

Waste Disposition Update



**EM Site-Specific Advisory Board Chairs Meeting
Santa Fe, New Mexico
September 15, 2010**

*Frank Marcinowski
Deputy Assistant Secretary
for Technical and Regulatory Support
Office of Environmental Management*



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Outline

- EM radioactive waste management system, policy and priorities
- DOE Order 435.1
- Programmatic updates and challenges
 - LLW/MLLW disposition
 - TRU waste acceleration and progress
 - High level waste and used fuel management
 - GTCC EIS
 - Mercury management EIS

Brief history of DOE's current waste management system

- EM established in 1989 to address the legacy contamination from DOE defense and research missions
- **Federal Facility Compliance Act (FFCAct) enacted in 1992**
- **DNFSB issued recommendation 94-2, calling for safety improvements to DOE low-level waste (LLW) facilities and program**
- **Site Treatment Plans issued, per FFCAct, to address treatment and disposition of legacy stores of mixed low-level wastes (MLLW)**
- DOE conducted complex-wide review of waste management practices in 1996, in response to Rec. 94-2
- Waste Management Programmatic EIS (PEIS) published in 1997
- DOE Order 435.1, *Radioactive Waste Management*, issued in 1999
- DOE's "Commercial Disposal Policy Analysis for Low Level and Mixed Low Level Wastes" published in 1999
- PEIS Records of Decision issued in 2000

DOE Order 435.1, Radioactive Waste Management

- DOE Order 435.1 was issued in 1999
- Update planned to address multiple purposes
 - Incorporate lessons learned
 - Institutionalize informal guidance documents
 - Address changes in relevant statutes, regulations, and standards
 - Account for advances in technology
 - Address new and emerging DOE needs
- Progress to date
 - Completed Complex-Wide Reviews in July 2010 to assess waste management activities and to support the update
 - Reviewed all DOE/NNSA sites that manage radioactive waste
 - Identified 69 Best Practices and 134 Areas for Improvement
 - Teams are in the process of drafting new order
 - Draft Order expected to be released for public comment in late 2011

DOE's Radioactive Waste Management Priorities

- Continue to manage waste inventories in a safe and compliant manner
- Address high risk waste in a cost-effective manner
- Maintain and optimize current disposal capability for future generations
- Develop future disposal capacity in a complex environment
- Promote the development of treatment and disposal alternatives in the commercial sector
- Review current policies and directives
- Provide needed oversight



Workers install a geosynthetic liner during the construction of Cell 5 at Oak Ridge



Highlights on LLW/MLLW Disposition Efforts

- *American Recovery and Reinvestment Act* providing needed funding for solid waste disposition, soil and groundwater remediation, and facility decontamination and decommissioning projects
 - Increased volumes of LLW/MLLW are expected in next few years
- Pending EM cleanup and operations contracts include significant waste management scope
- To ensure disposal plans are optimized, EM provided enhanced guidance to sites to ensure all disposal alternatives are evaluated

Recent developments and changes...

- Toxic Substances Control Act Incinerator at Oak Ridge is in the midst of closure
 - DOE relying on commercial treatment alternatives
 - New complex-wide treatment contract(s) were awarded in July 2010
- Additional disposal alternatives are being sought
 - On site cells, NTS mixed waste cell, WCS federal disposal facility in Texas
 - Texas and WCS reached an agreement that allows low-level waste to be stored at the site for up to 3 years.



