

HALEU Security Theft and Diversion at Fixed Sites and In Transit

Tim Harris, Senior Program Manager
Division of Physical and Cyber Security Policy
Office of Nuclear Security and Incident Response
Nuclear Regulatory Commission

Key Messages

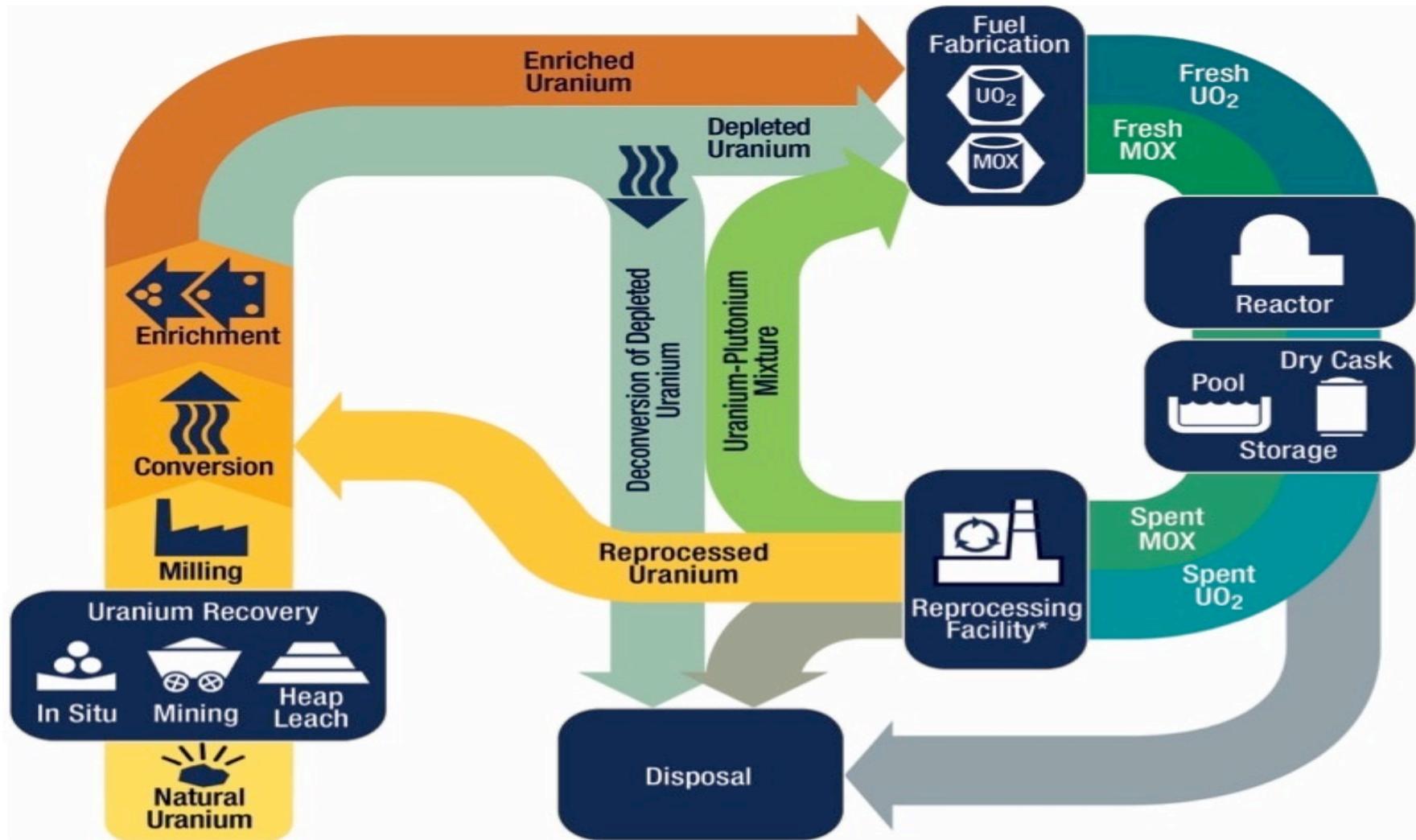
- Current regulatory framework allows NRC to securely license facilities using high assay low enriched uranium (HALEU) material
- Current focus is to streamline security throughout the life-cycle of HALEU fuel

Topics

- New advanced reactors and accident tolerant fuels driving expanded use of HALEU material
- Focus of presentation
 - Material enriched to between 10 and 20 percent (Category II quantities of SNM)
 - Fixed site (e.g., fuel facilities, medical isotope facilities, fresh fuel at advanced reactors)
 - Material in transit

NRC Enhanced Security to Address Current Threat

- Issued Orders following 9/11
- Promulgated numerous rules
- Enhanced Security of Special Nuclear Material Rulemaking
 - Incorporated Category I and III Orders
 - Considered Material Attractiveness



Existing NRC Physical Protection Requirements

- Category II quantities of SNM
 - 10 CFR 73.67(a), (b), (c), (d), and (e)
- Protective strategy
 - “Minimize the possibilities for unauthorized removal of special nuclear material consistent with the potential consequences of such actions; and facilitate the location and recovery of missing special nuclear material.”
- Applicable guidance
 - Regulatory Guide 5.59, “Standard Format and Content for a Licensee Physical Security Plan for the Protection of Special Nuclear Material of Moderate or Low Strategic Significance”

Current Approach

- Stakeholder outreach on HALEU protection
- Pre-licensing meetings with applicants
- Risk-informed case-by-case basis evaluations
- Site-specific license conditions
- Supplement requirements should be fairly and reasonably applied
- Interagency community interface on HALEU protection issues



Physical Protection Systems

- Change in detection and response expectations drive the need for the supplemental measures.
- Considering material attractiveness, the specific supplemental measures could vary
- In general, fewer supplemental measures would be required for facilities that do not process material or where the form of the material is not changed
- Additional supplemental measures would be required for process facilities with larger quantities of material.
- Changes in dilution could be considered in the development of the physical protection system.

Potential Supplemental Measures – Fixed Sites

- Greater control over material during use and storage
- Consideration of vital equipment (depends on material and processes)
- Better defined access controls (background checks)
- Enhancements to controlled access area portals and vehicles access
- Enhanced escort requirements
- Random entry searches and enhanced exit searches
- Alarm station
- Security patrols
- Enhanced communication and coordination with law enforcement
- Security equipment maintenance program

Potential Supplemental Measures – Fixed Sites

- For site with larger quantities, the following may also apply
 - Protected area and vehicle barrier
 - Potential for armed guards depending on delay features
 - Expanded intrusion and detection
 - Secondary alarm station

Potential Supplemental Measures – In Transit

- Transfers occur in controlled access area
- Increased key control
- Transport in closed and locked conveyance
- Increased searches
- Increased custody verification

Conclusion

- Pre-licensing activities strongly encouraged
- Use a risk-informed analysis on a case-by-case basis
- Use site-specific license conditions
- Ensure that supplemental security measures are fairly and reasonably applied