Transportation in Environmental Cleanup

Ellen E. Edge
Office of Packaging and Transportation
Office of Environmental Management
Discussion Topics

- Background
- Environmental Management Cleanup and Transportation Activities
  - Updates by Site
  - LLW/MLLW Update
- Office of Packaging and Transportation Activities
- National Transportation Stakeholders Forum (NTSF)
- Discussion
Cleaning Up the Environmental Legacy of the Cold War

EM Historical Cleanup Sites (107)

Sites Remaining Today (16)

Hanford 300 Area, Pre-Cleanup

Hanford 300 Area, Post-Cleanup
EM is an operational federal program performing a wide variety of tasks to clean up the environmental legacy of the U.S. nuclear weapons complex:
Radioactive Tank Waste $2,297M / 39%
Facility D&D $835M / 14%
Soil and Groundwater $527M / 9%

Special Nuclear Materials and Used Nuclear Fuel** $967M / 17%
Transuranic & Solid Waste $779M / 13%
Site Services* $413M / 7%

*Includes Program Direction, Program Support, Technology Development & Deployment, Post Closure Administration and Community and Regulatory Support
**Includes Safeguards and Security

EM’s FY 2016 Budget Request - $5.818 Billion Total
Waste Disposition Updates by Site
• Contact-handled Transuranic waste
• K-25
• Mercury
• Paducah
  • Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)
• Portsmouth
  • X-326 process building
  • Record of Decision
• Depleted uranium hexafluoride (DUF6)
Reduced stored legacy CH-TRU
TRUPACT-III at Idaho Advanced Mixed Waste Treatment Project
Closed Tank 16
Halted production of high level waste canisters
Salt Waste Processing Facility
West Valley

- Planning underway to ship waste incidental to reprocessing wastes to disposal site
- High level waste storage pad completed
- Vertical storage casks and delivery of multi-purpose canister overpacks
- Deactivation of main plant continues
Radioactive Liquid Tank Waste

• Approximately 88 million gallons of liquid waste
• Approximately 4,000 cubic meters of solid waste derived from liquids
• Current DOE estimated cost exceeds $50 billion
• High level waste portion of tank waste must be treated, immobilized and prepared for shipment to a geologic waste repository
• Focus on improvement of pre-treatment
Liquid Tank Waste Sites

Integrated Waste Treatment Unit (ID)

Defense Waste Processing Facility (SC)

Waste Treatment and Immobilization Plant (WA)
Nuclear Materials and Spent Nuclear Fuel

- Oak Ridge, TN
- Richland, WA
- Paducah, KY and Portsmouth, OH
- Savannah River Site, SC
Low-Level Waste/Mixed Low-Level Waste Update
• Authority and responsibility for management of all DOE-generated waste under authority of the Atomic Energy Act, as amended

• Clear distinction between DOE and non-DOE waste in Low Level Waste Policy Amendments Act
• DOE Order 435.1, Radioactive Waste Management
• Current low level waste (LLW) disposal policy:
  • Exemption documentation
  • DOE on-site (~90% by volume), DOE off-site (~5% by volume), and commercial disposal (~5% by volume)
  • DOE generally does not use State compact facilities for disposal of LLW/mixed low level waste
DOE LLW/MLLW Disposal Rates by Location

Millions of Cubic Feet

- FY12 Actual: 32.53
- FY13 Actual: 19.16
- FY14 Actual: 22.99
- FY15: 11.18
- FY16: 2.79
- FY17: 3.32

- OnSite
- Commercial
- NNSS
- TBD
### FY15 NNSS Disposal

Forecasting supports operational planning and is updated quarterly.