Highlights on LLW/MLLW Disposition Efforts

- Continued use of onsite disposal at large cleanup sites
- Continued optimized operations of DOE disposal facilities, especially for those wastes that cannot be disposed at commercial facilities
 - Nevada National Security Site (NNSS) [Formerly Nevada Test Site] operates as regional LLW and MLLW disposal facility
 - New site-wide EIS under development which will analyze continued use of NNSS as regional disposal facility
- Current Mixed Waste Disposal Unit at NNSS closes November 2010
 - State of Nevada approved new mixed waste disposal cell in July 2010
 - Construction initiated in August 2010 and is proceeding ahead of schedule
 - Operation scheduled 2nd quarter of FY 2011
 - RCRA storage permit under development
- Waste Control Specialists (WCS) received final license approval for commercial (Compact limited) and Federal LLW disposal facilities
 - DOE entered into agreement with TCEQ regarding coordination on Fed Facility and provided WCS written commitment regarding future ownership

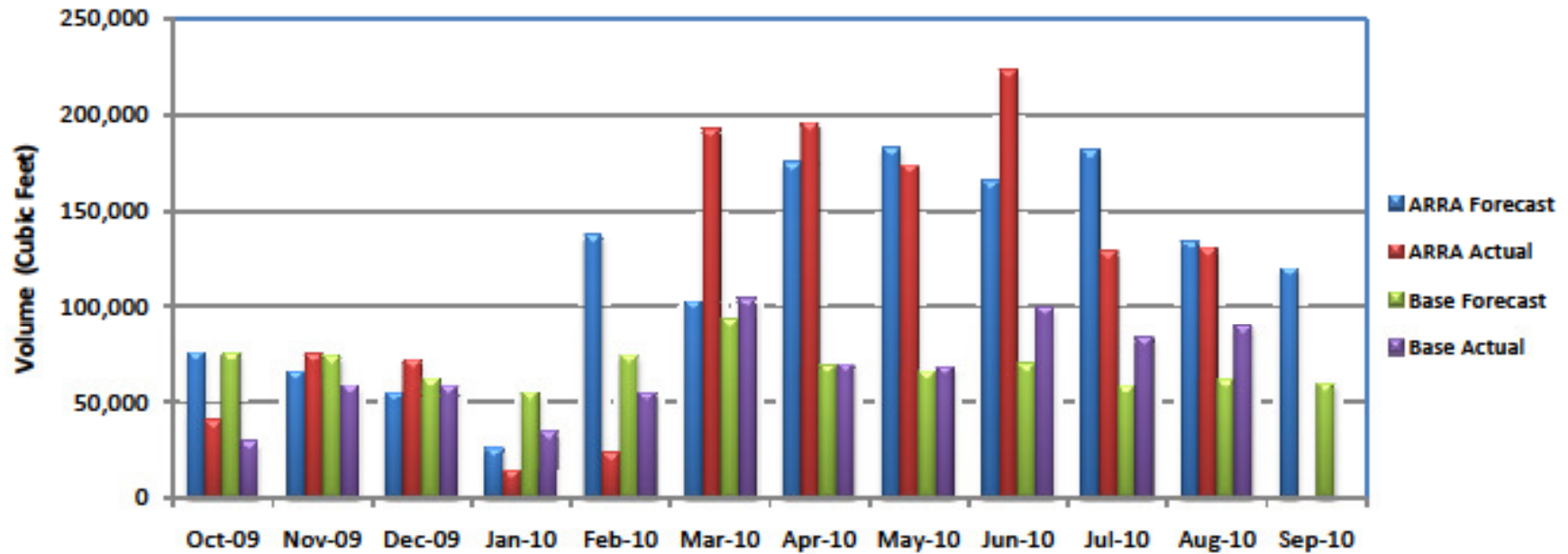


One year snapshot -- Where is DOE LLW+MLLW disposed?

