



# *E<sub>M</sub> Environmental Management*

*safety ❖ performance ❖ cleanup ❖ closure*

## *Nuclear Waste Technical Review Board Meeting Status of DOE Spent Nuclear Fuel and High Level Waste*

**Gary DeLeon, Director**  
**Office of Nuclear Materials Disposition**  
**June 11, 2009**

# Topics Covered

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- High Level Waste (HLW) overview
- Spent Nuclear Fuel (SNF) overview
- Current plans



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# Location of High Level Waste

2008 inventory of HLW and the projected number of canisters for repository disposal.



Mgal – Million gallons  
Canisters – HLW Canisters for Disposal

Data Source: National Spent Nuclear Fuel Program



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# *Savannah River Site HLW Program*

- As of mid-May 2009: 2,710 canisters produced in the Defense Waste Processing Facility
  - Over 40% complete
  - Operations planned through 2030
  - Improvements under development to reduce number of canisters
- Canisters stored in Glass Waste Storage Buildings
- 37 million gallons remain to be treated
- Processing sludge batch 5 thru May 2010
  - Melter 2 – Operational since March 2003
  - Melter 3 – Ready as spare
  - Melter 4 – Under contract



# *Idaho National Laboratory HLW Program*

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- 4,400 m<sup>3</sup> of dry granular calcine stored in stainless steel tanks within six concrete shielded structures (known as bin sets)
  - Design life of several hundred years
  - Seventh bin set (contains six bins) is empty and serves as spare
- Yucca Mountain Project License Application assumes calcine would be treated by separations followed by vitrification
- DOE has regulatory obligations related to calcine
  - Amended Record of Decision on treatment of calcine to be issued by end of CY 2009
  - Resource Conservation and Recovery Act Part B Permit Application to be submitted to State of Idaho by December 2012
- Current interim storage poses no credible environmental risk

# Hanford HLW Program

- 53 million gallons of radioactive and hazardous mixed waste in 177 tanks await treatment



- Waste Treatment Plant under construction
- Planned operation 2019-2042
- Low activity waste will be separated, stabilized, and disposed on-site

- ~122 SNF canisters of Cs/Sr capsules
  - 58 million Ci
  - Disposition strategy under evaluation



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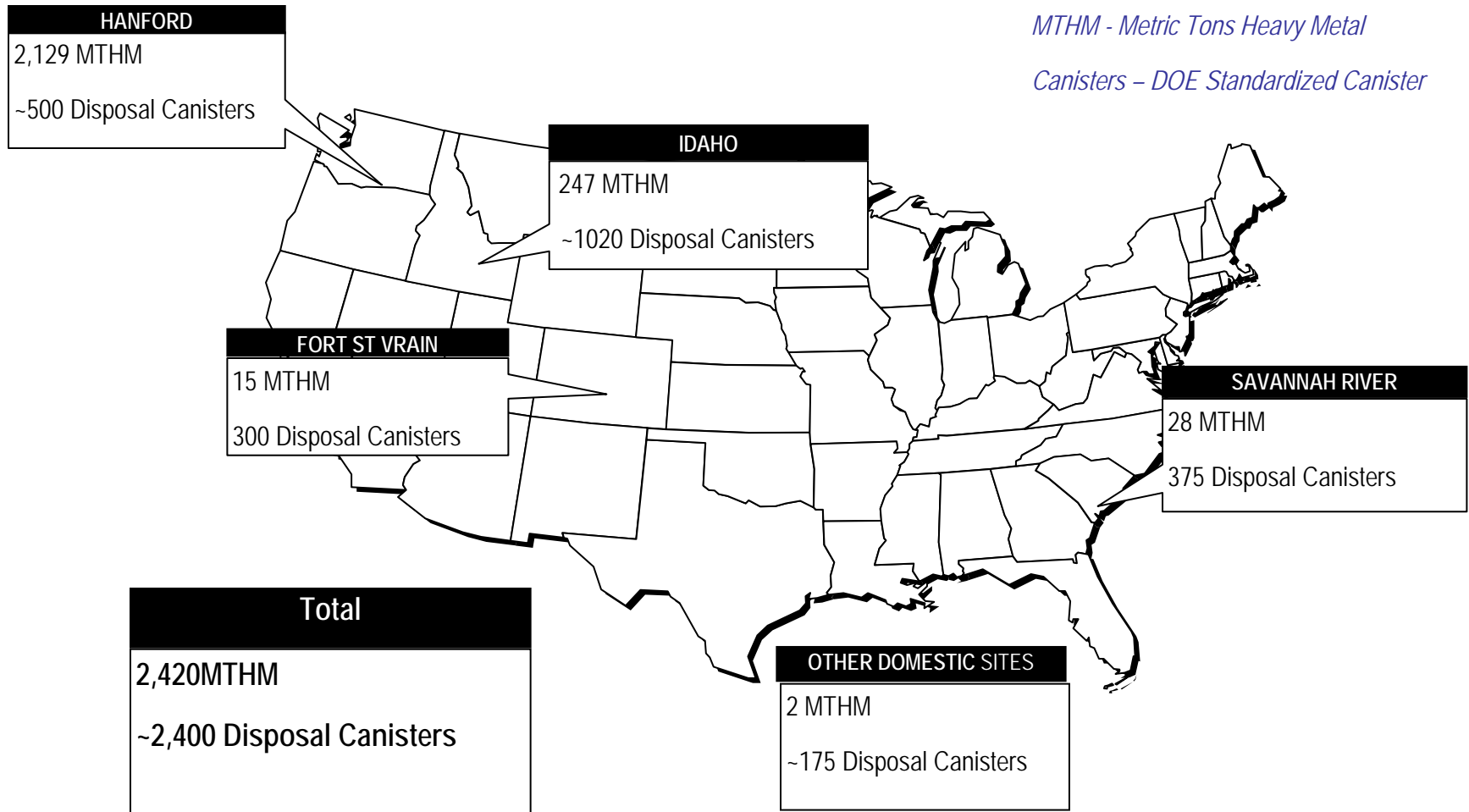
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# *West Valley HLW Program*

