

Assessment of Facilities, Materials, and Wastes Proposed for Transfer to EM

Challenge

In December 2007 the Assistant Secretary for Environmental Management (EM-1) invited the DOE Program Secretarial Offices (PSOs) of Nuclear Energy (NE), Science (SC), and the National Nuclear Security Administration (NNSA) to propose facilities and legacy waste for transfer to Environmental Management (EM) for final disposition or deactivation and decommissioning (D&D).

Transfers of facilities, materials, and waste to EM will generate liabilities that are currently unfunded. For purposes of overall planning, it is important to understand the impacts of proposed transfers with regard to technical difficulties, project risks, and range of cost. In addition, because it is EM's policy to not accept proposed transfers until they are budgeted for D&D, it is important to establish a priority for conduct of such transfers.



Technical Solution

Initial submittals in response to the EM-1 invitation and those subsequent to the walkdowns resulted in a total of 109 items proposed for transfer, consisting of facilities, materials and wastes including cleanout of hot cells, environmental remediation projects, and programmatic transfers (from INL) with the proposed facilities alone representing approximately 1.5 million Gross Square Feet (GSF). Accumulations of materials and wastes were judged to be a total volume of more than 5,000 cubic meters, exclusive of the INL proposed programmatic transfer of materials and waste. Site walkdowns and reviews were conducted at Argonne National Laboratory, Brookhaven National Laboratory, Fermi National Accelerator Laboratory, Idaho National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Nevada Test Site, Stanford Linear Accelerator Center, and Savannah River Site from May through July 2008 by an EM Team led by the Office of Engineering and Technology (EM-20). The purpose of the walkdowns was to assess facility/material conditions, determine if they meet DOE acceptance criteria (as documented in DOE O 430.1B and DOE G 430.1-5), identify pre-transfer stabilization conditions required to be met, identify significant D&D project risks and liabilities, and gather data to support development of rough order of magnitude (ROM) cost estimates for D&D.

Tech Accomplishments

The results of the walkdowns included: a bases for recommending transfer acceptance or rejection, the pre-transfer stabilization conditions which must be met, identification of significant D&D risks and liabilities, the prioritization of recommended acceptances, and rough order-of-magnitude (ROM) cost estimates. The EM Team recommended acceptance of 57 and the rejection of 48 of the proposed items. There were also 4 proposed Idaho National Laboratory (INL) programmatic items (transfer of materials and waste projects) that will be addressed separately since they will require policy decisions beyond the technical nature of the walkdowns. The prioritization for the acceptance of facilities across the complex is critical for the purpose of providing EM with a basis for the timing of accepting the proposed transfers and requesting budgets. Factors affecting the prioritization of the facilities, materials and wastes include: their level of hazard, risk, and regulatory drivers while factors influencing decisions for the removal of materials include the need for land and the need to support facility D&D. The following table represents a sampling of top rankings of facilities identified for D&D and waste cleanup.

Site Project & Identifier
Oak Ridge – Non-Integrated Facilities Disposition Project

Tech Stage:
Technical Assistance

Top Facility D&D Rankings			
Proposed Transfer	PSO	Site	FY Available
A/B Lines Excavation and Environmental Remediation	SC	BNL	2008
Building TRA 632 Hot Cells Cleanout and D&D	NE	INL	2010
Building 251 Heavy Element Facility D&D	NNSA	LLNL	2009
Building 212 Slab and sub-grade structure D&D	NNSA	LLNL	2009
Building 232-H Tritium Facility & 2 stacks D&D	NNSA	SRS	2009
Top Waste and Cleanup Rankings			
Proposed Transfer	PSO	Site	FY Available
Cleanout of Bldg 212 Alpha Gamma Hot Cells	SC	ANL	2010
Brookhaven Avenue Cleanup	SC	BNL	2008
Disposition of all Packaged TRU Waste at ANL	SC	ANL	Various

Impact

The EM Team's total best estimate ROM cost for disposition of the 57 proposed transfers that meet acceptance criteria is \$847 Million. A conservative, high-end upper bound is estimated to be as much as \$1.62 Billion using an upper range of +100 percent of the best ROM estimates. In February 2009, EM notified the Program Offices which facilities met the EM criteria and would be accepted in the future.

Lessons Learned

Based on DOE policy, Program Offices should not propose transfer of mission-related materials and waste to EM. Acceptance of the transfer to EM of materials and waste is limited to that which has legacy status, is directly associated with and facilitating D&D, is TRU waste, and/or is so called "orphan waste", without a clear disposition path.

Impact and Features

Project risk conditions observed and/or assessed which provide a greater than normal degree of uncertainty for D&D projects included:

- The uncertainty in current conditions encountered in hot cells and storage wells at ANL, BNL, and INL; in particular, those with spent nuclear fuel (SNF) are anticipated to be problematic because of the lack of explicit criteria for classifying these materials as either transuranic waste or SNF
- The complexity of conducting D&D in high security areas (INL, LLNL, and SRS) directly impacts schedule, cost, and productivity
- The unknown degree and extent of contamination in soil adjacent to or beneath facilities cannot be readily characterized until the facilities are removed (one facility at ANL, one facility at INL, and 2 facilities at LLNL)
- The D&D budget exposure for large accelerators (located at ANL, LANL, and SLAC) with minimal volume of activated materials or contamination is estimated to be at least \$140 million

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Technology/ Process Name: Assessment of Facilities and Materials for Transfer to DOE-EM

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Challenge Category	Tech Solution Category
<ul style="list-style-type: none"> • Deactivation • Decommissioning • Multiple Waste Streams 	<ul style="list-style-type: none"> • Technical Review