UCS Perspectives on the Enhanced Security Rulemaking

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Scope

- UCS supports a comprehensive rulemaking to update and make consistent the security requirements for all special nuclear material
  - Option 2a (Resume 2015 rulemaking and include spent nuclear fuel)
- But the focus should not be on reducing regulatory burden and cost to licensees but to ensure that security requirements are commensurate with material risks
- Retaining conservatism is appropriate given the horrific consequences of a nuclear terrorist attack

Category II

- It is important to revise Category II security requirements to address current understanding of the risks—especially considering the possibility that licensees will produce, transport, and use much greater quantities of Category II high-assay LEU (HALEU) than they have in the past
- Unclassified adversary characteristics for Category II theft should be specified in the rule language
- The revised Cat II requirements should incorporate a HALEU "goal quantity" (40-75 kg U-235) that would trigger more stringent requirements—potentially including an onsite armed response force—to **prevent** gross theft of a quantity of higher security concern

Alternative nuclear materials

- Given the possibility that NRC will receive applications for reprocessing plants and at-reactor processing facilities with separation of actinides other than plutonium, the rule should consistently address alternative nuclear materials (neptunium, americium, curium), both singly and in groups
  - "The staff is recommending that licensees storing or transporting large quantities of americium or neptunium should protect this material similar to comparable quantities of HEU." – SECY-09-0123, September 2009.

Spent fuel

- Self-protection limit should be increased to address current understanding of adversary capabilities and the dose rate necessary to deter theft and achieve denial of task
  - 50 Sv/hr at 1 meter seems more reasonable for both power and non-power reactor fuel
- Special consideration needed for low-power, low-burnup advanced reactors whose core or spent fuel may contain high SNM concentrations and relatively low or short-duration radiological barriers

Credit for dilution

- Credit for dilution should only be applied in the context of a site- and threat-specific vulnerability assessment
  - Example: rapid disassembly of bulky items (unirradiated LWR MOX)
  - Prevention of removal should be generally required for moderately dilute Cat I
- Credit for chemical dilution is not fully interchangeable with credit for radiological self-protection

Credit for LLEA

- Credit for response by local law enforcement agencies (LLEA) should only be considered if the LLEA meets all pertinent regulatory requirements for a licensee security force
  - Security plan commitments
  - Validated response timelines
  - Training and qualification
  - Integration of command, control, communications
  - Vetting for access authorizations at appropriate level

Radiological sabotage aspects of SNM

- Potential regulatory gaps associated with utilization of SNM in radiological dispersal or emission devices should be addressed, commensurate with radiological consequences
  - Critical assembly using HALEU

Removing inconsistencies

- The rule should remove legacy inconsistencies in security requirements
  - Category I exemption for non-power reactors
  - Category I exemption for ISFSIs containing non-self-protecting spent fuel
  - Category I exemption for MOX fuel (< 20% plutonium) at power reactors