EM Complex Waste Management Update

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Discussion Outline

- Waste Management Accomplishments and Priorities
- National TRU Program Update
- LLW/MLLW Disposal Update
- Other Programmatic Updates
FY13 Waste Management Accomplishments

- **WIPP:** Emplaced 5,065 cubic meters of TRU with 89 percent of shipments departed from TRU waste sites as planned
- **Los Alamos:** Met Framework Agreement goal for FY 13 ahead of schedule, disposing of over 1,800 cubic meters of legacy managed TRU waste
- **Oak Ridge:** Partnered with regulators to develop strategy for mercury cleanup efforts; continued TRU processing
- **SRS:** Completed remediation of all legacy TRU wastes; continued shipments to WIPP
- **Idaho:** Improved operations at the Advanced Mixed Waste Project; repurposed an existing facility for processing of sludge wastes; continued repackaging and shipment of remote handled TRU waste. Shipped 4,454 cubic meters of legacy managed TRU waste, including 2,139 cubic meters of TRU waste to WIPP
FY13 Waste Management Accomplishments

- **Portsmouth**: Reached full production rate of the DUF6 Conversion facility
- **Paducah**: 50,000 cubic feet of PCB debris from C-340 disposed offsite
- **Moab**: Shipped 695,071 tons of uranium residual radioactive material for disposal
- **WVDP**: Demolished Building 01-14 removing 34,000 cubic feet of LLW; initiated interim storage pad for HLW relocation
- **SPRU**: Completed construction of enclosures and ventilation systems; began sludge waste processing
- **Nevada**: Disposed 1.099 million cubic feet of LLW/MLLW (82 percent of FY 13 goal)
- **River Protection**: Developed and issued a Hanford Tank Waste Retrieval, Treatment and Disposition Framework
- **Richland**: Continued onsite disposal at ERDF to support site cleanup activities
FY 14 Waste Management Priorities/Goals

- **Idaho:** Start treatment of sodium bearing waste; continue CH and RH TRU projects; continue excavation of buried TRU waste;
- **Los Alamos:** Complete 3706 Campaign; work toward other Framework Agreement milestones
- **Carlsbad:** Continue optimized TRU program: LANL, INL, OR and SRS
- **Oak Ridge:** Resumption of TRU waste certification and shipments to WIPP
- **Office of River Protection:** Continue to work with State and regulators on Framework implementation
- **Portsmouth/Paducah:** Continue operation of DUF6 Conversion Plants; Issue Records of Decision regarding on-site disposal facilities
- **Savannah River:** Complete certification of legacy TRU waste and continue shipments; process and disposition non-MOXable plutonium
- **West Valley:** Disposition 3 large components (vitrification melter and two large associated vessels); continue prep for HLW relocation
Legacy TRU Waste Removed from 22 of 30 Sites
Shipments received at WIPP as of September 29, 2013: 11,664

Contact-handled: 10,955
Remote-handled: 709

89,104 cubic meters during 14 years of safe operations

Total Shipments Received by Calendar Year (Including intersite shipments)


CH TRU waste shipments only

CH and RH TRU waste shipments
WIPP Safety and Regulatory Compliance are Paramount

• Stellar safety record
  • Excellent worker safety
  • Star of Excellence for Voluntary Protection Program
  • Decades of national recognition for mine rescue teams
  • Highest level of recognition for environmental excellence from State of New Mexico

• Key Regulators
  • DOE - self regulation for nuclear safety and radioactive waste management
  • U.S. Environmental Protection Agency – Certification to Radioactive Waste Disposal Standards
  • New Mexico Environmental Department – Hazardous Waste Facility Permit
  • U.S. Nuclear Regulatory Commission – waste package certification
NNSS Accomplishments

• Continued soil and groundwater remediation activities -- including characterization and monitoring of underground nuclear test contamination, cleanup of above-ground industrial sites and surface soil contamination

• Continued to serve an important cleanup mission as regional disposal facility for DOE LLW/MLLW:
  
  • DOE sites forecasted disposal in FY 13 Forecast of 1,338,000 cubic feet, but actual disposal was 1,099,000 cubic feet (82%)
  
  • DOE sites are initially forecasting over 1.4 million cubic feet in FY 14
## Status of Disposal at Nevada National Security Site in FY 2013 & 2014 (cubic feet disposed)

