses resulting from the reliance on law enforcement or other offsite responses to safeguards contingencies would be identified and corrected and that a licensee would maintain an adequate response as is required to meet the requirements of § 73.55(b)(3).

§ 73.55(s)(2)(iii) – Alternative requirements for physical barriers

The proposed alternative in § 73.55(s)(2)(iii) would permit a licensee to apply means other than physical barriers as defined in § 73.2, "Definitions," in the design of its physical protection system to achieve the intended delay functions ~~for armed security responses~~ and access denial and meet the performance objective and requirements of § 73.55(b) to protect against the DBT of radiological sabotage. A licensee would be permitted to consider other methods that include the use of engineered systems or human actions, or both, where reliable and available, to achieve delay functions necessary to facilitate security responses after the successful detection and assessment of threats up to and including the DBT of radiological sabotage. For example, a licensee could potentially use engineered systems designed to disperse material that physically impedes or physiologically interferes with the adversary, such as obscurants and irritants, ~~as acceptable~~ to achieve the delay function rather than relying on physical barriers as defined in § 73.2. The alternative methods would permit consideration of active engineered security systems performing interdiction and neutralization functions, which may delay the DBT adversary (e.g., increasing task time, increase travel time, interrupt adversary action, etc.), as well as serving other functions. A licensee may

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consider physical spatial distances, terrain, and other natural features that increase adversary task times, after successful detection and assessment, in order to achieve delay functions in its design of a physical protection system. The proposed alternative also would permit a licensee to consider methods other than physical barriers for physical access controls in implementing the access authorization program, including restricting access to vital areas.

§ 73.55(s)(2)(iv) – Alternative requirements for onsite secondary alarm stations

The proposed alternative in § 73.55(s)(2)(iv) would permit a licensee to locate a secondary alarm station off-site, where the capabilities of receiving and monitoring signals for intrusion detection; receiving and monitoring video image signals to assess intrusion; communicating with onsite security to assist with implementing a security response; providing command and control of the security response; and summoning offsite local, State, and Federal law enforcement assistance are redundant and equivalent to that of the onsite central alarm station. This could include, for example, having a co-located alarm station offsite that provides secondary alarm station functions for multiple reactor sites, using a certified commercial security service, or other approaches that provide the functions required of a secondary alarm station.

The proposed alternative would require that an offsite secondary alarm station be able to perform the same functions as the onsite central alarm station, but a licensee would be relieved from the requirements in § 73.55(i)(4)(iii) to construct, locate, and protect the secondary alarm station to the same standards as the central alarm station. For example, an SMR or non-LWR licensee would not need to locate the secondary alarm station inside a protected area, ensure that the interior of the secondary alarm

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station is not visible from the perimeter of the protected area, or construct the secondary alarm station to be bullet resistant. A licensee would be permitted to install equipment in the secondary alarm station that is different than the central alarm station, as long as the secondary alarm station can perform the equivalent and redundant functions of the central alarm station.

§ 73.55(s)(2)(v) – Alternative requirements for vital areas

The proposed alternative in § 73.55(s)(2)(v) would permit relief from the requirements to designate the secondary alarm station as a vital area and locate the secondary power supply systems for the offsite secondary alarm station in a vital area. The primary purpose of designating areas as vital is to control access in order to protect vital equipment or operations important to safety or security. This is accomplished by limiting the number of site personnel that are authorized unescorted access to these areas and requiring security measures such as locks, alarms, and periodic armed security checks to control physical access and detect unauthorized access. These control measures, along with other controls implemented in accordance with a licensee's insider mitigation program, protect against the DBT insider threat. Locating the secondary alarm station offsite and separate from the central alarm station minimizes the risk of the insider threat to affect or disrupt alarm station functions. This reflects the assumption that not every individual who is authorized unescorted access to an onsite alarm station would have authorized unescorted access or physical access to a secondary alarm station that would be located offsite. In addition, a secondary alarm station does not include activities that involve special nuclear material that would pose a risk of significant release of radionuclides from any source. Thus, a secondary alarm

station would not be an element of a target set that an adversary would likely seek to destroy.

E. Conforming Changes – 10 CFR 73.55(b)(9)(i), (e)(10)(i), and (k)(1) and Appendix B to 10 CFR Part 73

This proposed rule would establish that, for SMRs and non-LWRs, the physical protection program must be designed to protect against a significant release of radionuclides from any source and would therefore be designed to protect against radiological sabotage as defined in § 73.2.

The NRC proposes to amend current requirements under § 73.55(b)(9)(i), (e)(10)(i), and (k)(1) and section VI.A.1 of appendix B to 10 CFR part 73 to provide conforming requirements for SMRs and non-LWRs. The current requirement under § 73.55(b)(3) of designing the physical protection program to prevent significant core damage (e.g., non-localized fuel melting or core destruction) and spent fuel sabotage was established as the means of protecting against radiological sabotage for LWRs. However, the term “core damage” may not be universally applicable to all advanced reactor designs, such as those that are based on non-LWR technology. For example, in some technologies, such as molten salt reactor technologies, the nuclear fuel may be in a liquid form. Also, for some advanced reactor designs, core damage may not result in a release of radionuclides that would constitute an unreasonable risk to public health and safety. The proposed conforming requirements for SMRs and non-LWRs under § 73.55(b)(9)(i), (e)(10)(i), and (k)(1) and section VI.A.1 of appendix B to 10 CFR part 73 continue to apply the definition of radiological sabotage under § 73.2, and establish the

new requirement for the design of the physical protection program to protect against significant release of radionuclides from any source.

F. Contents of Application

The NRC is proposing to amend the requirements for the content of applications for operating licenses under § 50.34 and for combined licenses under § 52.79. The current regulations under § 50.34(c), "Physical security plan," and § 52.79(a) require license applicants to include in their applications a physical security plan that describes how the applicant will meet the applicable requirements of 10 CFR part 73. Therefore, an applicant's election of a proposed alternative under § 73.55(s) would be described in the physical security plan included in the license application. The NRC is proposing to add paragraph § 50.34(c)(4) and § 52.79(a)(35)(iii) to require each applicant electing to apply an alternative in § 73.55(s)(2) to provide a description of the technical analysis required by § 73.55(s)(1)(iv). The technical analysis itself does not have to be submitted to the NRC for review and approval. Eligible licensees that would elect to use one of the proposed alternative requirements under § 73.55(s) would need to amend their security plans in accordance with the requirements in § 50.54(p).

