Transportation in Environmental Cleanup

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Office of Packaging and Transportation
Office of Environmental Management
Southern States Energy Board
Joint Meeting of the Radioactive Materials Transportation Committee
and the Transuranic Waste Transportation Working Group
December 7, 2016
Discussion Topics

- Environmental Management Cleanup
  - Site Information
  - Waste Stream Information
  - Transportation Activities
- Off-Site Source Recovery
- Greater-Than-Class C (GTCC) Low-Level Radioactive Waste
- Reorganization of the Office of Environmental Management
  - New Structure
- Update on the Office of Packaging and Transportation
  - Mission
  - Core Values
  - Activities
Environmental Management Cleanup
• 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
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:
EM’s FY 2017 Budget Request - $6.119 Billion Total

- **Radioactive Tank Waste**: $2,410M (40%)
- **Facility D&D**: $873M (14%)
- **Site Services**: $732M (12%)
- **Special Nuclear Materials & Used Nuclear Fuel**: $873M (14%)
- **Transuranic & Solid Waste**: $773M (13%)
- **Soil & Groundwater**: $445M (7%)

* Includes Safeguards and Security

** Includes Program Direction, Program Support, Mission Innovation and Technology, Post Closure Administration, Community and Regulatory Support, and $104M of GPP and Maintenance & Repair Activities.
• EM has reduced its footprint by 90% to less than 300 square miles
• 16 sites in 11 states with remaining cleanup activities
Oak Ridge

- Contact-handled Transuranic waste
- K-25 Demolition
- Mercury Cleanup
- CH-TRU processing activities
Savannah River

Defense Waste Processing Facility (SC)

Salt Waste Processing Facility
EM Nuclear Materials and Spent Nuclear Fuel

- Idaho National Laboratory
- Oak Ridge, TN
- Richland, WA
- Savannah River Site, SC
Complex-wide LLW/Mixed LLW Disposal Volumes by Location

<table>
<thead>
<tr>
<th>Location</th>
<th>FY13 Actual</th>
<th>FY14 Actual</th>
<th>FY15 Actual</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnSite</td>
<td>19.16</td>
<td>22.99</td>
<td>16.67</td>
<td>12.25</td>
<td>3.56</td>
<td>14.48</td>
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<tr>
<td>Commercial</td>
<td>0.92</td>
<td>0.56</td>
<td>0.58</td>
<td>1.78</td>
<td>0.72</td>
<td>0.24</td>
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<tr>
<td>NNSS</td>
<td>0.10</td>
<td>1.34</td>
<td>1.32</td>
<td>1.07</td>
<td>1.04</td>
<td>0.01</td>
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<tr>
<td>TBD</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
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</tr>
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</table>

Units: Millions of Cubic Feet
• DOE policy supports commercial disposition options.
• EnergySolutions (Clive, Utah)
  • Accepts 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
• NNSS -- Waste meeting the NNSS waste acceptance criteria
## FY16 NNSS Disposal

<table>
<thead>
<tr>
<th>Generator Site</th>
<th>FY 2016 Volume (m³)</th>
<th>FY 2016 Shipments</th>
<th>FY 2016 Packages</th>
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<tr>
<td>AMWTP</td>
<td>1,166.97</td>
<td>59</td>
<td>275</td>
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<tr>
<td>Y-12</td>
<td>3,622.82</td>
<td>104</td>
<td>1610</td>
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<tr>
<td>Idaho National Laboratory</td>
<td>1,196.87</td>
<td>66</td>
<td>348</td>
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<tr>
<td>LANL</td>
<td>1,364.20</td>
<td>41</td>
<td>260</td>
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<tr>
<td>Materials &amp; Energy Corporation Perma-Fix</td>
<td>4,067.70</td>
<td>172</td>
<td>614</td>
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<tr>
<td>Oak Ridge Reservation</td>
<td>6,775.41</td>
<td>241</td>
<td>1369</td>
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<tr>
<td>Portsmouth GDP</td>
<td>7,267.21</td>
<td>285</td>
<td>2601</td>
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<tr>
<td>Battelle Energy Alliance</td>
<td>900.37</td>
<td>35</td>
<td>136</td>
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<tr>
<td>Navarro</td>
<td>675.42</td>
<td>25</td>
<td>77</td>
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<td>LLNL</td>
<td>524.24</td>
<td>9</td>
<td>179</td>
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<tr>
<td>Nuclear Fuel Services</td>
<td>511.56</td>
<td>25</td>
<td>707</td>
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<tr>
<td>UT-Battelle /Oak Ridge NL</td>
<td>314.68</td>
<td>15</td>
<td>81</td>
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<tr>
<td>All Other Sites</td>
<td>1,229.06</td>
<td>77</td>
<td>458</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>29,616.52</strong></td>
<td><strong>1154</strong></td>
<td><strong>8715</strong></td>
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</table>
• 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/
DOE HAZMAT SHIPMENTS BY PROGRAM

