WIPP Status and Plans - 2011 – 11039

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ABSTRACT

The Waste Isolation Pilot Plant (WIPP) is completing its 12th year of operations. The 10-year RCRA permit renewal process by the State of New Mexico Environment Department (NMED) and the 5-year recertification process by the Environmental Protection Agency (EPA) were recently and successfully completed. Small quantity sites are being de-inventoried by consolidating their waste through the certified characterization line at the Idaho National Laboratory (INL). New emplacement methods for remote-handled waste in shielded containers (gamma and neutron) are undergoing regulatory review. A new Type B shipping package, the TRUPACT-III is being added to the transportation fleet. WIPP plans to license a new criticality control payload container that will allow almost twice the fissile content to be shipped than previously (thereby reducing the number and cost of shipments of Special Nuclear Material SNM) declared as waste. These, and other developments, make for exciting times at WIPP.

This paper presents an up-to-date look at the many aspects of America's only deep geologic long-lived radioactive waste repository. WIPP's mission includes coordination of all Department of Energy (DOE) sites to prepare, package and characterize transuranic (TRU) waste for final shipment and emplacement in WIPP. The paper describes the waste stream inventory emplaced in the last year and those planned for characterization in the near future.

Several new routes for shipping TRU waste both to WIPP and from small quantity sites to the consolidation site at the Idaho National Laboratory (INL) were negotiated and established in the past year (as well as a new close-in route to WIPP from sites in the southeastern part of the US). These new routes required emergency responder training along them. Additionally, the paper presents the status of the new shipping container, called the TRUPACT-III and the WIPP facility modifications to receive it; the status of two new shielded payload containers, one for gamma-emitting Remote Handled (RH) waste and the other for neutron-emitting RH waste; and a new criticality control container.

During 2010, concentrations of Carbon Tetrachloride sampled from WIPP exhaust air climbed to levels that approached action levels imposed in WIPP's hazardous waste facility permit. Subsequent mitigation resulted in lowering concentrations but impacted WIPP shipping rates, which are also discussed in the paper. The prospect of future impacts on WIPP operation from this and other volatile organic compounds is presented.

WIPP is using American Recovery and Reinvestment Act (ARRA) funding ($172M) for a variety of efforts, including accelerating characterization and shipping rates to record highs.

INTRODUCTION

The WIPP project has been the subject of literally hundreds of papers and presentations over almost 40 years since its conception in the early 1970's, so no introductory description of its

operation is given here. A recent issue of Radwaste Solutions Magazine (May/June 2009) was entirely devoted to WIPP in recognition of the facility's 10th operating anniversary. For a detailed look at WIPP and its many attributes, along with a complete description of its operation, the reader is encouraged to review that issue [1].

2010 ACCOMPLISHMENTS

Last year, the 12th year of operation, saw many WIPP accomplishments, and few setbacks, although there were a few. The most notable accomplishments are summarized in the list below (ranked according to the authors' opinion in descending order of importance).

- Celebrated 11-years of operations, receiving almost 25,000 shipping packages in more than 9200 shipments over 11 million loaded miles of safe transportation, and filling WIPP to about 40% of its legislated capacity. Calendar year 2010 set a record for number of shipments made in a single year (985 contact-handled waste plus 143 remote-handled waste plus dozens of inter-site shipments made from small sites to Idaho)
- Received recertification authorization from the EPA for 5 more years of operation under their licensing provisions in Title 40 Code of Federal Regulation, Part 194 (40CFR194).
- The WIPP Hazardous Waste Facility Permit (HWFP) renewal application to NMED was approved and the HWFP was reissued to authorize 10 more years of operations.
- The Nuclear Regulatory Commission (NRC) issued a certificate of Compliance for the TRUPACT-III, a new rectangular Type B shipping package that will be used to send large boxes (after waste certification) to WIPP and avoid repackaging their contents into smaller containers.
- Continued inter-site shipments from small quantity sites to the Idaho National Laboratory for characterization for disposal and subsequent shipment to WIPP (completed removal of all legacy TRU waste from site 300 at Lawrence Livermore National Laboratory, National Nuclear Security Site and the GE Vallecitos Nuclear Center).
- Developed a new shielded canister configuration (high density polyethylene pipe sleeves inside nominal RH canisters) for shipping neutron emitting waste, and submitted a license application to NRC for this neutron shielded configuration.
- Initiated design of a new criticality control payload container that will allow almost twice the fissile content to be shipped than previously (thereby reducing the number and cost of shipments of Special Nuclear Material declared as waste from National Nuclear Security Administration (NNSA) sites.
- Completed mining and outfitting of disposal panel 6, disposal operations (RH) scheduled to begin in February or March of 2011.
- Initiated mining panel 7 (~100,000 tons) for planned disposal operations start in late 2012.