G. Change Control

The NRC is proposing to amend the requirements for controlling changes to the physical security plan in § 50.54(p) by adding new paragraph (p)(5). Proposed § 50.54(p)(5) would apply to all licensees who use the alternative physical security requirements of § 73.55(s). This proposal would require that the applicable requirements proposed under § 73.55(s)(1)(ii) continue to be met if a licensee makes a

change to plant features or becomes aware of a change to offsite support resources described in the site-specific analysis required by proposed § 73.55(s)(1)(iv). In such cases, the licensee would need to consider the effect of the change on the analysis. The licensee would also need to amend the information in the physical security plan prepared under § 50.34(c) or § 52.79(a) to describe how the change continues to meet the requirements in proposed § 73.55(s)(1)(ii), as applicable.

H. Regulatory Requirements for Documentation and Technical Analysis

Proposed § 73.55(s)(1)(iii) would require the identification and documentation of the alternative security requirements being implemented as part of the physical protection program and demonstration of how the requirements set forth in § 73.55 are met when one or more of the selected alternatives are used.

Proposed § 73.55(s)(1)(iv) would require a technical analysis be performed to demonstrate eligibility to use the alternative physical security requirements. This technical analysis can use information from both the safety analysis and the target set identification process to support a finding of eligibility. This technical analysis would be separate from the documentation in a licensee's physical security plan describing how the licensee plans to implement any alternative physical security requirements as part of its physical protection program. Under proposed § 73.55(s)(1)(iv), the licensee would be required to maintain the technical analysis until the certifications required by § 50.82(a)(1) or § 52.110(a) have been ~~docketed by the NRC~~ submitted. Proposed § 50.34(c)(4) and § 52.79(a)(35)(iii) would require each applicant electing to apply an alternative in § 73.55(s)(2) to provide a description of the technical analysis required by

§ 73.55(s)(1)(iv). However, the technical analysis itself does not have to be submitted to the NRC for review and approval but would be subject to audit or inspection.

IV. Specific Requests for Comment

The NRC is seeking advice and recommendations from the public on the proposed rule. We are particularly interested in comments and supporting rationale from the public on the following:

(1) Some advanced reactors may have designs that are significantly different from the current operating large LWRs. These large LWRs must meet the requirement found in § 73.55(b)(3) for preventing “significant core damage and spent fuel sabotage.” The NRC is proposing that advanced reactors meet a new technology-inclusive requirement that would prevent a “significant release of radionuclides from any source.”

(a) If non-LWRs and SMRs should use a different requirement, then what other suitable requirement besides preventing “a significant release of radionuclides from any source” could be applicable to SMRs and non-LWRs? Please provide the basis for your response.

(b) The NRC also considered using a more specific technology-inclusive requirement, such as the dose reference values currently found in §§ 50.34(a)(1)(ii)(D) and 52.79(a)(1)(vi). How could the NRC implement the use of such a dose-based requirement (e.g., offsite dose reference values) in the context of evaluating physical security for a site? If there should be alternative value(s) (such as a different dose-based or safety-based value(s)), what would be a suitable alternative value(s)? Please provide the basis for your response.

(2) The NRC is not proposing a hybrid approach that would allow a licensee to rely on law enforcement or other ~~offsite~~-armed responders in combination with a given number of onsite armed responders to implement the licensee's protective strategy. Why should or shouldn't the NRC establish requirements and supporting guidance to allow for such a hybrid approach? What changes are necessary to the proposed rule and supporting guidance to address a hybrid approach? Please provide the basis for your response.

(3) Some advanced reactors may have design characteristics or engineered safety features that would contribute to the ability of a designer to show that the criteria in proposed § 73.55(s)(1) are met. However, the NRC is not proposing to add any submittal requirements for standard design certification applications under subpart B to part 52 in this rulemaking. Should the NRC add optional submittal requirements on such design characteristics or engineered safety features to § 52.47, "Contents of applications; technical information," similar to those for emergency preparedness for early site permits in § 52.17(b)(2) and (3)? To what extent should the NRC consider the review of security matters resolved under § 52.63(a)(5) for a standard design certification if the information is provided by the applicant and reviewed by the NRC as part of the certification process?

V. Section-by-Section Analysis

The following paragraphs describe the specific changes within this rulemaking.

§ 50.34 Contents of applications; technical information

This proposed rule would add a new paragraph (c)(4) to add a submission requirement that licensees of SMRs and non-LWRs electing to use one or more alternative security requirements in § 73.55(s)(2) must provide a description of the technical analysis required under § 73.55(s)(1) when submitting the application documentation required under § 50.34.

§ 50.54 Conditions of licenses

This proposed rule would add a new paragraph (p)(5) to add change control requirements that licensees of SMRs and non-LWRs must follow when there is a change that impacts the documentation required under § 73.55(s).

§ 52.79 Contents of applications; technical information in final safety analysis report

This proposed rule would add a new paragraph (a)(35)(iii) to add a submission requirement that licensees of SMRs and non-LWRs electing to use one or more alternative security requirements in § 73.55(s)(2) must provide a description of the technical analysis required under § 73.55(s)(1) when submitting the application documentation required under § 52.79.

§ 73.55 Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage

This proposed rule would remove and reserve paragraph (a)(5) as it is no longer relevant since [Tennessee Valley Authority/Watts Bar Unit 2](#) now has an operating license [for Watts Bar Unit 2](#) and no longer holds a construction permit.

This proposed rule also would revise paragraph (b)(3) introductory text, add paragraphs (b)(9)(i)(A) and (B), and revise paragraphs (e)(10)(i)(A) and (k)(1) to add requirements for SMRs and non-LWRs and to distinguish between SMRs and other LWRs.

This proposed rule also would add new paragraph (s) containing the alternative physical security requirements for SMRs and non-LWRs. Proposed paragraph (s) would include both the general and specific requirements that must be met by those licensees who elect to apply the alternatives to physical security requirements.

Appendix B to 10 CFR Part 73 – General Criteria for Security Personnel

This proposed rule would revise paragraph VI.A.1 to add requirements for SMRs and non-LWRs and to distinguish between SMRs and other LWRs.

