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Title: STRATEGY FOR THE PATH FORWARD FOR THE NATIONAL TRANSURANIC WASTE SYSTEM OPTIMIZATION PROJECT

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Strategy for the Path Forward for the National TRU Waste System Optimization Project

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Introduction

The Waste Isolation Pilot Plant (WIPP) opened on March 26, 1999, for the permanent disposal of defense-generated transuranic (TRU) waste generated by and temporarily stored at the production sites. With WIPP open, efforts are now focused on achieving the Department of Energy's (DOE's) strategic vision for WIPP and the National TRU Waste Program (NTP). This vision is to remove all TRU waste from DOE closure sites, to dispose of all legacy TRU waste from DOE sites with an ongoing nuclear mission, and to dispose of all newly generated TRU waste as it is generated.

The existing schedule for TRU waste disposition would achieve the NTP vision in the year 2034 at an estimated life-cycle cost of $16B. The DOE Carlsbad Field Office (CBFO) seeks to dispose of all legacy TRU waste by at least 10 years earlier and thereby save the nation an estimated $7B. CBFO's approach is to optimize (make as functional as possible) TRU waste disposition—that is, remove barriers that impede the disposition of waste in order to increase the rate and cost efficiency of waste disposal at WIPP, while maintaining safety and compliance with regulations. The National TRU Waste System Optimization Plan (1) presents the strategic vision and the implementation strategy for the Optimization Project. This paper discusses the strategy for the path forward for the Project.

After WIPP began receiving waste, it was evident that, at the rate at which TRU waste was being shipped to and received at WIPP, the facility was not being used to its full potential, nor would it be unless changes were made. The Optimization Project is the result of that effort to suggest changes that can speed up the clean up, maintain safety, and cut costs.

The approach of the Optimization Project is to focus efforts to optimize characterization, transportation, and disposal operations by plan and implementing system operational improvements or administrative change, technology implementation, and technology research and development activities.

The National TRU Waste Optimization Plan represents our best thinking on how to make the NTP more efficient in order to accelerate the cleanup of defense-related TRU waste at DOE facilities throughout the United States while, at the same time enhancing safety and lowering costs.

CBFO has take a comprehensive approach to addressing the various recommendations for maximizing TRU waste shipments to WIPP while ensuring that the TRU waste sites comply with all the regulatory and WIPP requirements. This approach uses three integrated management tools: 1) the National TRU Waste Management Plan, Revision 2, describes the current national TRU waste system's operating baseline and includes the use of performance metrics to monitor progress; 2) the National TRU Waste System Optimization Project is the principal focus for identifying, developing, communicating,

proposing, and upon approval, implementing cost-effective system optimization strategies to reach the proposed end state; and 3) the National TRU Waste Complex Corporate Board which integrates the independently managed DOE sites within the national TRU waste system into a single corporate entity. Through consensus, the Board members make recommendations for practices of economy of scale, standardization.

Optimization Process

The Optimization Project is based on a process of continuous improvement (performance-based). The process builds on the recommendations from the DOE-directed studies, Re-Engineering the Pipeline (2) and the study done by the National Academy of Science's National Research Council (3) and involves the identification and evaluation of issues and barriers within the TRU waste characterization transportation, and disposal process. The performance-based optimization process is iterative and involves the following steps:

- Identify barriers impeding the flow of TRU waste. Barrier identification may occur anywhere within the national TRU waste system.
- Identify and evaluate options for removing barriers to the flow of TRU waste from TRU waste sites to WIPP. Selection criteria include effectiveness and efficiency of process, cost, timeliness, feasibility of implementation, and expert opinion.
- Develop plans and timelines for implementation of those options that will achieve compliance, operational efficiencies for treatment, characterization, transportation, and disposal of TRU waste at WIPP.

- Develop and deploy technologies through the DOE Environmental Management's Office of Science and Technology's TRU and Mixed Waste Focus Area (TMFA) that will have significant, positive impact on the capability of the DOE Complex to characterize, ship, and dispose of TRU waste.
- Monitor performance of optimization projects through project-control methodologies. Track performance factors (throughput and cost) for trending and for future decision-making.
- Review and prioritize the needs of the national TRU waste system to ensure that all goals of system optimization are met.
- Develop data throughout the optimization process to ensure that optimized procedures produce the desired results.

Initial optimization work will be aimed at achieving and sustaining DOE's planned TRU waste transportation and disposal rates and improving long-term operational efficiency in these areas in order to reach the NTP's proposed end states earlier. The Optimization Project has evaluated the characterization, transportation, and disposal processes of the national TRU waste system and identified efficiency improvements that can significantly enhance TRU waste disposal rates at WIPP.

Implementation Strategy

As the Optimization Project is implemented, the DOE will achieve and sustain planned TRU waste transportation and disposal rates while concurrently striving for long-term

operational efficiencies. Optimization initiatives within the TRU waste characterization, transportation, and disposal processes have been identified for which efficiency improvements can significantly enhance TRU waste disposal at WIPP.

The optimization process involves the integrated management of barrier identification and resolution in each of four major functional areas:

1. Administrative/Operational Efficiencies
2. Regulatory Changes
3. Technology Deployment
4. Research, Development, and Demonstration

Resources will be applied to each of these four functional areas as necessary to continually fulfill critical path needs. The highest priority is to eliminate barriers to filling the TRU waste disposal pathway. The next priority is to improve cost efficiency through cost/benefit. This includes updating and validating the TRU waste inventory, deploying mobile characterization systems to TRU waste sites, requesting permit modifications to the WIPP Hazardous Waste Facility Permit (HWFP) and approvals from the Environmental Protection Agency (EPA), and identifying science and technology needed to implement an optimized TRU waste system.

Managing the various components of the Optimization Project will be challenging because of the many interrelationships and scheduling imperatives. Each project activity will be managed through the use of a roadline—a combination of an activity roadmap and

a timeline—that shows the activities needed to complete the project, the interdependencies among the activities, and the estimated requisite activity deadlines.

Summary

The DOE/CBFO has initiated the National TRU Waste System Optimization Project to propose and upon approval, implement activities that produce significant cost savings by improving efficiency, thereby accelerating the rate of TRU waste disposal without compromising safety and compliance.

References:

1. *National TRU Waste System Optimization Plan*, DOE/CBFO- Second Draft-3201, December 2001
2. *Re-engineering the Pipeline Recommendations, Final Report*, U.D. Department of Energy, Carlsbad Area Office, May 2000
3. *Improving Operations and Long-Term Safety of the Waste Isolation Pilot Plant, Final Report, 2001*, National Research Council of the National Academy of Sciences,