Regulatory Status

Several other papers presented in this year's Waste Management Symposium (and to be published in the proceedings) discuss the regulatory status of the HWFP granted by the New Mexico Environment Department, and the Compliance Re-certification from the Environmental Protection Agency. For detailed discussion of these two major regulatory umbrellas, the reader

is encouraged to peruse these other papers in Session 63. However, it will be mentioned here that the HWFP (which is the State equivalent of a permit under the Resource Recovery and Conservation Act for hazardous materials) was issued by NMED in 1999 for an effective period of 10 years. Thus, DOE submitted a permit renewal application to NMED in May 2009, with a supplemental submittal in October 2009. The NMED declared the renewal application "administratively complete" at the end of November 2009, and a draft permit for comment was issued (by NMED) in April 2010. Extensive negotiations between stakeholders, WIPP and the NMED were conducted throughout this entire process, (even after the draft was issued). After a 60 day comment period, NMED conducted a public hearing in August, administered by a hearing officer appointed by the State.

After all the negotiations and all the discussion, two primary issues remained unresolved at the end of that 15-month process. WIPP stakeholders contended that the surge capacity allowed in the HWFP was unnecessary, while WIPP maintained that unforeseen outages at the WIPP site (e.g., waste hoist failure) could occur with fully half of the shipping fleet on the road en route to WIPP. Thus WIPP believed the large surge capacity was necessary to preclude sending waste back to generator sites (which would add unnecessary risk). The hearing officer ruled that the stakeholders did not make an adequate case for their claim, and ruled in WIPP's favor by allowing the surge capacity to remain.

The second unresolved issue was the concentration of Carbon Tetrachloride in the exhaust ventilation from WIPP allowed by the permit. In 2009, waste shipments from INL containing high concentrations of Carbon Tetrachloride became more routine. This waste (originally generated at Rocky Flats in 200 liter drums) is sometimes referred to as oasis sludge, and is categorized as a homogeneous solid. The original waste stream came from a process that solidified solvent-rich sludge with cement or cement-like absorbent. Anecdotal verbal accounts of the "recipe" from older workers at Rocky Flats indicated that there could be 30-40 liters of Carbon Tetrachloride bound in the matrix per solidified drum. As the number of drums with oasis sludge accumulated (first in panel 4 and then in panel 5), the Carbon Tetrachloride "source term" grew from about May 2009 until the running annual average concentration sampled in exhaust air leaving the disposal ventilation circuit climbed to about 50% of the former concentration limit in the HWFP (165 parts per billion). The source term pathway out of the waste containers is via simple barometric breathing. While natural barometric breathing due to meteorological pressure variations in the atmosphere contributes, the drums underground at WIPP experience enhanced barometric breathing due to the operation of the mine itself. Hoisting operations and the use of large mining equipment traveling along with and against ventilation air flowing in the confined drifts of the underground result in abundant barometric pressure changes, which dominate the Carbon Tetrachloride source term.

To avoid further encroachment of the 165 ppb limit, DOE initiated several steps at the beginning of 2010. These included:

- Careful sealing of the bulkheads between disposal rooms in panel 5 as each room was filled using metal and plastic flashing embedded in the floor and commercial weatherizing sealant around all edges,
- Installation of a closed cycle getter (granulated activated carbon) in a baffle constructed on the outlet drift of panel 4 (later switched to a zeolite filter media)
- Temporary suspension of oasis sludge shipments from INL

