Public Meeting to Discuss the NRC Staff's Consideration of Options for a Potential Rulemaking on Security for Special Nuclear Material

April 19, 2022

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Purpose of this Meeting

- Provide information on the NRC's development of a Commission paper regarding enhanced security for special nuclear material (SNM)
- This is an Observation meeting
- Attendees will have the opportunity to ask questions and/or make comments about the issues discussed; however, the NRC will not provide written responses to comments or questions raised

Key Messages

- Staff is evaluating the pros and cons of multiple options to inform a recommendation to the Commission in response to Staff Requirements Memorandum (SRM)-SECY-19-0095, “Discontinuation of Rulemaking – Enhanced Security of Special Nuclear Material” (ML21217A065)
- For currently-licensed SNM, the existing regulatory framework provides adequate protection of public health and safety and promotes the common defense and security

Background

- January 2015 – Final regulatory basis on Enhanced Security for SNM (ML14321A007)
- April/June 2016 – Direction to suspend rulemaking activities
- August 2018 – Direction to staff to complete expedited, limited-scope rulemaking
- October 2019 – SECY-19-0095, “Discontinuation of Rulemaking – Enhanced Security of Special Nuclear Material” (ML19157A084)
- August 2021 – SRM-SECY-19-0095 – Provide a notation vote paper with options on enhanced security of SNM and the potential regulatory, resource, and timing impacts of the options, per the Commission’s direction (ML21217A065)

Current criteria for evaluating options

- Takes into account the most current threat environment
- Increases regulatory predictability and consistency for material possessed by current licensees and potentially by applicants
- Enhances licensees'/applicants' ability to implement a flexible approach to security of SNM
- Considers the full spectrum of SNM, i.e., Categories I-III*

* Categories of SNM can be found in 10 CFR Part 110, Appendix M. They correspond to the following descriptors in 10 CFR 73: "Formula quantity," "SNM of moderate strategic significance," and "SNM of low strategic significance," respectively.

Current criteria for evaluating options

- Requires a licensee to have access to information, e.g., adversary characteristics, for which some licensee staff may not currently have the appropriate security clearance
- Ensures consistency with prior Commission direction
- Takes into account the most current internationally-accepted security guidance, e.g., IAEA INFCIRC/225/Revision 5
- Assesses relative capital and recurring costs to industry

Additional criteria for evaluating options

- Attendees may share additional criteria they believe the NRC staff should consider in evaluating the options being developed for this paper.

Initial Options Under Consideration

- Option 1 – No Action (Status Quo)
- Option 2 – Resume 2015 rulemaking
- Option 2a – Resume 2015 rulemaking **and include spent nuclear fuel (SNF)** in scope
- Option 3 – Update existing regulations only for Category (Cat) II SNM
- Option 4 – Revise regulations for Cat I/II to be more performance-based (per Section 3.4 of 2015 Regulatory Basis); Revise regulations for Cat III consistent with 2015 Reg Basis
- Option 4a – Revise regulations for Cat I/II to be more performance-based (per Section 3.4 of 2015 Reg Basis) **and include SNF in scope**; Revise regulations for Cat III consistent with 2015 Reg Basis

Option 1 – No Action (Status Quo)

- Continue case-by-case approach of considering material attractiveness in licensing decisions
- Discontinue rulemaking

Option 2 – Resume rulemaking from 2015 Regulatory Basis

- Incorporate measures in Cat I and III orders into the regulations
- Use material attractiveness, primarily dilution, to further grade and right-size physical protection under the existing categorization structure
- Raise the external radiation ("self-protecting") level threshold in §73.6 to take account of whether the current radiation level (1 gray [100 rad] per hr at 1 meter [3.3 ft] without considering shielding) will sufficiently incapacitate an adversary to prevent it from completing its objective

Option 2a – Resume rulemaking and include SNF in scope

- SNF not considered in 2015 Reg Basis – “the physical protection requirements for these three classes of facilities would be covered by separate NRC rulemakings…”
- Revisions would address regulatory inconsistency re: protection levels
  - Transport of SNF below current external radiation level threshold would require Cat I protection
  - Staff position – this level of protection would be too stringent

Option 3 – Update Only Existing Regulations for Category II SNM

- Create two tiers of regulations for Cat II material
  - Moderately dilute*, e.g., High-Assay Low Enriched Uranium (HALEU)
  - Small quantities of (currently categorized as less-than-Cat I) Strategic SNM
- No revision of Cat I or III regulations

*"Moderately dilute"

U-235: 1% <= dilution factor <= 20%; **U-233/Pu**: 1% <= dilution factor <= 10%

Option 4 – Recraft Cat I/II Regulations to be more Performance-Based; Revise Cat III Regulations

- Stratify requirements for Cat I and Cat II material by non-dilute vs. moderately dilute
- Performance-based
  - Cat I non dilute – Conduct site-specific vulnerability assessments (VA) to demonstrate ability to defend against the Design Basis Threat
  - Cat I moderately dilute and Cat II non dilute – Conduct site-specific VAs to address specific set of adversary characteristics
  - Cat II moderately dilute – Perform timeline and tabletop analyses considering threat characteristics to demonstrate compliance with the performance objectives
- Revise regulations for Cat III to add limited number of prescriptive requirements

Option 4a – Recraft Cat I/II Regulations to be more Performance-Based and consider SNF; Revise Cat III Regulations

- Implement Option 4 and include SNF in scope

QUESTIONS?

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