

Public Meeting on Proposed Rule

10 CFR Parts 50, 52, and 73
Alternative Physical Security Requirements for Advanced
Reactors
[89 FR 65226, August 9, 2024]

September 19, 2024

Purpose

 Provide information to help stakeholders prepare comments on the "Alternative Physical Security Requirements for Advanced Reactors" proposed rule and draft regulatory guidance.

Agenda

- Welcome and Logistics
- Opening Remarks
- Background and Status
- Overview of the Proposed Rule
- Tips for Preparing Comments
- Next Steps
- Public Feedback and Questions

Logistics

- Meeting is being recorded and transcribed.
- Keep line muted until you intend to speak.
- Raise hand button in Teams (*5 on phone).
- Unmute button in Teams (*6 on phone).
- Chat feature is disabled.
- Presentation slides shown on the Microsoft Teams screen and in ADAMS at ML24254A351.

Opening Remarks

Anthony Bowers
Deputy Director

Office of Nuclear Security and Incident Response, Division of Physical and Cyber Security Policy



Background and Status

Background and Status

- The NRC decided to pursue this rulemaking due to the emergence of new reactor designs, which may warrant methods for meeting the NRC's physical security requirements that are different than the requirements for the currently operating reactors.
- The NRC conducted extensive public outreach including soliciting comments on a regulatory basis document and hosting public meetings on the preliminary proposed rule language.
- The proposed rule was published in the *Federal Register* on August 9, 2024 (89 FR 65226). The 75-day comment period ends October 23, 2024.

Proposed Rule and Related Documents

Proposed Rule

- Citation: <u>89 FR 65226</u> (August 9, 2024)
- Web version (ML24178A370)
- Supporting & Related Material
 - Draft Regulatory Analysis (<u>ML24178A372</u>)
 - Draft Environmental Assessment (<u>ML24178A374</u>)
 - Draft Supporting Statements for Information Collections (ML21334A009; ML22131A161; ML22131A167)

Guidance Documents

- DG-5072 / RG 5.90, Rev 0 (ML20041E037)
 - "Guidance for Alternative Physical Security Requirements for Small Modular Reactors and Non-Light-Water Reactors"
 - Early version posted by NRC for awareness on 02-05-24, posted for public comment on 07-24-24.
- DG-5071 / RG 5.81, Rev 2 (ML22021B529) (Official Use Only)
 - "Target Set Identification and Development for Nuclear Power Reactors"
 - Withheld from public disclosure and can be made available to those members of the public with a need to know.



Overview of the Proposed Rule

Where is this discussed in the FRN? Section III.D (pages 65230-65233)

FOCUS AREAS:

- 73.55(b)(3) Added requirements specific to small modular reactors (SMRs) and non-light-water reactors (non-LWRs)
- 73.55(s) Alternative physical security requirements
 - -73.55(s)(1) General requirements
 - 73.55(s)(2) Specific alternative physical security requirements

Where is this discussed in the FRN?

Section III.D (page 65231)

10 CFR 73.55(s)(1)

Eligibility Criteria in preliminary proposed rule language has been replaced by a single applicability statement

- (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 nonlight-water reactor.
- (ii) *Eligibility.* The applicant or licensee must demonstrate that the consequences of a postulated radiological release that could result 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.

Where is this discussed in the FRN?

Section III.D (page 65231)

10 CFR 73.55(s)(1)

- (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 submittal of the licensee's certifications required by § 50.82(a)(1) of this chapter or § 52.110(a) of this chapter.

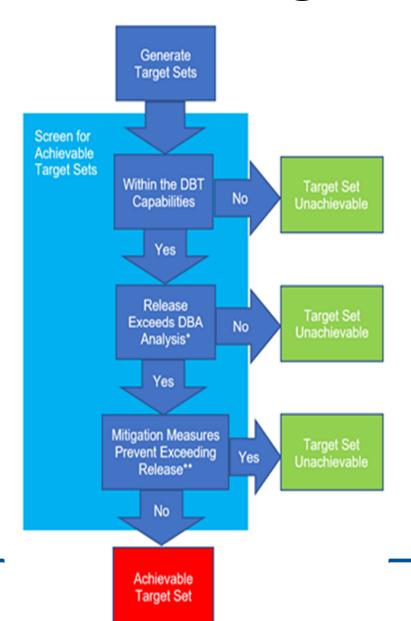
DG-5071: Non-LWR & SMR Target Set Definition

 The minimum combination of equipment, operator actions, and/or structures that, if all are prevented from performing their intended safety function or prevented from being accomplished, barring extraordinary actions by plant operations, would likely result in a significant release of radionuclides from any source (e.g., sufficient damage to the radionuclide inventory to exceed the radionuclide release fraction analyzed for the design-basis accident (DBA) and creation of a release pathway).

