

WM2016 Conference Panel Report

PANEL SESSION 15: **Panel: US DOE WIPP: Lessons Learned and Return to Operations Following 2014 Operational Incidents**

Co-Chairs: **Todd Shrader, US DOE-EM, Carlsbad Field Office**
Phil Breidenbach, Nuclear Waste Partnership, LLC

Panel Reporter: **Roger Nelson, US DOE-EM Carlsbad Field Office**

Panelists:

1. **Sean Dunagan, US DOE-EM, Carlsbad Field Office**
2. **Jim Blankenhorn, Nuclear Waste Partnership, LLC**
3. **J. R. Stroble, US DOE-EM, Carlsbad Field Office**
4. **Doug Hintze, US DOE-EM, Los Alamos Field Office**
5. **Jim Malmo, US DOE-EM, Idaho National Laboratory**
6. **Kathryn Roberts, New Mexico Environment Department**
7. **Tom Peake, Los Alamos National Laboratory**

About 85 attendees listened to presentations by the panelists and asked questions and made comments during this session. This panel session focused on the steps WIPP and the national TRU Program are taking on the path to recovery and resumption of waste shipments and emplacement operations. Both co-chairs made opening remarks. Todd Shrader introduced a five minute video that featured brief interviews with a cross section of WIPP workers and told a story of a dedicated work force, striving to safely resume normal operations at WIPP. Phil Breidenbach presented a short summary of the safety culture changes the WIPP Management and Operating (M&O) Contractor has installed over the two years since the February 2014 incidents.

Summary of Presentations

Sean Dunagan presented a summary of the recently approved Integrated Performance Measurement Baseline (PMB), which is a tool used to manage all work related to WIPP and the National TRU program across all WIPP participants, contractors and National Laboratories. This resource-loaded (through 2017) plan is the basis for claiming an 80% confidence factor for resumption of waste emplacement activities by December 2016. Mr. Dunagan explained that principal risk in meeting the schedule are critical path activities to commence waste emplacement, including completion of a Documented Safety Analysis (DSA - the first within the DOE complex developed under DOE-STD-3009-2014), with training and approval, Integrated Cold Operations, followed by a Self-Assessment and a M&O-Contractor Operational Readiness Review. Finally, a DOE Operational Readiness Review will be performed before approving start of hot operations to emplace the waste that has been in storage since the 2014 event into the underground.

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Mr. Dunagan then introduced the important components of WIPP's ventilation systems and described their key elements. The Underground Ventilation System (UVS) is comprised of the existing surface fan system, running in filtration mode, and nominally supports recovery, habitability, ground control and limited maintenance @ 60 Kcfm. A new surface fan system is being installed called the Interim Ventilation System (IVS), and will work in parallel with UVS to support waste emplacement, operation of additional diesel operated equipment and ground control, adding 54 Kcfm for a combined total of 114 Kcfm. Another new ventilation capability has already been installed underground, but will not be put into use for some time, and is called the Supplemental Ventilation System (SVS). It will support mining activities and provides additional air to the north maintenance shop and experimental area (EXO) @ 70 Kcfm. Finally, a new Permanent Ventilation System (PVS) will support resumption of full pre-incident operational levels including waste handling and mining with target rates of 540 Kcfm. The status of each of these new systems was described, along with cost estimates and projected operational dates.

The key question posed to Mr. Dunagan was "How many shipments will WIPP be accepting?" Some discussion ensued about how shipment receipt rates would likely stay low until experience was gained with waste emplacement constraints in contaminated areas. Mr. Dunagan projected that WIPP might start low and ramp up to 5 shipments per week within the first year of shipping resumption. He projected maximum rates up to 12 per week until the new PVS is operational (currently 2021), at which point, WIPP could return to pre-event shipments rates of more than 20 per week.

Jim Blankenhorn presented a review of WIPP recovery focused on facility status and accomplishments. Accomplishments in the area of facility and equipment improvements included a new Emergency Operating Center (EOC), a remodeled training facility, exhaust fan reliability improvements, new hybrid bolters (both electric and diesel), major surface facility habitability improvements, significant maintenance backlog reduction, and tie-in of the IVS to the UVS ductwork. Accomplishments in the area of enhanced underground safety included a new underground notification system, U/G combustibles reduction, a new U/G fire suppression system (installation in progress), improved mine stability and ground control, and completion of a radiologically clean path to panel 7 (where first waste emplacement will resume).

Mr. Blankenhorn described some of the aggressive safety culture changes that have been accomplished over the past two years, including establishment of a Leadership Academy, and a Leaders Forum focusing on values, expectations, and standards. He then listed other program improvements such as, approval of the new Integrated PMB, submittal of an Emergency Response Baseline Needs Assessment, and submittal of the major new DSA.

