


*Office of Environmental Management's
Spent Nuclear Fuel Management Priorities*

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*Briefing to the Institute for Nuclear Materials Management
January 13, 2015*

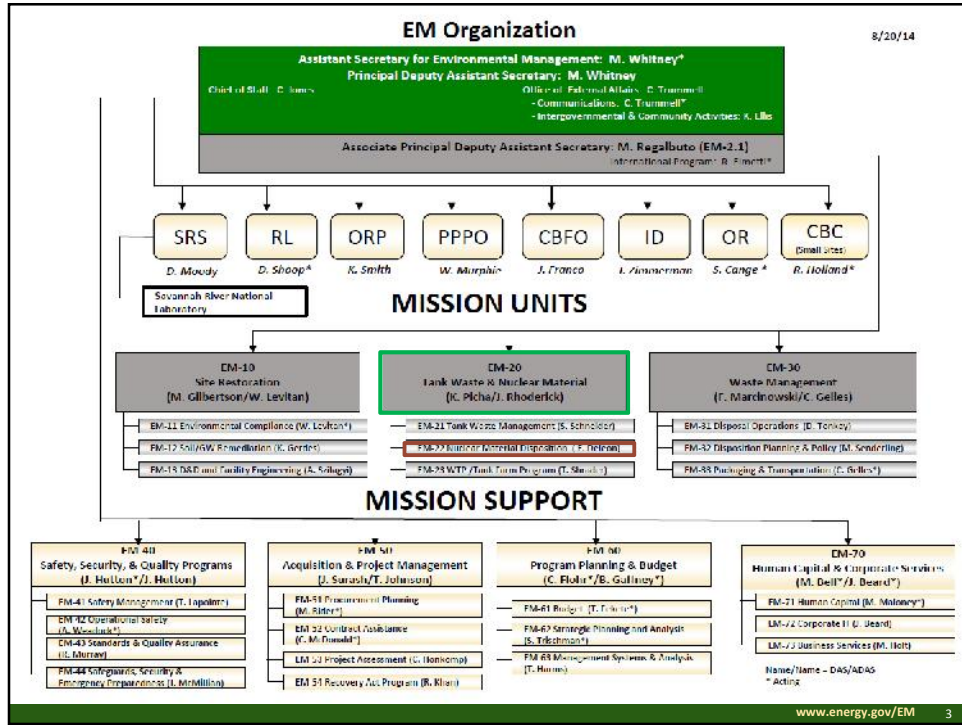
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Outline

- Department of Energy/Environmental Management (DOE/EM) Organization
- EM Mission/Progress
- Spent Nuclear Fuel (SNF) Accomplishments/Challenges
 - Options for disposal of defense SNF and high-level waste (HLW)
 - SNF Working Group
- Summary

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EM Mission

"Complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development, production, and Government-sponsored nuclear energy research"

- From a legacy of weapons production to one of the world's largest environmental cleanup program
- Operating in a complex regulatory environment
- EM clean-up enables DOE to maintain ongoing operations and other critical missions while achieving compliance with governing environmental laws and reducing risks to the public and the environment