VI. Regulatory Flexibility Certification

The Regulatory Flexibility Act of 1980 (RFA), as amended at 5 U.S.C. 601 *et seq.*, requires that agencies consider the impact of their rulemakings on small entities and, consistent with applicable statutes, consider alternatives to minimize these impacts on the businesses, organizations, and government jurisdictions to which they apply.

In accordance with the Small Business Administration's regulation at 13 CFR 121.903(c), the NRC has developed its own size standards for performing an RFA analysis and has verified with the SBA Office of Advocacy that its size standards are appropriate for NRC analyses. The NRC size standards at 10 CFR 2.810, "NRC size standards," are used to determine whether an applicant or licensee qualifies as a

small entity in the NRC's regulatory programs. Section 2.810 defines the following types of small entities:

A small business is a for-profit concern and is a—(1) Concern that provides a service or a concern not engaged in manufacturing with average gross receipts of \$8.0 million or less over its last 5 completed fiscal years; or (2) Manufacturing concern with an average number of 500 or fewer employees based upon employment during each pay period for the preceding 12 calendar months.

A small organization is a not-for-profit organization which is independently owned and operated and has annual gross receipts of \$8.0 million or less.

A small governmental jurisdiction is a government of a city, county, town, township, village, school district, or special district with a population of less than 50,000.

A small educational institution is one that is—(1) Supported by a qualifying small governmental jurisdiction; or (2) Not ~~s~~State or publicly supported and has 500 or fewer employees.

Number of Small Entities Affected

The NRC is currently not aware of any known small entities as defined in § 2.810 that are planning to apply for an advanced nuclear reactor construction permit or operating license under 10 CFR part 50 or an early site permit or combined license under 10 CFR part 52, and would be impacted by this proposed rule. Based on this finding, the NRC has preliminarily determined that the proposed rule would not have a significant economic impact on a substantial number of small entities.

Economic Impact on Small Entities

Depending on how the ownership and/or operating responsibilities for such an enterprise were structured, applicants for an advanced nuclear reactor rated 8

megawatts electric (Mwe) or less could conceivably meet the definition of small entities as defined by § 2.810. Owners that operate power reactors rated greater than 8 MWe could generate sufficient electricity revenue that exceeds the gross annual receipts limit of \$8 million, assuming a 90 percent capacity factor and the June 2021 U.S. Department of Energy's Energy Information Administration U.S. average price of electricity to the ultimate customer for all sectors of 11.3 cents per kilowatt-hour.

Although the NRC is not aware of any small entities that would be affected by the proposed rule, there is a possibility that future applications for an advanced nuclear reactor permit or license could be submitted by small entities who plan to own and operate an advanced nuclear reactor rated 8 MWe or less. Advanced nuclear reactors that are rated 8 MWe or less would most likely be used to support electrical demand for military bases or small remote towns, and would process heat, so would not directly compete with larger advanced nuclear reactors that typically produce electricity for the grid. As a result of these differing purposes, the NRC would expect that small and large entities would not be in direct competition with each other.

Therefore, the NRC preliminarily concludes that this proposed rule would not have a significant economic impact on a substantial number of small entities.

Request for Comments

The NRC is seeking comments on both its initial RFA analysis and on its preliminary conclusion that this proposed rule would not have a significant economic impact on a substantial number of small entities because of the likelihood that most expected applicants would not qualify as a small entity. Additionally, the NRC is seeking comments on its preliminary conclusion that if a small entity were to submit an advanced

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nuclear reactor application, the small entity would not incur a significant economic impact as it would most likely not be in competition with a large entity.

Any small entity that could be subject to this regulation that determines, because of its size, it is likely to bear a disproportionate adverse economic impact should notify the Commission of this opinion in a comment that indicates—

1) The applicant's size and how the proposed regulation would impose a significant economic burden on the applicant as compared to the economic burden on a larger applicant;

2) How the proposed regulations could be modified to take into account the applicant's differing needs or capabilities;

3) The benefits that would accrue or the detriments that would be avoided if the proposed regulations were modified as suggested by the applicant;

4) How the proposed regulation, as modified, would more closely equalize the impact of NRC regulations or create more equal access to the benefits of Federal programs as opposed to providing special advantages to any individual or group; and

5) How the proposed regulation, as modified, would still adequately meet the NRC's obligations under the Atomic Energy Act of 1954, as amended.

VII. Regulatory Analysis

The NRC has prepared a draft regulatory analysis for this proposed rule. The analysis examines the costs and benefits of the alternatives considered by the NRC. The conclusion from the analysis is that this proposed rule and associated guidance would result in net averted costs to the industry and the NRC of \$80,000 using a 7-percent

discount rate and \$130,000 using a 3-percent discount rate due to reductions in exemption requests. The NRC requests public comment on the draft regulatory analysis, which is available as indicated in the "Availability of Documents" section of this document. Comments on the draft regulatory analysis may be submitted to the NRC as indicated under the ADDRESSES caption of this document.

VIII. Backfitting and Issue Finality

This proposed rule would contain new alternative requirements for advanced reactor applicants and licensees. Because these alternative requirements would not be imposed upon current applicants and licensees and would not prohibit any applicant or licensee from following existing requirements, the proposed requirements would not constitute backfitting under 10 CFR 50.109, "Backfitting," or affect the issue finality of any approval issued under 10 CFR part 52.

As described in the "Availability of Guidance" section of this document, the NRC has prepared two draft regulatory guides (DG-5072 and DG-5071) that, if finalized, would provide guidance on methods acceptable to the NRC for complying with this proposed rule. Issuance of these DGs in final form would not constitute backfitting under § 50.109 and would not affect the issue finality of any approval issued under 10 CFR part 52. As discussed in the "Implementation" section of the DGs, the NRC staff does not intend to use the proposed guidance in these draft regulatory guides to support NRC staff actions in a manner that would constitute backfitting or affect the issue finality of an approval under 10 CFR part 52. If, in the future, the NRC seeks to impose positions stated in the DGs in a manner that would constitute backfitting or affect the issue finality

of an approval under 10 CFR part 52, the NRC would need to make the showing as required in § 50.109 or address the regulatory criteria in the applicable issue finality provision, as applicable, that would allow the NRC to impose the position.

Commented [A14]: Staff should update the discussion to reflect the Commission's policy on forward fitting in Management Directive 8.4.