- DOE/EM collected monthly disposal volumes from all EM sites between July 2009 and June 2010
- Based on the first 6-months of data:
 - 92.1% of EM's LLW+MLLW volume was disposed at the DOE site where generated
 - 6.7% of EM's LLW+MLLW was disposed at the *EnergySolutions* Clive, Utah, commercial facility
 - 1.2% of EM's LLW+MLLW was disposed at NTS

Details on Volumes Disposed at Nevada – Base funded and ARRA; Actuals and Forecasts

Nevada Test Site FY 2010 Waste Volume Forecast & Actuals



Volumes as of 8/13/2010
Forecast: 2,058,562 Actual: 2,021,652

FY 2010 Forecast Total: 2,238,670

Latest DOE LLW/MLLW Forecasts

- DOE updates its life-cycle LLW/MLLW forecasts annually and makes this information publically available in the Waste Information Management System (WIMS)
- Annual updates completed and available in WIMS
- Nearly 4.3 million m³ of LLW/MLLW will be generated FY2010-2015
 - Vast majority targeted to be disposed on site
 - DOE plans to continue use of Nevada National Security Site and, as appropriate, commercial disposal
 - Some large volume TBD streams exist

WIMS can be found at <http://wims.arc.fiu.edu/WIMS>

DOE LLW/MLLW Challenges

- Uncertainty in continuous availability of disposal capacity
 - Regulatory and policy changes have curtailed disposal of some depleted uranium streams
- Potential challenges and changes to DOE policies and strategies
- Problematic waste streams remain and will continue to be generated through additional facility D&D work
- Contemplated changes in NRC waste classification systems and waste related guidance documents
- Possible increased disposal demand to address disused sealed sources
- Inquiries from outside DOE for access to DOE low-level and mixed low-level waste facilities, due to changing circumstances and reduced commercial disposal access for Class B & C wastes

TRU Waste Disposition Update

- Waste Isolation Pilot Plant (WIPP) Summary
 - Over 11 years of safe operations!
 - Over 70,000 m³ of defense transuranic waste disposed with over 8,800 shipments since WIPP opened
- Remote-handled (RH) shipments summary
 - Over 400 RH shipments received to date from six RH-TRU sites
 - DOE Idaho site
 - Argonne National Laboratory
 - Oak Ridge National Laboratory
 - Los Alamos National Laboratory
 - Savannah River Site
 - General Electric Vallecitos Nuclear Center

Shipment numbers as of 9/5/10



First GEVNC Shipment to WIPP



Contact-handled emplacement



Facility cask being placed on RH-TRU horizontal emplacement machine.

Highlights on TRU Waste Disposition

- TRU waste processing and disposal efforts are accelerated and major projects are undertaken through the *American Recovery and Reinvestment Act*
 - Focusing on retrieval and shipments from Hanford
 - Reconstruction of the South Access Road
 - Construction of the Salt Pile Evaporation Pond and purchase of critical equipment to ensure operations
- In FY 2010 (as of September 5th) over 1,000 CH- and RH-TRU shipments completed!
- Implementation of the inter-site shipping campaign continues
 - Began in December 2008 with legacy TRU from Nevada Test Site to Idaho.
 - Intersite shipments from 4 sites (Hanford, GEVNC, LLNL, & NNSS) in FY 10 and 4 more sites (SNL, ANL, BAPL, LBNL) in FY 11, in addition to Hanford.
- WIPP Regulatory Renewals Progress
 - Compliance Recertification Application submitted to EPA in April 2009—expected approval by the end of calendar year 2010
 - Hazardous Waste Permit Renewal Application submitted to New Mexico in September 2009—expected approval by end of calendar year 2010



EM is Significantly Accelerating TRU Waste Shipments

FY 2010 - TRU Waste Shipment Goals

To WIPP, from:	Annual goal	
Schedule Comments (non-shipping periods)		
ANL (RH)	36	
GE-VNC (RH)	25	
INL (CH)	701	
INL (RH)	36	
LANL (CH)	112	
ORNL (CH)	74	
ORNL (RH)	71	
Hanford-RL (CH)	62	
SRS (CH)	97	
SRS (RH)	11	
SNL (RH)	6	
Total CH	1046	
Total RH	185	
Intersite, to AMWTP:	Annual goal	
GE-VNC (CH)	1	
Hanford-RL (CH)	69	
LIBNL (CH)	0	
ANL (CH)	2	
LILNL (CH)	10	
SNL (CH)	3	
Total Intersite	85	
TOTAL SHIPMENTS	1316	

