Transportation in Environmental Cleanup

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Southern States Energy Board
Joint Meeting of the Radioactive Materials Transportation Committee and the Transuranic Waste Transportation Working Group

10-11 December 2013
Discussion items

- Environmental management cleanup activities
  - Environmental cleanup as a key DOE Strategic Goal
  - Shipments supporting cleanup
  - Special projects – Canadian HEU and CEUSP activities
  - GTCC EIS

- Environmental management transportation activities
  - Packaging Certification
  - Emergency Preparedness & Outreach
  - Regulations & Standards Support
  - Transportation Risk Reduction
  - Program & Site Support
• Ella McNeil will be retiring on 3 January 2014.
• She has over 42 years of public service, the majority of which has been in DOE transportation.
• Her expertise and experience is irreplaceable.
• We do not yet know who will be managing her products.
Environmental Management
Cleanup Activities
The mission of the DOE Office of Environmental Management (EM) is to complete the safe cleanup of the environmental legacy brought about from five decades of nuclear weapons development and government-sponsored nuclear energy research.

EM’s work supports DOE Strategic Goal #3: “Enhance nuclear security through defense, nonproliferation, and environmental efforts.”

Hanford B Reactor during World War II
1989: Start of EM Cleanup
110 sites*
35 states
3,125 sq. miles

End of 2012
17 sites
11 states
318 sq. miles

- The program’s toughest challenges are still ahead, including processing liquid tank waste and deactivating and decommissioning a large number of facilities.
- These challenges require innovative technical solutions and scientific approaches to packaging and transportation.
Shipments from West Valley to Idaho

Casks on rail cars

At sunset
Waste Isolation Pilot Plant (WIPP) provides a national asset for safe disposal of TRU

- As of April 8, 2013, 326 shipments of TRU waste to WIPP were completed, resulting in 2,145 m$^3$ of TRU disposed so far in FY 2013.
- Since 1999, there have been 11,189 shipments and 85,933 m$^3$ of waste disposed.
Legacy Waste Cleaned up at 22 of 30 Sites
The WIPP Transportation System: Safest shipping containers on the road

Nuclear Regulatory Commission certified Shipping containers

“…The [WIPP transportation] system is safer than that employed for any other hazardous material in the U.S.…”

National Academy of Sciences, WIPP Panel

Approximately 12000 shipments to date
Some legacy LLW/MLLW inventories have been eliminated.

- Remaining legacy LLW streams are relatively small volumes. There potential challenges for the use of package alternatives and configurations.

- Majority of LLW/MLLW is mainly generated from ongoing decontamination and decommissioning and environmental restoration or ongoing missions.

- Shipments are made by rail and road.

- Coordination with our stakeholders is essential to our success.
1000th Waste Shipment from Los Alamos

22 October 2012
Forecast Complex-wide LLW/MLLW Disposal

- **Forecast**
- **Complex-wide**
- **LLW/MLLW Disposal**

![Bar Chart](chart.png)

- **OnSite**
- **Commercial**
- **NNSS**
- **TBD**

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<th>(millions of cubic feet)</th>
<th>FY11 Actual</th>
<th>FY12 Actual</th>
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EM: A National Responsibility

- Time is not on our side – costs and risks increase over time.

- We have a responsibility to relieve future generations of this environmental and financial liability.

- We have delivered significant cleanup progress in the past several years.

K-25 East Wing Demolition at Oak Ridge, TN
Only 6 of 54 units remain
• Uranium-233 (U-233) material created from the irradiation of highly enriched uranium (HEU)-thorium fuel in the Indian Point Reactor Unit I.

• Used nuclear fuel was reprocessed with the U-233 shipped to Oak Ridge National Laboratory in 1969.