IX. Cumulative Effects of Regulation

The NRC is following its CER process by engaging with external stakeholders throughout this proposed rule and related regulatory activities. Public involvement has included: (1) the publication of the regulatory basis for public comment (84 FR 33861; July 16, 2019); (2) numerous public meetings to examine potential performance-based alternatives and eligibility requirements for physical security for advanced reactors; and (3) the publication of numerous versions of preliminary proposed rule language. The NRC is considering holding additional public meetings during the remainder of the rulemaking process.

In parallel with this proposed rule, the NRC is issuing two draft implementing guidance documents for comment to support informed external stakeholder feedback. Section XIII, "Availability of Guidance," of this document describes how the public can access the draft implementing guidance.

In addition to the questions in the "Specific Requests for Comments" section of this document, the NRC is requesting CER feedback on the following questions:

1. In light of any current or projected CER challenges, does the proposed rule's effective date provide sufficient time to implement the new 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 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, inspection findings of a generic nature) influence the implementation of the proposed rule's requirements?

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

5. Please comment on the NRC's cost and benefit estimates in the regulatory analysis that supports this proposed rule. The draft regulatory analysis is available as indicated under the "Availability of Documents" section of this document.

X. 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 31885). The NRC requests comment on this document with respect to the clarity and effectiveness of the language used.

XI. Environmental Assessment and Proposed Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in subpart A, "National Environmental Policy Act - Regulations Implementing Section 102(2)," of 10 CFR part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," that this proposed rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and an environmental impact statement is not required. This environmental assessment focuses on those aspects of the proposed alternative physical security requirements for advanced reactors rulemaking where there is a potential for the revised requirements to affect the environment. The NRC has concluded that there would be no significant environmental impacts associated with implementation of the alternative security requirements for advanced reactors rule requirements for the following reasons:

(1) The proposed alternative requirements for physical security would provide an equivalent level of security as that for existing requirements; therefore, the environmental impacts would be the same because the resulting risk is similar.

(2) The proposed revision to the power reactor security requirements would not result in changes to the design basis requirements for the protection of structures, systems, and components (SSCs) in potential licensee facilities that function to limit the release of radiological effluents during and following postulated accidents. All the SSCs associated with limiting the releases of offsite radiological effluents would therefore continue to be able to perform their functions, and as a result, there would be no significant radiological effluent impact such that there would be no significant release of radionuclides from any source.

(3) The standards and requirements applicable to radiological releases and effluents would not be affected by the limited-scope security rulemaking and would continue to apply to the SSCs affected by the limited-scope security rulemaking.

The principal effect of this action is to revise the governing regulations pertaining to power reactor security, create alternative security requirements applicable to a certain class of licensees, and add additional requirements consistent with the rulemaking objective and requirements discussed earlier. None of the proposed revisions would affect current occupational exposure requirements; consequently, the NRC has concluded that this action would have no impact on occupational exposure.

For the reasons discussed above, the action would not significantly increase the probability or consequences of accidents, nor result in changes being made in the types of any effluents that may be released offsite, and there would be no significant increase in occupational or public radiation exposure.

With regard to potential non-radiological impacts, implementation of the rule requirements would not have a significant impact on the environment. The proposed requirements would not affect any historic sites and would not affect non-radiological plant effluents. Therefore, there would be no significant non-radiological environmental impact associated with this proposed rule. Accordingly, the NRC finds that there would be no significant environmental impact associated with this rulemaking action.

The determination of this environmental assessment is that there would be no significant effect on the quality of the human environment from this action. Public stakeholders should note, however, that comments on any aspect of this environmental assessment may be submitted to the NRC as indicated under the ADDRESSES caption.

The environmental assessment is available as indicated under the "Availability of Documents" section.

The NRC has sent a copy of the environmental assessment and this proposed rule to all State Liaison Officers and has requested comments.

XII. Paperwork Reduction Act

This proposed rule contains new or amended collections of information contained in part 50, 52, and 73 that are subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq). The collections of information have been submitted to the Office of Management and Budget for review and approval. Existing collections of information were approved by the Office of Management and Budget, approval number(s) 3150-0002 (part 73), 3150-0011 (part 50), and 3150-0151 (part 52).

Type of submission, new or revision: Revision

The title of the information collection: Alternative Physical Security Requirements for Advanced Reactors

The form number if applicable: Not Applicable.

How often the collection is required or requested: On occasion.

Who will be required or asked to respond: Future power reactor licensees or license applicants for advanced reactors to be licensed under 10 CFR part 50 or part 52.

An estimate of the number of annual responses: 6.66 (0.33 for part 50, 3 for part 52, and 3.33 for part 73)

The estimated number of annual respondents: 3.33 (0.33 for part 50, 3 for part 52, and 3.33 for part 73).

An estimate of the total number of hours needed annually to comply with the information collection requirement or request: 9,437 (110 for part 50, 1002 for part 52, and 8,325 for part 73)

Abstract: The proposed rule would result in changes in reporting, recordkeeping, and third-party disclosure requirements relative to existing rules by providing certain alternative, risk-informed, performance-based physical security requirements for advanced reactors. Part 50 and part 52 advanced reactor applicants electing to apply an alternative would need to provide a description of the technical analysis required by proposed § 73.55(s)(1)(iv) relating to eligibility to use the alternatives. These part 50 and part 52 advanced reactor applicants or licensees would also be required to maintain a record of the technical analysis related to eligibility until the certifications of cessation of operations required by §§ 50.82(a)(1) or 52.110(a) have been docketed by the NRC. In addition, advanced reactor licensees relying on law enforcement or other offsite armed responders would need to provide information about the facilities and make

available periodic training to these responders. Finally, the proposed rule would require part 50 and part 52 advanced reactor licensees, who make changes to or are aware of changes to plant features or offsite support resources described in the technical analysis, to prepare a report that considers the effect of changes and describes how the licensee will continue to meet the requirements in proposed § 73.55(s)(1)(ii) that the consequences of a postulated radiological release that results from a postulated security-initiated event does not exceed the offsite dose reference values. These new and amended information collections would be required to ensure the NRC has the necessary information to review whether an applicant or licensee has demonstrated they have met the proposed requirement to be eligible to use any of the proposed alternatives. The collected information would also be used by the NRC to review and determine whether the applicant or licensee has met the requirements for each elected alternative.