← FY 2010 Shipping Goals

- TRU Acceleration Plan has been developed and revised once to optimize the National TRU Program through FY 2015; Rev 2 of the Plan will be issued soon.
 - Strived for an average of 30 contact-handled and 5 remote-handled TRU shipments per week
 - Integrated sites' plans – including ARRA projects
 - Identified opportunities for further acceleration
 - Informed development of FY 2012 budget request and out-year strategic planning
- FY 2011 Shipping Goals being developed
- High level strategic goal to complete disposition of 90% *legacy* TRU by 2015



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

TRU Waste Disposition Challenges

- Achieve and sustain accelerated shipment rate
- Optimizing shipments through 2015
- Increase and maintain steady feed to the Central Characterization Project
- Difficult waste streams exist at most sites
 - “Easy” legacy has been disposed
- Regulatory, technical, and project issues require TRU complex to adjust, in order to maintain shipping progress
 - Example, carbon tetrachloride limits impacted shipments from Idaho



As Blue Ribbon Commission evaluates long-range alternatives, EM's HLW and spent fuel activities are on track

- EM continues to safely store, retrieve, and treat/repackage HLW and spent fuel
- FY 2011 Request fully funds tank waste management and treatment activities across the complex
 - Hanford WTP (\$740M) to accelerate completion of design
 - SRS Salt Waste Processing Facility (\$288M) construction and pre-operations
 - Idaho Sodium Bearing Waste Treatment (\$6.5M) to complete construction activities
 - Tank waste retrievals at Hanford and Savannah River (\$95M) to meet regulatory commitments
- EM will assess technical needs and fund research and development to ensure continued safe, cost-effective operations, treatment, and extended storage
 - FY 2011 Request includes \$60M for Tank Waste Technologies
 - With goal to optimize tank waste disposition resulting in technology insertion points into the tank waste retrieval and treatment system that will yield significant cost savings and reduce the period of execution
- EM will support the Blue Ribbon Commission, as needed

Update on the GTCC LLW Disposal EIS

- Draft EIS scheduled for issuance in early 2011
 - Completed extensive internal review
 - Briefings being planned for Senior DOE Management (Under Secretary, Deputy Secretary, and Office of the Secretary) throughout Fall
- Analyzes approximately 12,000 m³ of wastes requiring disposal over several decades
- Alternatives include geologic disposal at WIPP and construction/operation of new disposal facilities (trench, vault, and boreholes) at existing DOE sites and generic commercial locations)
 - Combinations of disposal methods may be appropriate based on the different waste types
 - 120 day comment period with Public Hearings to be held at each of the sites being evaluated in the Draft EIS: Carlsbad, Hanford, Idaho, Los Alamos, Nevada, and Savannah River
- Goal is to issue Final EIS in 2012 (approx. 1 year after issuance of Draft EIS)
- **Before issuing a Record of Decision, DOE must submit a Report to Congress on disposal alternatives and await Congressional action**

For additional information on the GTCC EIS visit <http://www.gtcceis.anl.gov/7>

Update on EM's Mercury Management Project

- *The Mercury Export Ban Act of 2008* requires DOE to provide storage and long-term management of mercury (non-radioactive) generated in the U.S.
 - Draft EIS published in January
 - Sites analyzed in the EIS are Hanford (WA); INL (ID); Grand Junction (CO); Hawthorne (NV); SRS (SC); Andrews (TX); and Kansas City (MO)
 - WCS facility in Andrews, TX, is Preferred Alternative
 - <http://www.mercurystorageeis.com/>
- Critical Milestones
 - DOE Interim Guidance on operating the proposed mercury facility – 11/14/09
 - DOE published Draft EIS – 01/29/10
 - Final EIS, Record of Decision, and selection of mercury storage site(s) - Fall 2010
 - Mercury storage facility ready to accept mercury – 01/01/13
 - Ban on export of mercury from the U.S. effective – 01/01/13
 - DOE mercury storage facility operating under RCRA permit – 01/01/13
- Current Status
 - Public hearings held at nine locations (2/23/10 – 3/9/10)
 - Public comment period closed (1/20/10 – 3/30/10)
 - The Final EIS is expected to be published in November - the ROD will be published no less than 30 days after publication of the Final EIS

In Closing...