• There are approximately 403 cans of this material that were planned to be disposed at the Nevada Nuclear Security Site low level waste disposal facilities.
Canadian HEU

• Materials: Highly enriched uranium (HEU) in liquid form.
• Outreach:
  – Extensive outreach with the Northeast and Southern regions and the Tribes.
  – Additional training by the Transportation Emergency Preparedness Program (TEPP) on emergency response in those areas, especially among the Tribes.
• Proposed routes:
  – NRC approved.
  – Buffalo, NY -- would go through some Tribal lands in Canada and through some heavily populated areas in Canada.
  – East of Buffalo – would go through a number of Native American lands on the U.S. side and moves through more heavily populated American regions.
In accordance with Section 631 of the Energy Policy Act of 2005 & Section (3)(b)(1)(D) of Low-Level Radioactive Waste Policy Amendments Act, the Report to Congress will:

- Propose actions to ensure safe disposal of such identified radioactive wastes
- Describe alternatives under consideration
- Identify the Federal and non-Federal options for disposal
- 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
Environmental Management
Transportation Activities
EM-33 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

www.energy.gov/EM
Packaging Support to Field Sites

• Department-wide program that provides for the certification of fissile and Type B packagings.
  – Review and approval of packaging designs and Issuance of DOE Certificates of Compliance
  – Curtail and/or suspends he use of specific packages, when warranted
  – Review and approval of quality assurance programs for Type B and fissile radioactive material packaging activities

• Radioactive Material Packaging (RAMPAC), the all-in-one source for information on shipping containers for radioactive materials (http://rampac.energy.gov/)

• Initiation of security training course.
Emergency Preparedness & Outreach

- TEPP – Transportation Emergency Preparedness Program
- NTSF – National Transportation Stakeholders Forum
- State Regional Groups
- Tribes
- Prospective Shipment Report
- Fact Sheets
• Department-wide responsibility for three transportation Directives
  – DOE O 460.1C: Packaging and Transportation Safety
  – DOE O 460.2A: Departmental Materials Transportation and Packaging Management

• Developing a new Order, 460.3: Physical Protection of Unclassified Irradiated Fuel in Transit
• Manuals are being eliminated from Directives System

• Requirements from Manual will be incorporated into revision of DOE Order 460.2, Departmental Materials Transportation and Packaging Management
  – Remaining information will from Manual will be placed in the DOE Guide 460.2

• An NTSF working group will be established to assist in the revision process.
• New requirements: physical protection of nuclear material in transport
  – Replaces expired, obsolete Order.
  – Updates old requirements for compatibility with 10 CFR Part 73.
• New requirements: physical protection of radioactive materials and sources in transport
  – Addresses concerns about theft and sabotage.
  –Uses a graded approach for implementation of protective measures.
  – Implements the requirements of 49 CFR Subpart I--Safety and Security Plans.
Defense in Depth for P&T Activities

- Motor Carrier Evaluation Program (MCEP)
- Transportation Safety and Operations Compliance Assurance Program (TCAP)
- Transport security and physical protection
• Motor Carrier Evaluation Program (MCEP)
  – Since 1989, played a vital role in maintaining DOE’s excellent transportation safety record.
  – Provides a framework for selection of responsible, effective, and efficient motor carriers.

• Transportation Safety and Operations Compliance Assurance Program (TCAP)
  – Systematic approach for evaluating and improving packaging and transportation regulatory and DOE policy compliance.
  – Assist all DOE packaging and transportation operations with compliance with applicable requirements.
Co Leads the Transport Security Subgroup of the NRC’s Radiation Source Protection and Security Task Force

- Is reviewing governmental actions in security of transport of sources since 2005 Congressional mandate.

Actively participates in the Nuclear Government Coordinating Council (NGCC)

- Is addressing the definitions of transportation for governmental needs and international and/or multilateral agreements.
- Is discussing transit and transshipments, such as overflights, port calls with/without offloading, shipments via international waters and shipments crossing territorial waters.
Program & Site Support

Support

- DOE/Contractor Interfaces
  - TMC – Transportation Management Council
  - PMC – Packaging Management Council
  - EFCOG – Energy Facility Contractor Group
- Tender Negotiations
- Automated Systems
Summary of Principles

• From cradle to grave, the manufacturing, use and disposition of nuclear and other radioactive material and sources ultimately requires safe, secure and compliant packaging and transport operations.

• DOE has and excellent performance record for safely, securely and efficiently transporting our materials.

• Plan to continue our support for international safety and security efforts.
• Summary of EM activities
• Summary of certain Office of Packaging and Transportation activities
• Collaborates with NE and NNSA to ensure and consistent, compliant approach to moving DOE materials, substances and wastes safely and securely
• Commitment to working with State Regional Groups and Tribes related to packaging and transportation issues.