The U.S. Nuclear Regulatory Commission is seeking public comment on the potential impact of the information collection(s) contained in this proposed rule and on the following issues:

1. Is the proposed information collection necessary for the proper performance of the functions of the NRC, including whether the information will have practical utility?
2. Is the estimate of the burden of the proposed information collection accurate?
3. Is there a way to enhance the quality, utility, and clarity of the information to be collected?

4. How can the burden of the proposed information collection on respondents be minimized, including the use of automated collection techniques or other forms of information technology?

A copy of the OMB clearance package and proposed rule is available in ADAMS under Accession No. ML22131A161, ML22131A167, ML21334A009, and ML21334A003 or may be viewed free of charge by contacting 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. You may obtain information and comment submissions related to the OMB clearance package by searching on <http://www.regulations.gov> under Docket ID NRC-2017-0227.

You may submit comments on any aspect of these proposed information collection(s), including suggestions for reducing the burden and on the above issues, by the following methods:

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

- **Mail comments to:** FOIA, Library, and Information Collections Branch, Office of the Chief Information Officer, Mail Stop: T6-A10M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 or by e-mail to Infocollects.Resource@nrc.gov or to the OMB reviewer at: OMB Office of Information and Regulatory Affairs (3150--0011, -0151, -0002), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503; email: oir_submission@omb.eop.gov.

Submit comments by **[INSERT DATE 30 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER]**. Comments received after this date will be considered if it is

practical to do so, but the NRC staff is able to ensure consideration only for comments received on or before this date.

Public Protection Notification

The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

XIII. Availability of Guidance

The NRC is issuing for public comment draft guidance for the implementation of the proposed requirements in this rulemaking: DG-5072, “Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors.” DG-5072 is available at <http://www.regulations.gov> by searching on Docket ID NRC-2017-0227.

DG-5071, “Target Set Identification and Development for Nuclear Power Reactors,” contains Official Use Only—Security Related Information (OUO—SRI) and is withheld from public disclosure. This DG may be made available to those affected stakeholders who have established a need-to-know. For access to DG-5071, contact the individuals listed for guidance information in the FOR FURTHER INFORMATION CONTACT section of this document.

DG-5072, "Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors"

This draft regulatory guide describes an approach that the NRC staff considers acceptable to develop the radiological consequence analysis required to demonstrate eligibility for the use of any alternative physical security requirement listed under § 73.55(s)(2). This analysis is performed by the applicant or licensee to determine radiation doses at the exclusion area boundary and the outer boundary of the low population zone from postulated radiological releases as a result of a postulated security-initiated event. This draft regulatory guide includes a description of an acceptable approach for demonstrating the ability to meet the requirements set forth in § 73.55 with the identified alternative physical security requirements incorporated into the security plans. This draft regulatory guide also provides a description of acceptable implementation guidance for each physical security alternative listed under § 73.55(s)(2), including guidance for licensees to provide information and conduct training and exercises with offsite law enforcement.

DG-5071, "Target Set Identification and Development for Nuclear Power Reactors"

This draft regulatory guide describes an approach that the NRC staff considers acceptable for applicant or licensee analysis, development, documentation, and evaluation of target set elements and target sets. This includes operator actions and mitigative measures that may be credited to prevent: 1) the target set's high-level objective, 2) significant core damage or 3) loss of spent fuel coolant and exposure of spent fuel for large LWRs, and to prevent significant release of radionuclides from any source for SMRs and non-LWRs.

XIV. Public Meeting

The NRC may conduct a public meeting on the proposed rule for the purpose of describing the proposed rule and implementation guidance to the public and answering questions from the public on the proposed rule and implementation guidance.

The NRC will publish a notice of the public meeting's location, time, and agenda on the NRC's public meeting Web site at least 10 calendar days before the meeting. Stakeholders should monitor the NRC's public meeting Web site for information about the public meeting at: <http://www.nrc.gov/public-involve/public-meetings/index.cfm>.

XV. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

DOCUMENT	ADAMS ACCESSION NO / FEDERAL REGISTER CITATION
SRM-SECY-18-0076, November 19, 2018	ML18324A478
SECY-22-XXXX, "Proposed Rulemaking: Alternative Physical Security Requirements for Advanced Reactors (RIN 3150-AK19)," <INSERT DATE>	ML21334A004
SRM-SECY-22-XXXX, "Staff Requirements - Proposed Rulemaking: Alternative Physical Security Requirements for Advanced Reactors (RIN 3150-AK19)," <INSERT DATE>	<insert ML#>
Draft Environmental Assessment, <INSERT DATE>	<insert published ML#>
Draft Regulatory Analysis, <INSERT DATE>	<insert published ML#>
OMB clearance package	ML21334A009, ML22131A161, ML22131A167

DG-5072, "Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors," <INSERT DATE>	ML20041E037
NCP-2002-003 Non-concurrence on the proposed rule, April 28, 2022	ML22161A919
Policy Statement on the Regulation of Advanced Reactors, July 8, 1986	51 FR 24643
Policy Statement on the Regulation of Advanced Reactors, October 14, 2008	73 FR 60612
SECY-10-0034, "Potential Policy, Licensing, and Key Technical Issues for Small Modular Nuclear Reactor Designs," March 28, 2010	ML093290268
SECY-11-0184, "Security Regulatory Framework for Certifying, Approving, and Licensing Small Modular Nuclear Reactors (M110329)," December 29, 2011	ML112991113
NEI White Paper, "Proposed Physical Security Requirements for Advanced Reactor Technologies," December 14, 2016	ML17026A474
NRC "Draft White Paper on Potential Changes to Physical Security Requirements for Small Modular and Advanced Reactors," November 2017	ML17333A524
Regulatory Basis for the Physical Security of Advanced Reactors, July 16, 2019	84 FR 33861
Regulatory Basis Public Comment Submission from Jordan Lewis, August 14, 2019	ML19228A144
Regulatory Basis Public Comment Submission from Pia Jensen, August 14, 2019	ML19228A150
Regulatory Basis Public Comment Submission from Alan Medsker, August 14, 2019	ML19228A159
Regulatory Basis Public Comment Submission from Pia Jensen, August 15, 2019	ML19228A166
Regulatory Basis Public Comment Submission from Pia Jensen, August 15, 2019	ML19228A171
Regulatory Basis Public Comment Submission from Phillip Hammond (NuScale Power, LLC), August 15, 2019	ML19228A180
Regulatory Basis Public Comment Submission from Michael D. Tschiltz (Nuclear Energy Institute), August 15, 2019	ML19228A184
Regulatory Basis Public Comment Submission from Edwin Lyman (Union of Concerned Scientists), August 15, 2019	ML19228A186