J.R. Stroble described the changes in the National TRU Waste Program taking place across the DOE complex as a result of the February 2014 incident. Based on the Accident Investigation Report and subsequent evaluations, DOE implemented multiple Corrective Actions that

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significantly improve the National TRU Program (NTP) and WIPP safety envelope, and will prevent such incidents from occurring throughout the WIPP life cycle. He described the new paradigm of “trust, but verify” for waste characterization and certification in the future. He explained how a new set of processes would be applied to confirm the pedigree of Acceptable Knowledge, and how DOE will perform pre-waste evaluations at each generator site, upstream of the certification process, to preclude similar events in the future. He also described the many organizational changes (at WIPP, EM Headquarters, and at generator sites) that were made to the TRU waste characterization and certification process, and briefly touched upon how new interfaces are needed to ensure good communications among organizations implementing the NTP.

Mr. Stroble presented graphics showing how new and enhanced federal oversight at TRU waste generator sites, with increased compliance oversight by both Carlsbad Field Office and EM/HQ would be used to verify the adequacy of acceptable knowledge. He described a new technical and program review process where waste is generated (Generator Site Technical Reviews). He listed enhanced technical documentation requirements and detailed chemical compatibility analyses that will be required for all new TRU waste streams, along with a new hazardous waste determination verification process.

Finally, Mr. Stroble explained how these changes in how waste is certified for disposal at WIPP will be institutionalized. Programmatic corrective actions will be solidified for long-term effectiveness through revision or development of new DOE orders and policies. Degrading program effectiveness from turnover and contract changes will be prevented by procedures; and will provide consistency for the remaining life-cycle of TRU waste. Each TRU waste programs’ ability to maintain adequate funding and priority-to-complete missions related to the disposition of TRU waste will be enhanced.

Doug Hintze talked about lessons learned, and the return to operations at LANL. He augmented the information he presented in an earlier session (004 – LANL Recovery - Re-Treatment of Problem Waste Stream Nitrate Salts), with minimal duplication. He began with a description of the safety basis actions LANL took upon recognition of the nitrate salt issue. All waste operations at LANL immediately required an “Extent of Condition” review. These reviews resulted in “Additional Discoveries of Concern”, each of which was further analyzed and mitigated as needed. There were many challenges at three primary waste facilities at LANL, with Potential Inadequate Safety Analyses (PISA) declared and operations paused. These three facilities include Area G (Waste Facility), the Radioassay and Nondestructive Testing Facility (Shipping Facility), and the Waste Characterization Reduction and Repackaging Facility (Processing Facility) Mr. Hintze briefly described the impact from such limited TRU waste processing and storage.

While recovery at LANL is ongoing, Mr. Hintze described some of the actions LANL and DOE have taken and some lessons learned as well. The Secretary of Energy established the

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Environmental Management Los Alamos Field Office (EM-LA), which was formally in place on March 22, 2015. EM-LA is in the process of staffing the office, and expects it to grow from 26 to 41 FTEs over the next year. Mr. Hintze stressed the importance of effective oversight and execution of the EM-LA mission. The EM-LA Manager has responsibility for all functional requirements to manage the legacy waste, including nuclear safety. Probably because of a question from the earlier session (004), he stressed that there was still a lot of culture at LANL that needed to be changed. He explained that NNSA relies mostly on self-implemented contractor assurance programs, but EM relies on day-to-day hands on oversight.

Mr. Hintze described the upcoming dedicated contract to perform legacy cleanup. He briefly touched on the relationship to the bridge contract for FY16 with two six-month options in FY17 negotiated with Los Alamos National Security (LANS). The new EM contract is expected to be in place in FY18. Finally he talked about the importance of maintaining a strict discipline to conduct of operations from start to finish in the waste management program. This could have presented the unfortunate February 2014 incident.

Jim Malmo presented a perspective of a TRU waste generator site that has been significantly impacted by the unavailability of the WIPP disposal facility for such an extended period. He began his remarks with a description of the Idaho Settlement Agreement, and the status of meeting that agreement. Most of the Legacy TRU waste inventory destined for disposal at WIPP has or will come from Idaho, and he stressed the importance of WIPP recovery in the context of commitments to the state of Idaho. He summarized the backlog of certified TRU waste that Idaho has created and how it is currently stored in existing facilities. There are over 20,000 containers ready for shipment to WIPP once disposal operations resume.