While these measures provided some limited control of the source term, the running annual average continued to climb. This is the nature of running annual averages. Since the new inventory of oasis sludge drums was now emplaced in WIPP, and older (more than a year) sample results prior to the source being present dropped out of the running annual average calculation, the annual average climbed until it reached a new "equilibrium". By this time, (May 2010), NMED had granted a temporary authorization to change the limit to a higher concentration of concern at DOE's request. This higher limit was allowed because EPA had fortuitously increased the inhalation unit risk for Carbon Tetrachloride from 1.5 E-05 $m^3/\mu g$ to 6.0 E-06 $m^3/\mu g$ on March 31, 2010. With a large backlog of oasis sludge drums ready at INL, DOE was motivated to resume shipments. With the higher limit in hand, shipments resumed, but as a precaution, drums are being over-packed into ten-drum over-packs (TDOP). Multiple filter vents are installed in the TDOP so that the shipment complies with the TRUPACT-II requirements. Then, when received at WIPP, the extra filter vents are plugged before TDOP emplacement in the disposal rooms underground. As of November 2010, the added measures have kept the running annual average to below the original (165 ppb) concentration limit, but the over-packing is continuing to impact WIPP shipping rates.

In March 2010 (prior to the draft permit being issued by NMED), DOE performed a comprehensive analysis showing that the concentration of concern could be increased almost 10-fold, with no change to risk levels. The arguments were based on EPA's increase in the inhalation unit risk and detailed knowledge of the distribution of volatile organic compounds in the multiple waste streams already emplaced and those destined for emplacement in WIPP.

The 1999 permit was based on unrealistically conservative future estimates of VOC distributions, but after 12 years of sampling, DOE could use "actual" values. When NMED issued the draft permit, it increased the allowed concentration for Carbon Tetrachloride, but only by a factor of 2.5 (from 165 to 412 parts per billion). During the comment period on the draft permit, and in the hearing, DOE made the argument that all of the information, taken in total, showed the 10-fold higher value was appropriate (about 1600 ppb), but to no avail. The hearing officer ruled that DOE had not shown why the lower value used by NMED (412 ppb) should be increased. Obviously, DOE disagreed, and submitted comments to the Secretary of the NMED prior to his final decision. When the permit was finally approved on November 30, 2010, the Secretary agreed that the 412 ppb limit was unnecessarily conservative and ruled that an intermediate value between 412 and 1600 would be adequately conservative to protect workers, and at the same time would give DOE flexibility in meeting the limit. The Secretary chose 960 ppb, from which DOE will not seek further relief. In the meantime, the running annual average carbon tetrachloride levels in exhaust air have continued to decline from the 2010 peak (~159 ppb) due to the more effective ventilation leakage control between disposal rooms and the over-packing of source term drums into TDOPs.

Other changes that resulted during the permit renewal process included clarification on the quantity of prohibited liquids. Liquids have always been prohibited in the HWFP, but no de-minimus volume was set. Liquid prohibition was primarily to ensure that all flammable, corrosive and reactive characteristic wastes were prohibited without having to list them or quantify these characteristics. However, over the many thousands of containers of legacy TRU waste shipped to WIPP, some drums with minor amounts of liquid have been "missed" during real time radiography or visual examination. A vexing example was a drum that was mistakenly shipped to WIPP from INL in 2007 with about 100 ml of liquid in a plastic laboratory squeeze

bottle. DOE discovered and self-reported the violation, and then instituted procedural changes to preclude a similar occurrence, but was forced to remove the non-compliant container by NMED under a compliance order issued by the state after several weeks of additional shipments had been emplaced. After retrieval from WIPP and shipment back to INL, the bottle, hand-labeled "windex", was removed. The new HWFP includes a de-minimus liquid volume limit of 60 ml; inner containers with <60 ml may be compliantly shipped to WIPP without treatment or removal.

Finally, the certification under 40CFR194, issued by EPA, must be reevaluated every five years to demonstrate continued compliance with the disposal standards at 40CFR191. DOE submitted the second recertification compliance application to EPA in March 2009, and after extensive information exchanges and clarifications, it was declared administratively complete by EPA in June 2010. Stakeholder participation during this 15-month process was extensive, with multiple opportunities for organizations and anti-nuclear activist individuals to express their concerns and learn more about the minor changes that were made since the previous re-certification process, five years ago. EPA issued its decision to recertify WIPP for compliance with the disposal requirements at 40 CFR Part 191 on November 18, 2010. With recertification in hand, DOE will next petition EPA to allow more efficiency changes using the planned change request process. The next recertification application is due March 26, 2014.