Regulatory Basis Public Comment Submission from Pia Jensen, August 15, 2019	ML19228A192
Preliminary Proposed Rule Language, April 13, 2020	ML20072F620
Revised Preliminary Proposed Rule Language, September 14, 2020	85 FR 56548
Revised Preliminary Proposed Rule Language, December 14, 2021	ML21336A004
December 13, 2017, Public Meeting Summary	ML17354B266
August 8, 2019, Public Meeting Summary	ML19221B611
December 12, 2019, Public Meeting Notice	ML19344D035; https://www.nrc.gov/pmns/mtg?do=details&Code=20191290
NEI Additional Input for the Rulemaking for Physical Security for Advanced Reactors, January 10, 2020	ML20029E959
February 20, 2020, Periodic Advanced Reactor Stakeholder Meeting Notice	ML20054A703 https://www.nrc.gov/pmns/mtg?do=details&Code=20200135
April 22, 2020, Public Meeting Notice	ML20112F411 https://www.nrc.gov/pmns/mtg?do=details&Code=20200250
April 21, 2021, Public Meeting Summary	ML21183A004
May 14, 2021, Public Meeting Notice	ML21124A174
August 17, 2021, Public Meeting Notice	ML21218A150 https://www.nrc.gov/pmns/mtg?do=details&Code=20211046
September 16, 2021, Public Meeting Notice	ML21246A143 https://www.nrc.gov/pmns/mtg?do=details&Code=20211155
September 29, 2021, Public Meeting Notice	ML21260A177 https://www.nrc.gov/pmns/mtg?do=details&Code=20211158
October 19, 2021, Public Meeting Notice	ML21279A152 https://www.nrc.gov/pmns/mtg?do=details&Code=20211310
January 20, 2022, Public Meeting Summary	ML22024A063
NEI 20-05, "Methodological Approach and Considerations for a Security Assessment to Demonstrate Compliance with the Performance Criteria of 10 CFR 73.55(TBD)," Draft A, April 10, 2020	ML20104A306

NEI 20-05, "Methodological Approach and Considerations for a Technical Analysis to Demonstrate Compliance with the Performance Criteria of 10 CFR 73.55(a)(7)," Draft B, April 13, 2020	ML20107D894
NEI 20-05, "Methodological Approach and Considerations for a Technical Analysis to Demonstrate Compliance with the Eligibility Criteria of 10 CFR 73.55(a)(7)," Draft D, May 14, 2021	ML21137A057
NRC Letter to NEI regarding May 2020 comments, September 17, 2020	ML20212L397
NRC Comments on NEI 20-05, Draft B, March 2, 2021	ML21049A029
NRC Letter to NEI ceasing NRC review of draft NEI 20-05, November 24, 2021	ML21307A120

Throughout the development of this rule, the NRC may post documents related to this rule, including public comments, on the Federal rulemaking website at <https://www.regulations.gov> under Docket ID NRC-2017-0227.

List of Subjects

10 CFR Part 50

Administrative practice and procedure, Antitrust, Backfitting, Classified information, Criminal penalties, Education, Emergency planning, Fire prevention, Fire protection, Intergovernmental relations, Nuclear power plants and reactors, Penalties,

Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements, Whistleblowing.

10 CFR Part 52

Administrative practice and procedure, Antitrust, Combined license, Early site permit, Emergency planning, Fees, Inspection, Issue finality, Limited work authorization, Nuclear power plants and reactors, Probabilistic risk assessment, Prototype, Reactor siting criteria, Redress of site, Penalties, Reporting and recordkeeping requirements, Standard design, Standard design certification.

10 CFR Part 73

Criminal penalties, Exports, Hazardous materials transportation, Imports, Nuclear energy, Nuclear materials, Nuclear power plants and reactors, Penalties, Reporting and recordkeeping requirements, Security measures.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended; the Energy Reorganization Act of 1974, as amended; and 5 U.S.C. 552 and 553, the NRC is proposing to amend 10 CFR parts 50, 52, and 73 as follows:

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION

FACILITIES

1. The authority citation for part 50 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 11, 101, 102, 103, 104, 105, 108, 122, 147, 149, 161, 181, 182, 183, 184, 185, 186, 187, 189, 223, 234 (42 U.S.C. 2014,

2131, 2132, 2133, 2134, 2135, 2138, 2152, 2167, 2169, 2201, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2239, 2273, 2282); Energy Reorganization Act of 1974, secs. 201, 202, 206, 211 (42 U.S.C. 5841, 5842, 5846, 5851); Nuclear Waste Policy Act of 1982, sec. 306 (42 U.S.C. 10226); National Environmental Policy Act of 1969 (42 U.S.C. 4332); 44 U.S.C. 3504 note; Sec. 109, Pub. L. 96–295, 94 Stat. 783.

2. In § 50.34, add paragraph (c)(4) to read as follows:

§ 50.34 Contents of applications; technical information.

* * * *

(c) * * *

(4) Each applicant electing to apply an alternative in § 73.55(s)(2) of this chapter must provide a description of the technical analysis required by § 73.55(s)(1)(iv) of this chapter.

* * * *

3. In § 50.54, add paragraph (p)(5) to read as follows:

§ 50.54 Conditions of licenses.

* * * *

(p) * * *

(5) A licensee that meets § 73.55(s)(1) of this chapter and makes changes to or becomes aware of a change to plant features or offsite support resources described in the technical analysis prepared under § 73.55(s)(1)(iv) of this chapter must consider the effect of the change(s) on the analysis. The licensee must amend the information in the application prepared under § 50.34(c)(4) or § 52.79(a)(35)(iii) of this chapter to describe how the licensee continues to meet the requirements in § 73.55(s)(1)(ii) of this chapter.

* * * *

Commented [A15]: Staff should clarify what the intended effect of this draft proposed requirement is. As drafted, it could be interpreted as a submittal requirement but the regulatory analysis does not reflect any future submittals by licensees under this rule. It also seems unusual to require a licensee to amend their application after the license has been issued and the application will have no further effect.