The Advanced Mixed Waste Treatment Plant (AMWTP) at ID is a unique facility in the DOE complex. Mr. Malmo provided a detailed description of its capabilities and performance. He described the Idaho goal to use FY16 operations to address current challenges that are impacting production, and provide optimal conditions for the upcoming Idaho Cleanup Project Core Contractor's ability to complete the Idaho Settlement Agreement Scope. DOE's ID priorities are:

- Accelerate and Complete AMWTP Retrieval
- Complete Processing of ISA RH-TRU
- Continue Unloading AMWTP Cargo Containers
- AMWTP Infrastructure Improvements
- Acceleration of AMWTP Characterization to Increase Production Feed
- Startup New Waste Processing Activities

Mr. Malmo concluded his remarks with a summary of remote handled TRU waste activities that continue at INL, even without WIPP availability. Photos of hot cell operations and a list of the remote handled waste projects currently performed, or soon to be started, were presented.

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Kathryn Roberts presented the NMED perspective on the regulatory aspects of the February 2014 incident. She expressed NMED's view that All of the issues at WIPP were preventable, and that WIPP is still the ideal location for disposing TRU waste. NMED continues to evaluate the path forward to re-opening WIPP. She described the actions NMED took by issuing Administrative Orders to WIPP. NMED issued Administrative Orders (AO) to LANL & WIPP on February 27, 2014, May 12, 2014 and May 20, 2014. The February 27 AO stipulated waste storage requirements for aboveground waste (not nitrate salts), and that all shipments to WIPP be suspended. The May 12, 2014 AO required submittal of an Underground Compliance Plan & Underground Derived Waste Storage Plan, stringent reporting requirements, monitoring for Trichloroethylene, and prohibited future waste emplacement operations without inspection and approval from NMED. The May 20, 2014 AO required submittal of an "Isolation Plan", expedited closure of Panel 6, and Panel 7, Room 7, and additional stringent reporting requirements.

She went on to describe the Settlement Agreement that closed the AOs (signed January 22, 2016), which included 4 Separate Environmental Projects (SEPs) and dozens of Corrective Actions. She provided examples of Corrective Actions, such as changes to the waste characterization processes & Central Characterization Program, operational procedure changes/updates, upgrades to emergency equipment, enhancements to training programs, protocols and equipment, and improvements to notification requirements. NMED considers the idea of SEPs in lieu of fines as "state of the regulatory art".

Ms. Roberts concluded her remarks with NMED's vision of the path forward at WIPP. She reiterated that safety is a core value for NMED, and that NMED will work closely with DOE to achieve estimated schedule for re-opening. She stated the NMED position that new temporary storage of TRU waste at WIPP (months) was an option, and that NMED was willing to discuss with DOE. NMED expects corrective actions will be completed on time, and looks forward to meetings regarding SEPs and Corrective Actions over the next several months.

Tom Peake opened his remarks on behalf of the EPA by describing the EPA response to the February 2014 incident. EPA initially only reviewed DOE data from the incident, and determined that releases were not a public health concern and the WIPP facility remained in compliance with EPA's regulations. EPA then developed information for public distribution. Later, EPA conducted its own confirmatory air monitoring at several locations, and inspected WIPP facility monitoring. EPA found that DOE's sampling and modeling could be confirmed and that the release did not pose a threat to public health or the environment. However, EPA identified several areas in which DOE could improve, including environmental air sampling, sample tracking, and incident response procedures. DOE responded to EPA's primary concerns in the US Department of Energy Plan for Addressing the Areas for Improvement Identified by the US Environmental Protection Agency, October 1, 2014. DOE's continued progress was reviewed during EPA's April 2015 WIPP Site Inspections.

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Next, Mr. Peake described EPA's review of DOE's WIPP Compliance Recertification Application (CRA-2014), which was delayed about 6 months due to the February 2014 incident. EPA identified a number of comments on the application and submitted them to DOE in several letters over the past two years. EPA is currently reviewing the application for completeness and working toward a resolution of comments. EPA expects to have a supplemental performance assessment. Once EPA decides the application is complete, it will issue a completeness determination, and then issue a final decision within 6 months. During this process, EPA will meet with the public in several venues.

He concluded his remarks by describing EPA oversight of DOE's recovery process, which includes reviews of ventilation system changes. Mr. Peake briefly described DOE's proposed iterative changes to the facility's ventilation system to accommodate recovery activities. EPA requires that WIPP remain compliant with EPA's radionuclide NESHAPs (40 CFR 61 Subpart H), and representativeness requirements have been discussed between DOE and EPA. EPA plans to inspect the new ventilation and sampling systems before interim ventilation system begins full operation. EPA plans to inspect the WIPP facility before waste handling operations commence again. EPA also intends to review DOE's waste characterization oversight.