DG-5071: Non-LWR & SMR Achievable Target Set Definition

 A target set that is: (1) within the capabilities of the design-basis threat (DBT) adversary to compromise, destroy, or render non-functional, (2) cannot be mitigated after an adversary interference precluded time (AIPT) and prior to the adversary achieving the target set objective, and (3) on an irreversible path to the target set objective prior to a bounding or protection time.

Determining Achievable Target Sets



LEGEND

APSR = Alternative Physical Security Requirement

DBA = Design-Basis Accident

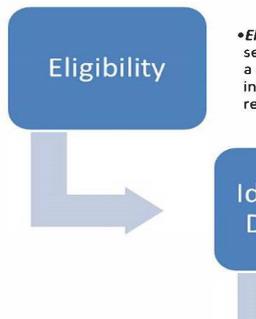
DBT = Design-Basis Threat

SBT = Security Bounding Time

AIPT = Adversary Interference Precluded Time

- GREEN Boxes APSR can be implemented in accordance with RG 5.90.
- BLUE Boxes Process and/or analysis.
- RED Box Cannot implement APSR using target set analysis; however, RG 5.90 provides guidance to determine if an APSR can be used.
- * At an SBT.
- ** After an AIPT and before a release to the environment exceeds that analyzed in the DBA licensing basis.

Determining Eligibility



 Eligibility: Verify, independent from security program, through analysis* that a radiological release from a securityinitiated event(s) would be below reference values.

Identify and Document

- Identify the specific alternative physical security requirements an applicant/ licensee intends to implement.
- **Document** as part of the physical protection program.

Demonstrate

- Demonstrate ** the physical protection program meets applicable 73.55 regulations.
- * Analysis starts with outcome of target set process and includes radiological consequence analysis, if needed.
- ** Approved during the licensing process or by license amendment.

Where is this discussed in the FRN? Section III.D (pages 65231-65233)

10 CFR 73.55(s)(2)

- Five proposed specific alternative physical security requirements:
 - 1. Allowing fewer than 10 onsite armed responders.
 - 2. Allowing flexibilities for performing interdiction and neutralization functions when a facility would have zero onsite armed responders.
 - 3. Allowing alternative means for accomplishing delay other than with physical barriers.
 - 4. Allowing the secondary alarm station to be located offsite.
 - 5. Allowing the offsite secondary alarm station and the location of its secondary power supplies to no longer be considered vital areas.

Where is this discussed in the FRN? Section III.D (page 65231)

10 CFR 73.55(s)(2)(i)

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

Where is this discussed in the FRN?

Section III.D (page 65232)

10 CFR 73.55(s)(2)(ii)

- (ii) Alternative requirements for interdiction and neutralization. A licensee that meets paragraph (s)(1) of this section and has no armed response personnel onsite 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 responders to fulfill the interdiction and neutralization functions.

Where is this discussed in the FRN? Section III.D (page 65232)

10 CFR 73.55(s)(2)(ii)(A)

(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.

Where is this discussed in the FRN? Section III.D (page 65232)

10 CFR 73.55(s)(2)(ii)(A)

(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.

Where is this discussed in the FRN? Section III.D (page 65232)

10 CFR 73.55(s)(2)(ii)(A)

(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.

10 CFR 73.55(s)(2)(ii)

(B) Is relieved from applying:

- (1) 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 shall 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.

Where is this discussed in the FRN?

Section III.D (page 65233)

10 CFR 73.55(s)(2)(iii)

(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.

Where is this discussed in the FRN?

Section III.D (page 65233)

10 CFR 73.55(s)(2)(iv)

- (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 shall 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.

Where is this discussed in the FRN?

Section III.D (page 65233)

10 CFR 73.55(s)(2)(v)

- (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.