Waste Availability Status

There are several barriers that limit the amount of TRU waste that can be shipped to WIPP. Probably the most onerous barrier is the ability of generator sites to provide feedstock to the waste certification processes. This is an issue at all sites. Nearly all TRU waste remaining throughout the DOE complex requires repackaging or remediation, and each site's facilities are different. Repackaging work is both intrusive and time consuming. Further, most sites have insufficient repackaging capabilities to obtain the feed rates that would allow WIPP to achieve its optimum shipping rates.

DOE and the Central Characterization Project (CCP), are working to ameliorate these barriers at all sites across the complex. CCP is the organization established within the WIPP Management and Operating Contractor to conduct standardized waste characterization and certification required by the WIPP waste acceptance criteria and especially the waste analysis plan required under the HWFP [2]. To optimize feed rate at many sites, additional work areas must be established. While these may be temporary enclosures, there is still a significant lead time associated with procurement, assembly, procedure development, testing, authorization basis, and startup activities. In addition, remediation and repackaging of TRU waste is a slow, tedious process performed in glove boxes, containment tents, or hot cells. Staffing levels must be sufficient to support multiple shifts or continuous operation. DOE and CCP have identified how and where the waste will be repackaged for each site, based on information obtained from the Sites, and developed a plan to produce more feed through repackaging than can be shipped, thus providing some surge capability. While this is potentially achievable once all of the repackaging stations come on line, it is not expected that significant surge capacity will be achieved from repackaging activities until well into FY11. The obstacles to developing a surge capability are:

1. Delays in facility readiness/availability;
2. Equipment breakdowns, and operational upsets, and;
3. Facilities are operated less than 24/7.

Today, waste is characterized by CCP at a rate that exceeds repackaging rates at all sites (except the Advanced Mixed Waste Treatment Plant at INL, which is the only other authorized characterization and certification program for WIPP than CCP). Adequate budget needs to be provided to generator sites to maintain staffing and contractor incentives need to be negotiated to maintain alignment with DOE complex-wide goals. In addition, waste retrieval, at almost every site, needs to be accelerated to provide a surge capability for FY11 and beyond.

Another barrier to efficient shipping rates to WIPP is the time and effort to perform the characterization and certification processes required under the HWFP and the EPA's approval process under 40CFR Part 194.8. While the same processes are required at each site, the composition of the waste introduces variability in processing rates. Widely varying isotopic compositions or problematic isotopes (e.g., cesium) complicate and slow the assay determination. Waste that must be visually examined instead of radiographed decreases the characterization rate. Certain waste types containing polychlorinated biphenyls cannot have any residual liquid present, which increases rejection rates. Based on a review of the complex wide inventory, DOE and CCP believe this barrier can be significantly reduced, if not eliminated, by two specific actions. First, the majority of the waste being repackaged or newly generated should be placed into standard waste boxes (SWB) or standard large boxes (SLB2) (at the SRS). This will allow fewer packages to be processed for a given volume of waste. This has advantages to the generator sites as well as the WIPP site, and has been incorporated into the waste packaging plan for every major site. Second, the waste should be processed through the CCP characterization lines by waste stream, which would significantly streamline the certification process, allowing much more waste to be shipped for a given effort. Any additional surge capacity needed will most likely be provided by staff augmentation.

Disposal Status

At the end of 2010, over 72,000 m^3 have been emplaced in WIPP (contact-handled transuranic waste volume: 72,193 $m^3$and remote-handled transuranic waste volume: 229 m^3). This represents approximately 42% of the contact-handled waste volume and 3% of the remote-handled waste volume legislatively limited in the WIPP Land Withdrawal Act of 1992, which totals about 175,500 m^3[3].

Figure 1 shows the disposal status at the end of November 2010. Disposal panels 1-4 (along the right – eastern – side of the facility) are filled with contact-handled waste (shown shaded), and considered "closed". Panels 1-2 are blocked from ventilation by robust 4 meter thick concrete block walls. Panels 3-4 are blocked from ventilation by simple metal bulkheads. These ventilation barriers are placed on the inlet and outlet legs of each panel. Another paper in session 063 (11040) describes results of flammable gas monitoring in the disposal rooms of Panels 3-4.