<table>
<thead>
<tr>
<th>Generator Site</th>
<th>FY 2015 Actual (ft³)</th>
<th>*FY 2015 Actuals + Remaining Forecast (ft³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portsmouth GDP (OH)</td>
<td>543,827</td>
<td>627,918</td>
</tr>
<tr>
<td>Oak Ridge Reservation (TN)</td>
<td>126,540</td>
<td>164,507</td>
</tr>
<tr>
<td>Oak Ridge NNSA/Y-12 (TN)</td>
<td>118,422</td>
<td>130,672</td>
</tr>
<tr>
<td>Los Alamos National Lab (NM)</td>
<td>33,282</td>
<td>52,861</td>
</tr>
<tr>
<td>Idaho Site (ID)</td>
<td>125,916</td>
<td>138,122</td>
</tr>
<tr>
<td>Livermore Nat’l Lab (CA)</td>
<td>45,684</td>
<td>48,572</td>
</tr>
<tr>
<td>Paducah GDP (KY)</td>
<td>5,465</td>
<td>5,465</td>
</tr>
<tr>
<td>NNSA/Nuclear Fuel Services (TN)</td>
<td>39,506</td>
<td>47,001</td>
</tr>
<tr>
<td>Onsite NNSS (NV)</td>
<td>13,348</td>
<td>13,348</td>
</tr>
<tr>
<td>Savannah River (SC)</td>
<td>535</td>
<td>1,075</td>
</tr>
<tr>
<td>Berkeley</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>West Valley (NY)</td>
<td>9,078</td>
<td>9,078</td>
</tr>
<tr>
<td>All other sites</td>
<td>57,281</td>
<td>66,245</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,118,884</strong></td>
<td><strong>1,304,864</strong></td>
</tr>
</tbody>
</table>

*Actual volumes thru 8/23/15*
• EM updates DOE-wide life-cycle LLW/MLLW forecasts annually with input from other Program Offices – National Nuclear Security Administration, Office of Science, Office of Nuclear Energy, and Naval Reactors

• This information publicly available through Waste Information Management System (WIMS) maintained by the Florida International University, http://www.emwims.org/
Office of Packaging and Transportation Activities
FY15 EM Shipments

Total number of Shipments = 16,897
OPT Programs and Activities

Packaging Certification
- Certificates of Compliance
- DOE Exemptions
- DOT Special Permits
- Quality Assurance
- RAMPAC

Emergency Preparedness & Outreach
- TEPP
- NTSF
- State Regional Groups
- Tribes
- Prospective Shipment Report
- Fact Sheets

Regulations & Standards Support
- Domestic Federal Agencies
- International Community
- Nongovernmental Organizations
- DOE Orders, Policy, Guidance

Transportation Risk Reduction
- Motor Carrier Evaluations
- Physical Protection
- Transportation Compliance Reviews
- Safety Metrics

Program & Site Support
- DOE/Contractor Interfaces
- TMC
- PMC
- EFCOG
- Tender Negotiations
- Automated Systems
Transportation Emergency Preparedness Program

• Since 2005, TEPP has trained over 20,000 responders
• TEPP has conducted over 30 full scale exercises and drills
• Translation of MERRTT curriculum into Spanish

TEPP is a national level program for providing radiological transportation emergency preparedness activities and addressing emergency response concerns of state, tribal and local officials affected by the Department’s radiological shipments.
National Transportation Stakeholders Forum (NTSF)
• **Purpose**
  • Engage at national level with States, Tribes, Federal agencies
  • Work through existing agreements and networks to ensure Federal, state, and tribal government participation

• **Goals and Objectives**
  • Information exchange
  • Input from States and Tribes about concerns, needs, or logistics
  • Emerging issues for DOE and its transportation stakeholders
NTSF Charter and Organization

- DOE chair
- Planning Committee
- Ad hoc working groups
- Membership
- Other stakeholders
Communication with External Stakeholders

- NTSF
  - NTSF Annual Meeting
  - Working groups
  - NTSF newsletter
  - Webinars

- Other communication mechanisms
  - State Regional Groups and Tribes
  - ASKPAT/public website
  - Waste Information Management System (WIMS)
  - Prospective Shipment Report

NTSF Annual Meeting 2012 – Oak Ridge tour

NTSF Annual Meeting 2010 – Chicago
Wrap Up
Summary of Principles

- Disposition of radioactive material and sources ultimately requires safe, secure, and compliant packaging and transport operations
- DOE maintains excellent performance record for safely, securely, and efficiently transporting materials
- Continued support for domestic and international safety and security efforts
• Through partnership with regulators, tribes, stakeholders and industry, we have ability to further clean up mission while mitigating impacts to environment and communities
DOE Contacts