Draft Guidance: Key Elements

DG-1365 (now DG-5072)

- Redesignated as DG-5072
- What is DG-5072?
 - New guidance for SMRs and non-LWRs that elect to meet one or more of the alternative physical security requirements
- What are the major pieces within DG-5072?
 - Guidance for § 73.55(s)(1)
 - Guidance for § 73.55(s)(2)

DG-5072: Overview of (s)(1) guidance

- Guidance explains one approach for addressing the requirements in § 73.55(s)(1) that will demonstrate the eligibility to use the alternative security measures.
- These requirements are:
 - Identify the specific alternative physical security requirement(s).
 - Perform a site-specific analysis to evaluate the potential offsite radiological consequences and demonstrate how the performance requirements set forth in § 73.55(b)(3) are met.

DG-5072: "Significant Release"

- A release of offsite doses that exceed the reference values defined in §§ 50.34(a)(1)(ii)(D)(1) and (2) and 52.79(a)(1)(vi)(A) and (B).
- The 25-rem reference dose has been used in Parts 50, 52, 70 and 100 as a reference value that is used to evaluate plant design features with respect to postulated reactor accidents, including DBAs.
- The DBAs are not intended to be actual event sequences but are used as surrogates to allow the NRC and licensees to evaluate the response of a facility's engineered safety features.

DG-5072: Consequence Analysis

- An activity 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
- Needed to demonstrate applicability for using the alternative security measures found in § 73.55(s) for the physical protection program

DG-5072: Overview of (s)(2) guidance

This guidance includes:

- methods and approaches the staff would find acceptable for satisfying the alternative security requirements in § 73.55(s)(2);
- a methodology for calculating SBT; and
- explanatory information and clarifications related to the relief provided within the alternatives proposed in § 73.55(s)(2).

DG-5071

- Revision to RG 5.81, "Target Set Identification and Development for Nuclear Power Reactors"
- This revision provides guidance to:
 - identify target sets for SMRs and non-LWRs consistent with changes to § 73.55(b)(3).
 - Prevent a significant release of radionuclides from any source.
 - utilize the target set process to determine applicability of alternative physical security requirements.

Regulatory Analysis

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.

Specific Requests for Comment

Where is this discussed in the FRN?

Section IV (page 65234)

- 1. Some advanced reactors may have designs that are significantly different from the current operating large LWRs [light-water reactors]. 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.

Specific Requests for Comment

Where is this discussed in the FRN?

Section IV (page 65234)

- 2) The NRC is not proposing a hybrid approach that would allow a licensee to rely on a combination of onsite armed responders and law enforcement or other offsite 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 potential hybrid approaches? Please provide the basis for your response.
- 3) The NRC recognizes that allowing licensees to rely entirely or partially on law enforcement, rather than onsite armed responders, to interdict and neutralize threats up to and including the DBT of radiological sabotage, is a novel approach to meeting the performance objectives in § 73.55(b). Has the NRC adequately addressed the uncertainties associated with the proposed requirements at 10 CFR 73.55(s)(2)(ii)? Please provide the basis for your response.

Specific Requests for Comment

Where is this discussed in the FRN?

Section IV (page 65234)

4) 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 currently proposing to add any submittal requirements in this regard for standard design certification applications under subpart B to 10 CFR part 52. What would be the potential benefits and challenges if the NRC were to 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 plans for early site permit applicants in § 52.17(b)(2) and (3)? To what extent should the NRC consider security matters resolved under § 52.63(a)(5) for a standard design certification when the information that would be required to show that the criteria in proposed § 73.55(s)(1) are met is provided by a design certification applicant and reviewed by the NRC as part of the certification process?

General Request for Comments

Where is this discussed in the FRN?

Section IV (page 65235)

The NRC is seeking comments on both its initial RFA [Regulatory Flexibility Act of 1980] 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 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.

General Request for Comments

Where is this discussed in the FRN?

Section IV (pages 65235 - 65236)

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—

- 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 demonstrate compliance with the NRC's obligations under the Atomic Energy Act of 1954, as amended.



Tips for Preparing Comments

How to submit a comment

Regulations.gov: Comment Form

Email: Rulemaking.Comments@nrc.gov

or

Mail: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001

Attn: Rulemakings and Adjudications Staff

Applies to all public comments on the proposed rule and DG-5072 (comments on DG-5071 follow a separate process, contact Lou Cubellis for more information)



NUCLEAR REGULATORY

mending these regulations are to maintain a safe, effective, and efficient decommissioning process; reduce the need for license amendment requests and exemptions from existing

2022. 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 eceived before this date.