Disposal operations are currently ongoing in panel 5, which is almost filled. By the time of the Waste Management 2011 Symposium in March, it is expected that remote-handled waste emplacement will have transitioned from panel 5 to panel 6. Remote-handled waste is emplaced in the walls of the salt pillars between disposal rooms. Each remote-handled canister emplaced through November 2010 is shown as a small bar in Figure 1. Note that disposal panels 1-3 were filled with contact-handled waste before regulatory approval for the disposal of remote-handled waste was received in January 2007. Thus, panel 4 is the first to hold remote-handled waste. In order to optimize the use of disposal room wall space, the relative rates of receipt of contact-handled and remote-handled waste need to be balanced. An excess contact-handled waste

receipt rate will fill a disposal room before remote-handled waste canisters have completely filled the wall space in the adjoining room. This has been and continues to be the case, where the fraction of emplaced remote-handled waste canisters has been about 50% of the permitted emplacement capacity allowed in the permit.

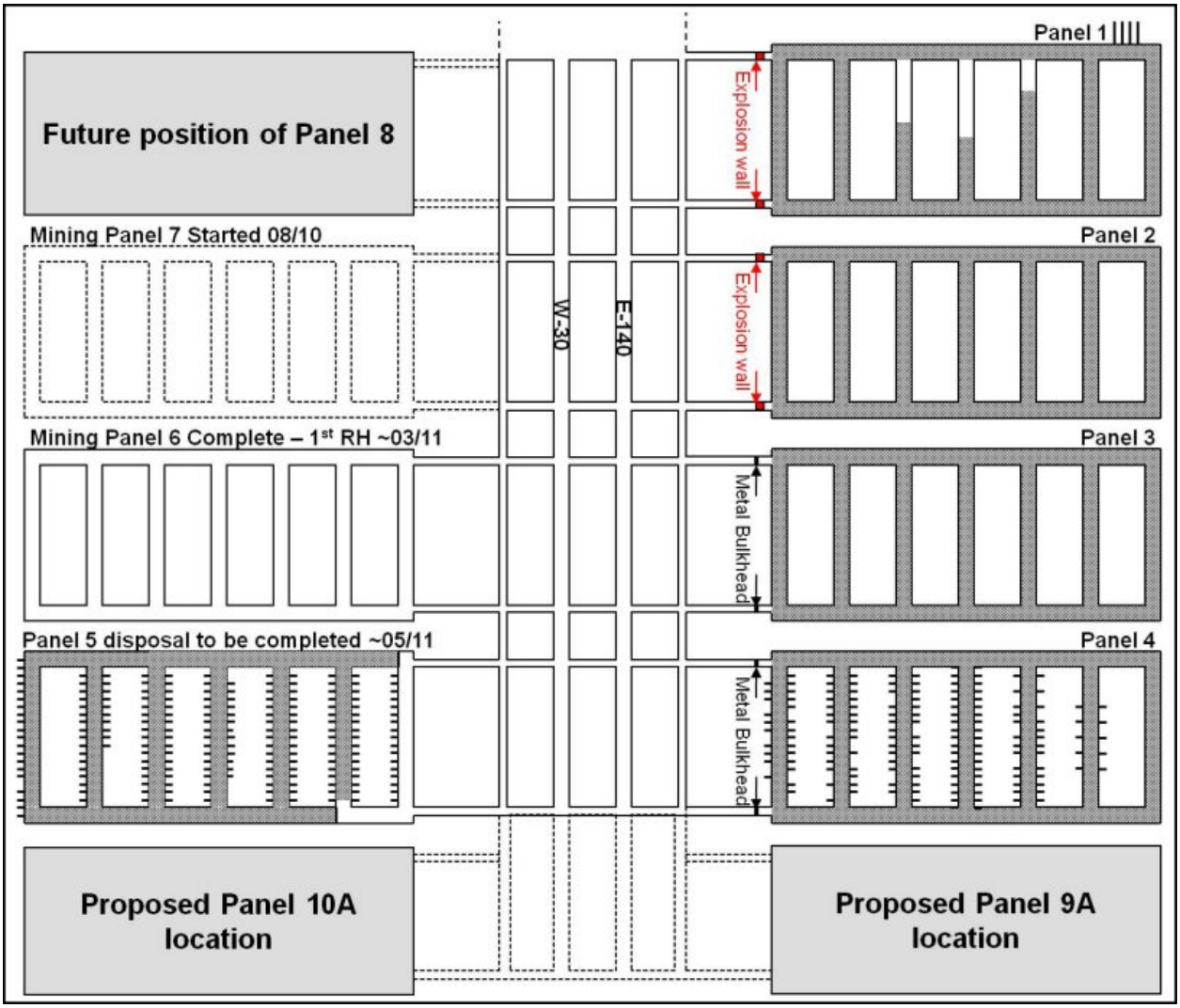

Fig. 1 Disposal status through November 2010 (shaded boxes are discussed in the section on WIPP Plans for future regulatory changes).

Shipping Status

At the time this paper was prepared, shipments were continuing in 2011, and the rate was on-track to set an annual record for total shipments since WIPP disposal operations began (both contact-handled and remote-handled waste shipments). Table 1 shows the shipments received through November 8, 2011, and compares them with the total number of shipments received by site since March 1999, when WIPP first opened. Note that WIPP nominally suspends shipments from the Thanksgiving to New Year Holidays each year for critical maintenance activities (typically underground to accommodate cumulative salt creep issues). This maintenance outage is also timed to avoid winter weather delays. Also, agreements with many transportation authorities along WIPP routes call for shipping suspension during peak holiday traffic periods.

Table 1 – Summary of Shipments by Generator Site (2010 and Totals).

Generator Site	**2010**		**Total (1999-2010)**	
	CH	**RH**	**CH**	**RH**
Argonne National Laboratory	0	36	15	63
GE Vallecitos Nuclear Center	0	11	0	32
Idaho National Laboratory	643	32	4268	231
Los Alamos National Laboratory	173	0	716	16
Lawrence Livermore National Laboratory	0	0	18	0
National Nuclear Security Site (Nevada Test Site)	0	0	48	0
Oak Ridge National Laboratory	39	53	45	64
Rocky Flats Site	0	0	2045	0
Richland Operations (Hanford)	60	0	492	0
Savannah River Site	70	11	1115	39