L-Basin, SRS

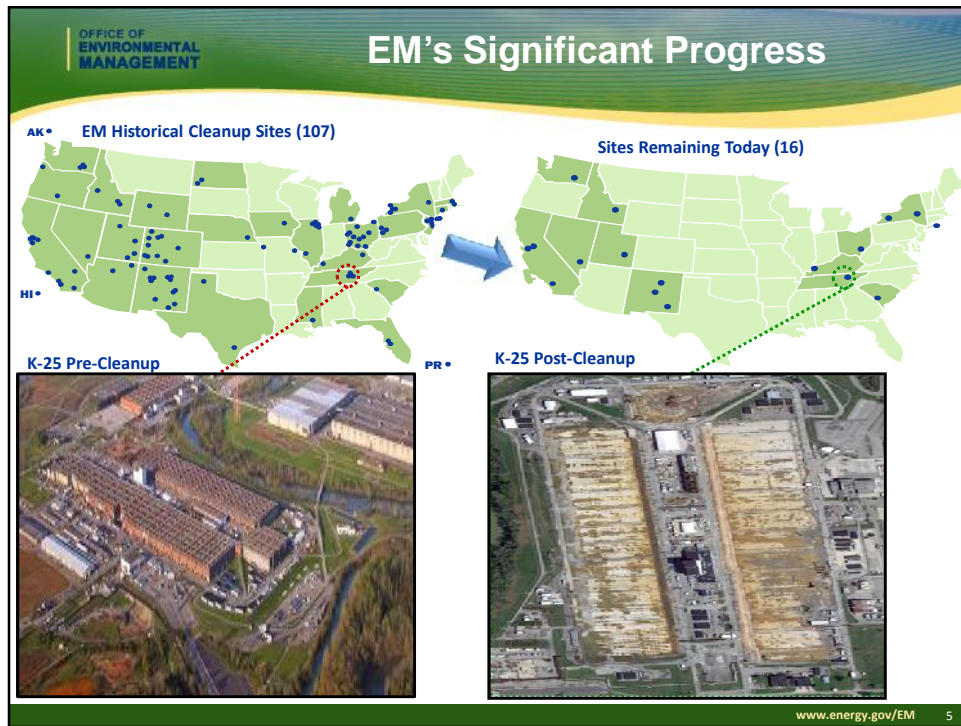


H-Canyon, SRS



Idaho

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- ## SNF Accomplishments, 2014
- Savannah River Site (SRS) completed processing of Sodium Reactor Experimental fuel (148 total bundles processed) in August 2014
 - SRS initiated processing of aluminum-clad fuel for down-blending into LEU in September 2014
 - SRS continued receipt of Research Reactor SNF
 - Continued with preparation for receipt of Canadian liquid HEU and NRU/NRX fuel
 - 1st shipment NRU/NRX fuel scheduled in 2015 (4-year campaign)
 - 1st shipment of liquid HEU scheduled in 2016 (1 – 2 year campaign)
 - Signed a Statement of Intent (April 1, 2014) with German Government to perform technology development to determine feasibility of receipt and disposition of German pebbled bed research reactor fuel containing US-Origin HEU
 - Issued a Notice of Intent (May 29, 2014) to prepare an Environmental Assessment
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SNF Management Challenges

- Deteriorating infrastructure and fiscal challenges to fund necessary improvements
 - Efforts are underway to evaluate and determine how to improve progress on deferred maintenance of nuclear materials facilities to support mission
- Integration of liquid waste system with SNF processing activities at SRS
- Foreign Research Reactor Program challenges
 - Anticipating many shipments as Program comes to an end in 2019
- Coordination of SNF activities among four Departmental Program Offices
 - Initiation of SNF working group
- Removal of all SNF from wet storage in Idaho by 2023 (per 1995 Idaho Settlement Agreement)
- Uncertainty regarding end state and disposal options

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Defense SNF & HLW Disposition

- *Assessment of Disposal Options for DOE-Managed High-Level Radioactive Waste and Spent Nuclear Fuel*, October 2014
 - Consistent with Administration's January 2013 *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*
 - Report is based on technical and programmatic considerations (and does not include an evaluation of relevant regulatory and legal considerations)
 - Assessment analyzed three options
 - ✓ Disposal of all HLW & SNF regardless of origin in one repository
 - ✓ Disposal of some DOE-managed HLW & SNF in a separate mined repository
 - ✓ Disposal of smaller waste forms in deep boreholes

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Defense SNF & HLW Disposition - Conclusions

- DOE pursue a phased, adaptive, and consent based approach for some DOE-managed HLW and cooler DOE managed SNF
 - Technologies available today
 - Benefits from beginning a deliberate stepwise approach
 - Build confidence that SNF and HLW can be safely disposed
- Include a research, development and demonstration program addressing technologies relevant to deep borehole disposal of smaller DOE-managed waste forms and large DOE-managed waste packages with high thermal loads in mined repositories

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SNF Working Group

- DOE complex-wide coordination of SNF issues by establishing an internal DOE working group in 2014
 - Led by Office of Environmental Management, other participants include:
 - ✓ Office of Science, Nuclear Energy, Naval Reactors, and Global Threat Reduction (NNSA)
 - ✓ DOE field sites that manage DOE SNF
- SNF working group goals are to
 - Promote integration and issue resolution across the DOE complex
 - Strategic planning
 - Cost-effective management
 - Consistency across the DOE complex
 - Efficient knowledge exchange

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SNF Working Group- Objectives

- SNF working group objectives include:
 - Develop complex-wide strategies for storage, retrieval, packaging, transportation, technology development, processing, and/or disposal
 - Integrate and leverage DOE SNF management and disposition activities across the complex
 - Work to develop waste acceptance criteria for a future repository
 - Support non-proliferation goals
 - Reestablish National SNF Program and oversee complex-wide database of DOE's SNF

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SNF Working Group (Cont.)

- Initial meeting held in November 2014, in Idaho Falls
 - Identified collaborative efforts that would benefit the SNF complex
 - ✓ Evaluate DOE security and safeguards strategy
 - ✓ Feasibility of fuel exchange between Idaho and SRS
 - Promoted SNF activities as "one DOE"
 - Discussed working relationships with other cross-cutting organizations, such as Tank Waste Corporate Board

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Summary

- Ability to continue safe near-term storage
 - Invest in infrastructure upgrade
 - Comply with site-specific agreements
 - Continue to develop new and improved and cost-effective technologies (e.g., neutron absorbers)
 - Continue to work with GTRI and international partners to support non-proliferation and HEU minimization objectives
- DOE endorsed (Jan 2013) key principles of BRC's recommendations – legislation needed for implementation
 - Pilot-scale interim storage facility, 2021
 - Consolidated interim storage facility, 2025
 - Geologic repository, 2048
- Separate repository for defense HLW and SNF
- SNF Working Group

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ACRONYMS

- DOE – Department of Energy
- EM – Office of Environmental Management
- GTRI – Global Threat Reduction Initiative
- HEU – Highly Enriched Uranium
- HLW – High-level Waste
- INL – Idaho National Laboratory
- LEU – Low Enriched Uranium
- NNSA – National Nuclear Security Administration
- NRU - National Research Universal
- NRX - National Research Experimental
- SNF - Spent Nuclear Fuel
- SRS – Savannah River Site

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Questions