- EM, 91%
- NE, 3%
- SC, 1%
- NNSA, 5%

Total shipments = 18642
Total number of Shipments = 16,897
Historical EM Shipments

<table>
<thead>
<tr>
<th>Year</th>
<th>Shipments</th>
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<tbody>
<tr>
<td>2004</td>
<td>22,931.00</td>
</tr>
<tr>
<td>2005</td>
<td>24,393.00</td>
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<tr>
<td>2006</td>
<td>17,393.00</td>
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<td>2007</td>
<td>7,802.00</td>
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<td>2008</td>
<td>8,604.00</td>
</tr>
<tr>
<td>2009</td>
<td>6,687.00</td>
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<tr>
<td>2010</td>
<td>18,774.00</td>
</tr>
<tr>
<td>2011</td>
<td>18,231.00</td>
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<tr>
<td>2012</td>
<td>9,586.00</td>
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<td>2013</td>
<td>7,642.00</td>
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<tr>
<td>2014</td>
<td>9,060.00</td>
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<tr>
<td>2015</td>
<td>16,897.00</td>
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Route Map

Watch this space.
Off-Site Source Recovery
ORS Off-Site Source Recovery Program

Mission:

The Office of Radiological Security (ORS) removes to secure storage and disposes of disused radiological sealed sources that present a potential risk to national security, public health, and safety. Additionally, OSRP support ORS in the repatriation of US origin sources from International partner countries.
OSRP Background

- Formally started in 1999 at Los Alamos National Laboratory as part of DOE-Environmental Management
- Manages ten primary isotopes, including: Am-241, Cf-252, Cm-244, Co-60, Cs-137, Ir-192, Pu-238, Pu-239, Ra-226, and Sr-90
- Other sealed sources may be managed as needed.
- Now the program is managed within NNSA Global Material Security as part of Office of Radiological Security
- OSRP is operated out of several ORS supported National Laboratories.
Current OSRP Mission

• Although secure storage is a temporary measure, the longer sources remain disused or unwanted, the greater the chances increase that they will become unsecured or abandoned. Thus, permanent disposal is essential.

• To carry out its mission, ORS OSRP has the authority to acquire disused sealed sources.

• OSRP primarily recovers Am-241, Cs-137, Co-60, Pu-238, Pu-239:
  • Different Types of Recoveries – Transuranics, Low-activity (<4.8 TBq) beta/gamma sources without commercial disposal, High-activity beta gamma devices

• Additionally, ORS partners with the Conference of Radiation Control Program Directors (CRCPD) on the Source Collection and Threat Reduction (SCATR) project, which works with state regulators and licensees to round up sources with commercial disposal pathways.
Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste
Status on GTCC LLRW & GTCC-Like Waste Disposal