PART 52 – LICENSES, CERTIFICATIONS, AND APPROVALS FOR NUCLEAR POWER PLANTS

4. The authority citation for part 52 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 11, 101, 102, 103, 104, 105, 108, 122, 147, 149, 161, 181, 182, 183, 184, 185, 186, 187, 189, 223, 234 (42 U.S.C. 2014, 2131, 2132, 2133, 2134, 2135, 2138, 2152, 2167, 2169, 2201, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2239, 2273, 2282); Energy Reorganization Act of 1974, secs. 201, 202, 206, 211 (42 U.S.C. 5841, 5842, 5846, 5851); Nuclear Waste Policy Act of 1982, sec. 306 (42 U.S.C. 10226); National Environmental Policy Act of 1969 (42 U.S.C. 4332); 44 U.S.C. 3504 note; Sec. 109, Pub. L. 96-295, 94 Stat. 783.

5. In § 52.79, add paragraph (a)(35)(iii) to read as follows:

§ 52.79 Contents of applications; technical information in final safety analysis report.

(a) * * *

(35) * * *

(iii) Each applicant electing to apply an alternative in § 73.55(s)(2) of this ~~section~~ chapter must provide a description of the technical analysis required by § 73.55(s)(1)(iv) of this ~~section~~ chapter.

* * * * *

PART 73—PHYSICAL PROTECTION OF PLANTS AND MATERIALS

6. The authority citation for part 73 continues to read as follows:

Authority: Atomic Energy Act of 1954, secs. 53, 147, 149, 161, 170D, 170E, 170H, 170I, 223, 229, 234, 1701 (42 U.S.C. 2073, 2167, 2169, 2201, 2210d, 2210e, 2210h, 2210i, 2273, 2278a, 2282, 2297f); Energy Reorganization Act of 1974, secs. 201, 202 (42 U.S.C. 5841, 5842); Nuclear Waste Policy Act of 1982, secs. 135, 141 (42 U.S.C. 10155, 10161); 44 U.S.C. 3504 note.

Section 73.37(b)(2) also issued under sec. 301, Pub. L. 96–295, 94 Stat. 789 (42

U.S.C. 5841 note).

7. In § 73.55:

- a. Remove and reserve paragraph (a)(5);
- b. Revise paragraph (b)(3) introductory text;
- c. Revise paragraph (b)(9)(i) introductory text;
- d. Add paragraphs (b)(9)(i)(A) and (B);
- e. Revise paragraphs (e)(10)(i)(A) and (k)(1); and
- f. Add paragraph (s).

The revisions and additions read as follows:

§ 73.55 Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage.

* * * * *

(b) * * *

(3) ~~For a~~A licensee holding an operating license under the provisions of part 50 of this chapter or a combined license under the provisions of part 52 of this chapter for a light-water reactor, other than a small modular reactor, as defined in § 171.5 of this chapter, must design the physical protection program ~~for the facility~~must be designed to prevent significant core damage and spent fuel sabotage. A licensee holding an operating license under the provisions of part 50 of this chapter or a combined license under the provisions of part 52 of this chapter ~~F~~for a small modular reactor licensee or a non-light-water reactor licensee licensed under part 50 of this chapter or part 52 of this chapter, must design the physical protection program ~~for the facility~~must be designed to prevent a significant release of radionuclides from any source. Specifically, the program

Commented [A16]: Staff should confirm that it is not necessary to document the addition of new paragraphs (e)(10)(i)(A)(1), (2), (k)(1)(i) and (ii) in the amendatory instructions and make appropriate changes if required.

must:

* * * * *

(9) * * *

(i) * * * The insider mitigation program must monitor the initial and continuing trustworthiness and reliability of individuals granted or retaining unescorted access authorization to a protected or vital area, and implement defense-in-depth methodologies to minimize the potential for an insider to adversely affect, either directly or indirectly, the licensee's capability to prevent the following:

(A) For light-water reactors, other than small modular reactors, as defined in § 171.5 of this chapter, significant core damage and spent fuel sabotage.

Commented [A17]: Edited to use a non-breaking space.

(B) For small modular reactors, as defined in § 171.5 of this chapter, or for non-light-water reactors, a significant release of radionuclides from any source.

* * * * *

(e) * * *

(10) * * *

(i) * * *

(A) Design, construct, install, and maintain a vehicle barrier system, to include passive and active barriers, at a stand-off distance adequate to protect personnel, equipment, and systems necessary to prevent:

(1) For light-water reactors, other than small modular reactors, as defined in § 171.5 of this chapter, significant core damage and spent fuel sabotage ~~against~~ due to the effects of the design basis threat of radiological sabotage and vehicle bomb assault.

(2) For small modular reactors, as defined in § 171.5 of this chapter, or for non-light-water reactors, a significant release of radionuclides from any source ~~against due to~~ the effects of the design basis threat of radiological sabotage and vehicle bomb assault.

* * * * *

(k) * * *

(1) The licensee ~~must shall~~ establish and maintain, at all times, properly trained, qualified and equipped personnel required to interdict and neutralize threats up to and including the design basis threat of radiological sabotage as defined in § 73.1, to prevent:

(i) For light-water reactors, other than small modular reactors, as defined in § ~~171.5~~ of this chapter, significant core damage and spent fuel sabotage.

(ii) For small modular reactors, as defined in § 171.5 of this chapter, or for non-light-water reactors, a significant release of radionuclides from any source.

* * * * *

(s) *Alternative physical security requirements.*

(1) *General requirements.*

(i) *Applicability.* The requirements of this section apply to an applicant for or holder of a license under part 50 of this chapter or part 52 of this chapter for a small modular reactor, as defined in § 171.5 of this chapter, or a non-light-water reactor ~~under part 50 of this chapter or part 52 of this chapter.~~

(ii) *Eligibility.* The applicant or licensee must demonstrate that the consequences of a postulated radiological release that ~~could~~ results from a postulated security-initiated event do not exceed the offsite dose reference values defined in §§ 50.34(a)(1)(D) and 52.79(a)(1)(vi) of this chapter.

Commented [A18]: Edited to use a non-breaking space.

(iii) *Identification and documentation.* The applicant or licensee must identify the specific alternative physical security requirement(s) it intends to implement as part of its physical protection program and demonstrate how the requirements set forth in this section are met when the selected alternative(s) is used.