<table>
<thead>
<tr>
<th>Generator Site</th>
<th>FY 2013 Forecast</th>
<th>FY 2013 Actual</th>
<th>FY 2014 Forecast</th>
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<tbody>
<tr>
<td>Portsmouth GDP (OH)</td>
<td>490,000</td>
<td>228,000</td>
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<td>Oak Ridge Reservation (TN)</td>
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<td>Oak Ridge NNSA/Y-12 (TN)</td>
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<td>Los Alamos National Lab (NM)</td>
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<td>Livermore Nat'l Lab (CA)</td>
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<td>Paducah GDP (KY)</td>
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<td>NNSA/Nuclear Fuel Services (TN)</td>
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<td>Onsite NNSS (NV)</td>
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<td>Savannah River (SC)</td>
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<td>9,000</td>
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<td>West Valley (NY)</td>
<td>6,000</td>
<td>43,000</td>
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<td>All other sites</td>
<td>45,000</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1,338,000</strong></td>
<td><strong>1,099,000</strong></td>
<td><strong>1,423,000</strong></td>
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DOE policy supports consideration of commercial disposition options in addition to DOE options, when compliant, cost effective, and in the best interest of the U.S. government

- **EnergySolutions (Clive, Utah)**
  - Accept Class A LLW and MLLW; 11e(2); NORM
  - Offers rail access, onsite treatment, and favorable bulk waste handling and disposal

- **Waste Control Specialists LLC (Andrews County, Texas)**
  - Multiple disposal facilities/licenses
    - Hazardous/exempt; 11e(2); NORM
    - Texas Compact Class A, B and C LLW – non-DOE waste
    - Federal Waste Facility Class A, B, and C LLW/MLLW – DOE waste
  - Offers onsite rail access, onsite treatment and storage capabilities
• EnergySolutions’ Clive facility continues to provide a key role in disposition of DOE generated LLW and MLLW

• Most DOE sites are certified waste generators

• Direct railcar access to Clive site allows DOE sites to ship direct or transload from truck at a nearby site

• WVDP disposed building 01-14 debris -- 34,000 cubic ft LLW

• Idaho/AMWTP disposed over 20,000 cubic ft MLLW

• Paducah disposed 50,000 cubic ft PCB debris
WCS’s Federal Waste Facility (FWF) provides an important, additional disposal alternative for DOE LLW and MLLW

LANL sent first shipment to the new WCS FWF – shipped over 1,100 cubic yards

- WCS option has contributed to our successful 3706 campaign for the wastes that were determined to not be TRU

SPRU processed tank sludge liners are being shipped

Nine DOE sites have approved programs to ship to WCS, and two more are in process
DOE updates its life-cycle LLW/MLLW forecasts annually. EM coordinates collection of DOE-wide data with other Program Offices – NNSA, SC, NE, and Naval Reactors

- This information publically available in the Waste Information Management System (WIMS) maintained by the Florida International University (FIU)
- FY 2013 forecasts are currently available at http://www.emvims.org/
- This data set reflects approved program baselines as late CY 12.
- FY 2014 data must be considered as preliminary, because the development of the FY 2014 Budget Request was delayed until early CY 13
- At the time this data set was updated, WCS Federal Facility had not yet begun operations
Complex-wide LLW/MLLW Disposal Forecasts Continue Downward Trend

This data pre-dates availability of WCS FWF
• Greater Than Class C (GTCC) LLW
  • Anticipate releasing final EIS in 2014, followed by submission of the required Report to Congress and will await Congressional direction

• Mercury Storage EIS
  • Mercury Export Ban Act (MEBA) banned export of elemental mercury as of Jan. 1, 2013. MEBA requires DOE to site and operate storage facility for mercury generated in US.
  • *Supplemental Environmental Impact Statement for Long Term Management and Storage of Elemental Mercury* evaluated additional locations near WIPP for storage facility (September 2013)
  • No change in Preferred Alternative (WCS site, Andrews, TX)
  • DOE has received seven notifications from private facilities that can store Hg as allowed under MEBA until DOE ready to receive mercury
• DOE continues to closely monitor ongoing regulatory changes by the NRC – including the 10 CFR Part 61 LLW Site Specific Analysis Rulemaking
  
  • DOE provided comments on the preliminary proposed rule language and regulatory analysis

• The Advisory Committee on Reactor Safeguards – Radiation Protection and Nuclear Materials Subcommittee has requested DOE participate in a workshop on DOE’s LLW waste management policy and approach to performance assessment and period of compliance
DOE Order 435.1, Radioactive Waste Management

• Proposed updates to Order 435.1 and associated guides are being reviewed by DOE General Counsel

• Major Proposed Changes
  • Consolidation of duplicate requirements into General Requirements
  • Addressing waste consolidation (blending) as a positive, even necessary, action
  • Alignment of 435.1 Waste Incidental to Reprocessing (WIR) evaluation with 3116 waste determination process
  • Increased description of requirement for WIR Citation determination
  • Development of Technical Standard capturing all requirements and authorities associated with authorizing LLW disposal facilities operations