“An important part of a sound, comprehensive and long-term domestic nuclear energy strategy is a well-considered policy for managing used nuclear fuel and other aspects of the back end of the nuclear fuel cycle.”

Presidential Memo to DOE Secretary Chu, January 29, 2010

- EM’s efforts directly support the Nation’s energy goals by providing a reliable waste and materials disposition system
- EM has 20 years of progress and experience in safely managing radioactive wastes and nuclear materials and is well positioned for continued success
 - Continued progress is dependent upon a robust waste and materials disposition system.
 - EM is working to accelerate foot print reduction and solid waste disposition, and is targeting technological advances to reduce life-cycle cost of tank waste and nuclear materials disposition
- ARRA has supported accelerated cleanup and led to increased waste disposal progress
- A vigilant commitment to continued safety and progress and a productive investment in technology is needed for EM to maintain our momentum
- **EM has a strong partnership with our regulators, stakeholders and industry, which must be maintained to support the DOE waste and materials disposition system and support EM cleanup goals**

Backup Slides on BRC



EM *Environmental Management*

safety ❖ performance ❖ cleanup ❖ closure

DOE has revised its plans for the HLW repository....

“The Administration has determined that **developing a repository at Yucca Mountain, Nevada is not a workable option** and has decided to terminate the Office of Civilian Radioactive Waste Management. The Nation needs a different solution for nuclear waste disposal.” - FY 2011 Budget Request

- o In 2010, the Department of Energy (DOE) discontinued its application to the U.S. Nuclear Regulatory Commission (NRC) for a license to construct a high-level waste geologic repository at Yucca Mountain
- o On February 16, 2010, the NRC Atomic Safety Licensing Board halted review of the Yucca Mountain License Application at request of DOE.
- o DOE established a Blue Ribbon Commission to inform the Administration as it develops a new strategy for nuclear waste management and disposal
- o The Office of Nuclear Energy will develop and execute a research and development program that will address critical scientific and technical issues associated with the long-term management and disposal of used nuclear fuel.
- o DOE has begun to assess the costs and preparation the Yucca Mountain site for stewardship and remediation.
- o License Application records and document are being retained and archived in the License Support Network (LSN) database.
- o Responsibility for License records and maintenance of the LSN has been transferred to the DOE Office of Nuclear Energy.
- o The Administration remains committed to fulfilling its obligations under the Nuclear Waste Policy Act



EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Blue Ribbon Commission on America's Nuclear Future

- *Blue Ribbon Commission established January 2010 to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle, including all alternatives for the storage, processing and disposal of civilian and defense used nuclear fuel, high-level waste and materials derived from nuclear activities*
 - o Will provide advice, evaluate alternatives and make recommendations for developing a safe, long-term solution to managing the Nation's used nuclear fuel and nuclear waste
 - o Comprised of 15 members with range of expertise and experience in nuclear issues – including scientists, industry representatives, and respected former elected officials
 - o Will produce an interim report within 18 months, and a final report within 24 months; i.e., respectively June 2011 and January 2012
 - o Formal charter approved March 1, 2010
 - o First meeting held March 25-26, 2010
 - o Last meeting held September 1, 2010
 - o Meetings planned for September 21-23, 2010



Current Offsite Disposal Forecast Trends Reflect ARRA Impacts (in millions of cubic feet)