(iv) *Analysis.* The applicant or licensee electing to meet one or more of the alternative security requirements in paragraph (s)(2) of this section must perform a technical analysis demonstrating how it meets the criteria in paragraph (s)(1)(ii) of this section. The licensee must maintain the analysis until submission of the licensee's certifications required by § 50.82(a)(1) of this chapter or § 52.110(a) of this chapter ~~have been docketed by the NRC.~~

(2) *Specific alternative physical security requirements.*

(i) *Alternative requirement for armed responders.* A licensee that meets paragraph (s)(1) of this section is relieved from the requirement for the minimum number of armed responders in paragraph (k)(5)(ii) of this section.

(ii) *Alternative requirements for interdiction and neutralization.* A licensee that meets paragraph (s)(1) of this section and has no armed response personnel onsite continuously within the protected area whose primary duty is to respond to, interdict, and neutralize acts of radiological sabotage:

(A) May rely on law enforcement or other offsite armed responders to fulfill the interdiction and neutralization functions required by paragraph (b)(3)(i) of this section.

(1) The licensee must maintain the capability to detect, assess, interdict, and neutralize threats as required by paragraph (b)(3)(i) of this section.

(2) The licensee must provide adequate delay for threats up to and including the DBT of radiological sabotage to enable law enforcement or other offsite armed

Commented [A19]: Edited to align with the sunseting requirements in §§ 50.54(hh)(2) and 50.155. Staff should justify extending requirements past the time at which a licensee submits the certifications under oath or affirmation that the reactor has been permanently shutdown and fuel has been permanently removed from the reactor vessel until the agency completes the ministerial act of docketing those certifications by comparing the costs and benefits of so extending the requirements. Given that the agency does not independently verify the permanent removal of fuel as a prerequisite to docketing of the certification, there does not seem to be any potential for benefits to continuing this requirement.

Commented [A20]: Edited to reflect that the provision in draft proposed paragraph 73.55(s)(2)(B)(3) would not prevent the armed response personnel from being onsite but would allow them to be onsite outside the protected area as well.

responders to fulfill the interdiction and neutralization functions ~~for threats up to and including the DBT of radiological sabotage.~~

(3) The licensee must provide necessary information about the facility and make available periodic training to law enforcement or other offsite armed responders who will fulfill the interdiction and neutralization functions for threats up to and including the DBT of radiological sabotage.

(4) The licensee must fully describe in the safeguards contingency plan the role that law enforcement or other offsite armed responders will play in the licensee's protective strategy when relied upon to fulfill the interdiction and neutralization capabilities required by paragraph (b)(3)(i) of this section. The description must provide sufficient detail to enable the NRC to determine that the licensee's physical protection program provides high assurance of adequate protection against threats up to and including the DBT of radiological sabotage.

(5) The licensee must identify criteria and measures to compensate for the degradation or absence of law enforcement or other offsite armed responders and propose suitable compensatory measures that meet the requirements of paragraphs (o)(2) and (3) of this section to address this degradation.

(B) Is relieved from applying:

(1) ~~Applying~~ the requirements in paragraphs (k)(3) through (7) of this section and the requirement in paragraph (k)(8)(ii) of this section to law enforcement responders.

(2) The training and qualification requirements related to armed response personnel in section VI of appendix B to this part for law enforcement responders, except for the performance evaluation program requirements related to armed response

personnel in section VI.C.3 of appendix B to this part, which the licensee ~~must~~ continue to satisfy for all armed response personnel, including law enforcement.

(3) The location-related requirements in paragraph (k)(5)(iii) of this section and in section II.B.3.c.(iv) of appendix C to this part related to armed responders.

(iii) *Alternative requirements for physical barriers.* A licensee that meets paragraph (s)(1) of this section may utilize means other than physical barriers and barrier systems to satisfy the physical protection program design requirements of paragraph (e) of this section. Acceptable means can be any method(s) that accomplishes the delay and access control functions necessary to allow the licensee to implement its physical protection program.

(iv) *Alternative requirements for onsite secondary alarm stations.* A licensee that meets paragraph (s)(1) of this section:

(A) May have one alarm station located offsite notwithstanding the requirement in paragraph (i)(2) of this section to have at least two alarm stations located onsite. The central alarm station must remain onsite.

(B) Is relieved from the requirement in paragraph (i)(4)(iii) of this section to construct, locate, and protect the offsite secondary alarm station to the standards for the central alarm station. The licensee is not relieved from the requirement in paragraph (i)(4)(iii) of this section that both alarm stations ~~must~~ be equipped and redundant, such that all functions needed to satisfy the requirements of paragraph (i)(4) of this section can be performed in both alarm stations.

(v) *Alternative requirements for vital areas.* A licensee that meets paragraph (s)(1) of this section:

(A) Is relieved from the requirement in paragraph (e)(9)(v)(D) of this section to designate an offsite secondary alarm station as a vital area.

(B) Is relieved from the requirement in paragraph (e)(9)(vi) of this section to locate the secondary power supply systems for an offsite secondary alarm station in a vital area.

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8. In appendix B to 10 CFR part 73, revise paragraph VI.A.1 to read as follows:

Appendix B to Part 73 - General Criteria for Security Personnel

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VI. * * *

A. * * *

1. For light-water reactors, other than small modular reactors, as defined in § 171.5 of this chapter, the licensee ~~must~~ ensure that all individuals who are assigned duties and responsibilities required to prevent significant core damage and spent fuel sabotage, implement the Commission-approved security plans, licensee response strategy, and implementing procedures, meet minimum training and qualification requirements to ensure each individual possesses the knowledge, skills, and abilities required to effectively perform the assigned duties and responsibilities. For small modular reactors, as defined in § 171.5 of this chapter, or for non-light-water reactors, the licensee ~~must~~ ensure that all individuals who are assigned duties and responsibilities required to prevent a significant release of radionuclides from any source, implement the Commission-approved security plans, licensee response strategy,

and implementing procedures, meet minimum training and qualification requirements to ensure each individual possesses the knowledge, skills, and abilities required to effectively perform the assigned duties and responsibilities.

* * * * *

Dated: <MONTH DAY>, 2022.

For the Nuclear Regulatory Commission.

Brooke P. Clark,
Secretary of the Commission.