• Next Steps:
  • Release for 60 day public review and comment period (mid-Winter) and hold two webinars for public meetings during comment period
  • Response to public comments (late Spring/early Summer)
  • Formal review and approval by DOE (Summer/Fall)
• EM continues to work with the Office of Nuclear Energy and the Secretary’s senior advisors on matters related to the Department’s action in response to the Blue Ribbon Commission on America’s Nuclear Future

  • As Secretary Moniz reported (in his testimony) to the Senate Energy and Natural Resources Committee, DOE has initiated studies to evaluate whether defense and commercial wastes should be “commingled” in a single repository

• DOE’s NNSA continues its efforts to complete NEPA analyses on release of clean metals from radiological areas
Hanford – 176M curies
Idaho – 37M curies
Savannah River Site – 379M curies
Hanford ~ 2130 mthm

Idaho ~ 280 mthm

Fort St. Vrain, CO ~ 15 mthm

Savannah River Site ~ 30 mthm
DOE TRU Waste Sites

Hanford Site  Idaho National Laboratory  Materials Fuels Complex  Argonne National Laboratory - East  West Valley Demonstration Project  Knolls Atomic Power Laboratory  Babcock & Wilcox NES  Bettis Atomic Power Laboratory  Savannah River Site  West Valley Demonstration Project  NRD, LLC

Los Alamos National Laboratory  Waste Isolation Pilot Plant  Oak Ridge National Laboratory  KAPL Nuclear Fuel Services  Savannah River Site  Four small CA sites

Shipments  11,689  Safe Loaded Miles  13,968,591  Total dispositioned to date  89,360 m³

As of October 27, 2013
EM Disposition Summaries

**Hanford:** ERDF, Mixed waste trenches; LLW burial ground; IDF (future)
- **LLW:** On site, including remediation wastes
- **MLLW:** On site (most); commercial (small volume sent offsite for treatment)
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** Plutonium shipped to other sites (complete)

**SRS:** E-Area facilities; saltstone vaults
- **LLW:** On site (most); some NNSS and commercial
- **MLLW:** NNSS and commercial
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** downblended Pu to WIPP; other Pu planned for MOX
**Idaho:** ICDF; RH vaults

- **LLW:** Remediation wastes on site ICDF; on site CH vaults (past); RH on site RH vaults; NNSS and commercial
- **MLLW:** NNSS and commercial; remediation wastes may remain onsite
- **TRU:** WIPP
- **HLW & SNF:** TBD
- **SNM:** EM owned shipped to other sites (complete)

⭐ AMWTP receives offsite TRU from select sites for processing and/or certification prior to shipment to WIPP (1 yr schedule limit)
**LANL:** Area G disposal facility

- **LLW:** NNSS and commercial; some NNSA LLW on site
- **MLLW:** NNSS and commercial
- **TRU:** WIPP

**NNSS:** Area 5 (active); Area 3 (standby)

- **LLW:** onsite
- **MLLW:** onsite
- **TRU:** WIPP (some via AMWTP) – complete

★ NNSS selected and operates as regional disposal for LLW/MLLLW
**Oak Ridge:** EMWF; new CERCLA cell (future)
- **LLW:** Onsite - remediation only; NNSS and commercial
- **MLLW:** Onsite - remediation only; NNSS and commercial
- **TRU:** WIPP
- **DUF6 cylinders:** Portsmouth (complete)

**Portsmouth:** On site CERCLA cell under evaluation
- **LLW:** NNSS and commercial
- **MLLW:** NNSS and commercial
- **DUF6 conversion product:** TBD – NNSS and commercial options anticipated
Paducah: On site CERCLA cell under evaluation
- **LLW:** NNSS and commercial
- **MLLW:** NNSS and commercial
- **DUF6 conversion product:** TBD – NNSS and commercial options anticipated

West Valley:
- **LLW:** NNSS and commercial
  - **LLW WIR components:** WCS
- **MLLW:** NNSS and commercial
- **TRU:** TBD, pending GTCC LLW EIS and Congressional decision
- **HLW:** NY owned; on site storage pending repository
- **SNF:** Idaho (complete)
EM Disposition Summaries

MOAB

- **Uranium tailings**: Crescent Junction disposal cell

Small Sites:

- If **CH TRU**: AMWTP and WIPP
- If **RH TRU**: WIPP
- **LLW**: commercial and NNSS
- **MLLW**: commercial and NNSS
In these budget constrained times, it is more important than ever that DOE – and more broadly, the US -- optimize its waste management system to ensure environmental cleanup can continue

- Continued integration and flexibility are critical
- Political and social influences are increasing
- Financial and economic factors present real constraints
- Pending and contemplated regulatory changes will also have impact

**The Path Forward....**

- Continue close consultation with and among stakeholders
- Ensure plans are risk informed
- Continue to encourage innovation and identification of new disposition options

In Closing...