- February 2016, DOE published the *Final Environmental Impact Statement for the Disposal of Greater-Than-Class C (GTCC) Low-Level Radioactive Waste and GTCC-Like Waste*
  - GTCC LLW has radionuclide concentrations that exceed 10 CFR Part 61 limits for Class C LLW.
  - GTCC LLW currently does not have a defined disposal path.
  - GTCC-like waste is DOE owned or generated LLW or TRU waste with characteristics similar to GTCC LLW, and with no identified disposal path.
  - Preferred alternative: land disposal at generic commercial facilities and/or WIPP Geologic Repository.
  - The Final EIS the potential to enable disposal of the entire GTCC LLW and GTCC-like waste inventory of approximately 12,000 cubic meters (m³).
  - Presently there is no preference among the three land disposal technologies (intermediate-depth borehole, enhanced near-surface trench, and above-grade vault) at generic commercial facilities.
- In accordance with the Energy Policy Act of 2005, before the Secretary of Energy makes a final decision on the disposal alternative(s) to be implemented, a Report to Congress must be submitted.
GTCC LLRW refers to LLRW that --
- Has radionuclide concentrations that exceed the limits for Class C LLRW given in 10 CFR 61.55,
- Is generated by activities of NRC and Agreement State licensees,
- Cannot be disposed of in currently licensed commercial LLRW disposal facilities and
- Is the responsibility of the federal government for the disposal.

GTCC-like waste refers to radioactive waste that --
- Is owned or generated by DOE,
- Has characteristics sufficiently similar to those of GTCC LLRW such that a common disposal approach may be appropriate and
- Consists of LLRW and non-defense-generated TRU waste that has no identified path for disposal at the present time.

The use of the term “GTCC-like” is not intended to and does not create a new DOE classification of radioactive waste.

Status on GTCC LLW & GTCC-Like Waste Disposal Actions

The Report to Congress will:

• Describe alternatives under consideration
• Identify waste volume, concentration, and other relevant characteristics
• Identify the Federal and non-Federal options for disposal
• Describe actions to ensure safe disposal of identified radioactive wastes
• Describe projected costs
• Identify options for ensuring that the beneficiaries of the activities resulting from the generation of GTCC waste bear all reasonable costs of disposing of such wastes
• Identify statutory authority required for disposal of GTCC waste
EM Reorganization
Update on the Office of Packaging and Transportation
Our mission is to provide guidance, tools, and support for DOE programs and contractors in order to assure safe, compliant, reliable, and efficient transportation of the Department's hazardous and nonhazardous materials.
Core Values

- Safety
- Service
- Compliance
- Security
- Efficiency
OPT Programs and Activities

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

Outreach and Emergency Preparedness
- NTSF
- State Regional Groups
- Tribes
- TEPP
- 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
Summary

- 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
- DOE continues to support 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.
Contact for Additional Information

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Additional Information
Packaging Certification Portfolio

**DOE Packaging Certification Program**

- Performs six major functions
- In FY-16, work-in-progress-20 packaging dockets
  - 20 dockets open at start of FY
  - 49 dockets closed
  - 46 new dockets opened
  - 9 QA dockets approved
- 17 dockets open at start of FY-17
National Transportation Stakeholders Forum

• National Transportation Stakeholders Forum (NTSF)
• Transportation Emergency Planning and Preparedness

<table>
<thead>
<tr>
<th>Region</th>
<th>Classes</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>67</td>
<td>716</td>
</tr>
<tr>
<td>South</td>
<td>145</td>
<td>1972</td>
</tr>
<tr>
<td>Midwest</td>
<td>4</td>
<td>59</td>
</tr>
<tr>
<td>Northeast</td>
<td>15</td>
<td>185</td>
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Department-wide responsibility for –
• Developing and maintaining three transportation Orders
  • 460.1D -- Packaging and Transportation Safety
  • 460.2B -- Departmental Materials Transportation and Packaging Management
• DOE-HDBK-XXX-201X: “Freight Container Handbook
Defense in Depth for P&T Activities

- Motor Carrier Evaluation Program (MCEP)
- Transportation Safety and Operations Compliance Assurance Program (TCAP)

Transportation Risk Reduction
Operational Tools and Assistance

- Packaging Management and Transportation Management Councils
- EFCOG
- Coordination & Communication Across the Complex
- Automated Tools
  - ATLAS
  - RADCALC
  - RADTRAN
  - WebTRAGIS