DDRESSES: You may submit comments ment describes a different method or submitting comments on a specific

https://www.regulations.gov and search or Docket ID NRC-2015-0070. Address tions about NRC dockets to Dawn order: telephone: 301-415-3407:

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN:

see "Obtaining Information and Submitting Comments" in the SUPPLEMENTARY INFORMATION section o

Daniel I. Doyle, Office of Nuclear Material Safety and Safeguards, U.S. on, DC 20555-0001; telephone

A. Need for the Regulatory Action The NRC is proposing to amend its egulations related to the irected the NRC staff to proceed with an integrated rulemaking on nuclear approach to emergency preparedn (EP), lessons learned from the lice that have already gone through (or are currently going through) the decommissioning process, the advisability of requiring a licensee's post-shutdown dec tivities report (PSDAR) to be approved for decommissioning and the timeframes associated with those options, the appropriate role of State and local governments and non-governmental stakeholders in the in this proposed rule are alternatives to decommissioning process, and any other issues deemed relevant by the

Compared to an operating nuclear power reactor, the risk of an offsite radiological release is significantly lower, and the types of possible accidents are significantly fewer, at a nuclear power reactor that has permanently coased operations and removed fine from the reactor vessel. As a direct result, there is no need for the NMC to impose new requirements in the NRC to impose new requirements in the areas identified in this rulemaking to over time, while maintaining safety and security. The decommissioning process can be improved and made mor can be improved and made more efficient, open, and predictable by reducing the reliance on licensing actions (i.e., license amendment and exemption requests) that reflect this reduction in risk to achieve a

The NRC has also determined that changes to the regulations are appropriate with respect to drug and alcohol testing; cyber security; and foreign ownership, control, or domination of a production or utilization facility undergoing

decommissioning.
In several areas, the current regulations do not distinguish between provisions that apply to a nuclear power reactor that has permanently ceased operations and provisions that apply to an operating nuclear power reactor. To address this, the NRC is proposing to amend its regulations in several areas provide a regulatory framework for th transition from operating to decommissioning. This proposed rule a four-step graded approach that is commensurate with the reduction in radiological risk at four levels of cessation of operations and permanent removal of all fuel from the reactor vessel, (2) sufficient decay of fuel in the spent fuel pool (SFP) such that it would not reach ignition temperature within 10 hours under adiabatic heatup conditions (i.e., a complete loss of SFP water inventory with no heat loss), (3) transfer of all fuel to dry storage, and (4) removal of all fuel from the site. The graded approach is a fundamer concept for this proposed rule. Because the current regulato Because the current regulatory framework for decommissioning is adequate to protect public health and safety and the common defense and security, many of the new requirement

R Major Provisions

Major provisions of this proposed rule Major provisions of this proposed ru include changes in the following areas • Emergency preparedness. This proposed rule offers an alternative, graded approach to the current requirements for onsite and offsite radiological emergency preparedness a a nuclear power reactor. This approach would provide four levels of ea planning standards that coincide with significant milestones in gradual reduction of the radiological risk during decommissioning.

would apply once a nuclear power reactor enters decommissioning. Th reactor enters decommissioning. These proposed changes would (1) permit a certified fuel handler (CFH) to approve the temporary suspension of security measures during certain emergency conditions or during severe weather, (2) remove the requirement that a licensee's physical protection program be

Review the Commenter's Checklist on Regulations.gov

- "Commenter's Checklist" link available on this comment submission form webpage: https://www.regulations.gov/commenton/NRC-2017-0227-0038
 - Also available in a <u>printable format</u> (also referred to Tips for submitting comments)

Next Steps

Public comment period ends: October 23, 2024

Final rule to the Commission: September 9, 2025
 (estimated)

• Final rule publication: March 2026 (estimated)



Question and Answer Session

Thank You!

Dennis Andrukat

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Regulations.gov docket ID: NRC-2017-0227

Please provide feedback on this public meeting using this link: https://www.nrc.gov/public-involve/public-meetings/contactus.html

Acronyms

ADAMS	Agencywide Documents Access and Management System
AIPT	adversary interference precluded time
APSR	alternative physical security requirement
CFR	Code of Federal Regulations
DBA	design-basis accident
DBT	design-basis threat
DG	draft regulatory guide
FR	Federal Register
FRN	Federal Register Notice
LWR	light-water reactor
NEI	Nuclear Energy Institute
Non-LWR	non-light-water reactor
NRC	Nuclear Regulatory Committee
RFA	Regulatory Flexibility Act of 1980
RG	regulatory guide
SBT	security bounding time
SMR	small modular reactor