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- 275 canisters of commercial-origin HLW stored in on-site hot cell
  - Waste owned by the State of New York under West Valley Demonstration Act of 1980
  - EM provides maintenance and surveillance
  - EM is evaluating alternative on-site storage for HLW canisters; hot cell to be decommissioned

# Location of EM Spent Nuclear Fuel





# *Types of DOE SNF in Inventory*

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- DOE production reactors and research and development reactors
- Core debris from the Three-Mile Island reactor
- Commercial power demonstration projects (Shippingport, Peach Bottom and Fort St. Vrain)
- Domestic research reactors (DRR)
- Foreign research reactors (FRR)



# *Savannah River Site SNF Program*

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- Consolidated SNF in L-Basin
- Receive FRR and DRR through 2019
- Recycle aluminum-clad SNF
  - Reduce number of SNF canisters to manage
  - Use recovered uranium to generate electricity
- Plan to exchange SNF between Idaho National Laboratory and Savannah River Site
  - Achieve regional consolidation by fuel type
  - Eliminate need for packaging facility at SRS



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# Idaho National Laboratory SNF Program

- Move SNF from wet to dry storage
- Exchange SNF with SRS
- Receive FRR and DRR
- Design, construct and operate an NRC-licensed packaging facility
- Submit FSV NRC license renewal–November 2009
- Evaluate treatment options for sodium bonded SNF



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# Hanford SNF Program

- Completed transfer of all SNF from wet storage into ~400 Multi-Canister Over-packs (MCOs) or dry storage casks
- MCOs stored in Canister Storage Building (CSB)
- Other SNF in casks stored on pad in CSB complex
- Capability planned to repackage SNF (other than MCO) into standardized canisters and to load transportation casks



# *Path Forward*

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- “Blue Ribbon” Panel to investigate alternatives
- Develop appropriate strategies to support revised Departmental policy
- Minimal impact to EM on near-term SNF or HLW management
  - Continue to package, treat and store SNF and HLW consistent with repository License Application
  - Maintain current baselines
  - Continue efforts to develop more cost effective technologies for treatment and storage of HLW and SNF



# Summary

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- EM will continue to manage its SNF and HLW safely
- Implement current program strategy and comply with site-specific agreements
  - No significant near-term impacts to EM
- Plans will evolve to support outcome from “Blue Ribbon” Panel recommendations