Michael E. Wangler  Ellen E. Edge
Chair TEPP Program Manager
National Transportation Stakeholders Forum Office of Packaging and Transportation
EM-33/FORS 5B-171 EM-33/CLV 2065
1000 Independence Avenue, S.W. 1000 Independence Avenue, S.W.
Washington, DC 20585 Washington, DC 20585
Phone: 202-586-7976 Phone: 301-903-8327
Email: mike.wangler@em.doe.gov Email: ellen.edge@em.doe.gov
Backup Slides
• Completed targeted exhumation at 3.8 out of total 5.69 acres at Subsurface Disposal Area
  • Exhumations ongoing at Accelerated Retrieval Project (ARP) VIII enclosure
  • Initiated design and foundation construction for ARP IX enclosure (final enclosure)
• Continuing processing of stored legacy TRU waste at Advanced Mixed Waste Treatment Plant (AMWTP)
  • ~700 contact-handled TRU shipments certified for WIPP
  • Started retrieving waste from Pad 1 Cell 1, final cell with waste containers.
  • Completed retrieval of all waste from Pad 1 Cell 2
• Continuing start-up testing of Integrated Waste Treatment Unit for treatment of sodium bearing radioactive waste
• Responding to the AIB report
  • Phase 1 Report issued April 22, 2014 on how the radiological material was released into atmosphere
  • Phase 2 Report issued April 16, 2015; included 24 conclusions and 40 judgments of need (JONs)

• Current priorities
  • Safe storage of nitrate salt waste stream
  • Re-process improperly treated nitrate salts
  • Resumption of processing and re-packing TRU waste
  • Continue LLW/MLLW disposition
Moab

- FY15 to date, shipped over 522,000 tons of uranium mill tailings (cumulatively almost 7.7 million tons) from Moab to engineered disposal cell near Crescent Junction, Utah
- FY15 to date, extracted 9.7 million gallons of contaminated ground water and cumulatively 226.4 million gallons to date
- In response to major rockslide at Moab site rail bench last fall, installed radar monitoring unit, temporary barrier separating truck traffic from the hillside, and implemented safe work controls
• 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

• Nevada National Security Site (NNSS) continues to serve important cleanup mission as disposal facility for DOE LLW/MLLW

• Continuing working group discussions with State of Nevada on unique waste streams
Transportation Safety Activities

- Motor Carrier Evaluation Program (MCEP)
- Transportation Safety and Operations Compliance Assurance Program (TCAP)
- Transport security and physical protection
- RADTRAN
Packaging Support to Field Sites

- Department-wide program providing for certification of fissile and Type B packaging
  - Review and approval of packaging designs and issuance of DOE Certificates of Compliance
  - Curtail and/or suspend use of specific packages when warranted
  - Review and approve quality assurance programs for Type B and fissile radioactive material packaging activities
- Radioactive Material Packaging (RAMPAC), all-in-one source for information on shipping containers for radioactive materials (http://rampac.energy.gov/)
- Initiation of security training course
Emergency Preparedness & Outreach

Emergency Planning

- TEPP – Transportation Emergency Preparedness Program
- NTSF – National Transportation Stakeholders Forum
- State Regional Groups
- Tribes
- Prospective Shipment Report
- Fact Sheets
Since 2005, TEPP has trained over 20,000 responders
More than 30 full scale exercises and drills
Translation of MERRTT curriculum into Spanish

TEPP is a national level program for providing radiological transportation emergency preparedness activities and addressing emergency response concerns of state, tribal and local officials affected by the Department’s radiological shipments.
Policy, Guidance, and Direction

- Department-wide responsibility for three transportation Directives
  - DOE O 460.1C: Packaging and Transportation Safety - under review
  - DOE O 460.2A: Departmental Materials Transportation and Packaging Management - under review
  - DOE M 460.2-1A: Radioactive Material Transportation Practices Manual - under review

- Developing new Order, 460.3: Physical Protection of Unclassified Irradiated Fuel in Transit - under development
Program & Site Support

- DOE/Contractor Interfaces
  - TMC – Transportation Management Council
  - PMC – Packaging Management Council
  - EFCOG – Energy Facility Contractor Group

- Tender Negotiations

- Automated Systems
  - ATLAS
  - RADCALC
Transport security training

• Target Audience – Individuals responsible for security of nuclear and other radioactive material during transport.
• Objectives
  • Development and implementation of security plans
  • Assessment of readiness of transport system
  • Actionable security measures
• Content
  • Information on US-specific requirements for transport
  • Insight into international requirements
  • Activities – presentations, discussions, hands-on exercises
  • ARG-US system training
• Next Course: http://rampac.energy.gov/education/training/default.aspx
• Tools
  • WebTRAGIS – route planning,
  • ARG-US – package/conveyance tracking,
  • RADTRAN – risk analysis
• Integration of the tools
  • Enhanced tracking of shipments and contents
  • Prompt rerouting based on developing threats
  • Near real-time evaluation of the consequences of threat
• Outcomes
  • Enhanced security of DOE shipments
  • Improved supply chain security during transport