Total Shipments to WIPP	985	143	8762	445

Clearly evident is that the dominant fraction has been (and continues to be) received from the Idaho National Laboratory, which should not be surprising. Most of the TRU legacy waste is retrievably stored at INL and the Advanced Mixed Waste Treatment Plant, which was specifically built to disposition this large inventory of legacy waste, continues to operate at peak efficiency.

Implied with the record number of shipments in 2010, is a record number of safe transport miles. WIPP's transportation protocols, set forth and negotiated with transportation authorities along WIPP routes, continue to serve the program well. Sparkling clean records like these support the claim that the WIPP transportation system is the safest program for hazardous materials in the US [4].

Not shown in Table 1 are the many inter-site shipments from small quantity sites to INL as part of the small site consolidation program [5]. In additional to shipments to WIPP for direct emplacement many shipments were made from the National Nuclear Security Site, GE Vallecitos Nuclear center, and Hanford to INL. These wastes will be temporarily stored (compliantly) while being characterized and certified for disposal using the certified programs at INL. They will be characterized within 6 months of their shipment to INL, and then shipped to WIPP within 6 months of their characterization under the provisions of the Batt agreement between DOE and the State of Idaho [6]. The nominal shipments to WIPP and the inter-site consolidation shipments (about 50), taken in concert, made 2010 a record shipping year for WIPP.

During 2010, several new shipping routes were opened. The consolidation of wastes from small quantity sites (by shipping to INL for characterization and subsequent shipment to WIPP for disposal) required that routes from these small sites in Nevada and California to Idaho be approved, and training provided to first responders along the way. The Western Governor's Association provided assistance and support with the various transportation authorities along these new routes and made the quick route additions possible. In addition, the American Recovery and Reinvestment Act funds were used to up-grade the southern access route to WIPP itself. All shipments to WIPP have been routed via the North Access Road which is a 12-mile stretch across Bureau of Land Management property from US Highway 62/180 between Carlsbad and Hobbs New Mexico to the WIPP site. For shipments that originate in the

southeastern part of the US (e.g., Savannah River Site), this circuitous route adds several hundred extra miles. The upgrade to the South Access Road with wider shoulders (the one that most WIPP employees use to get to work) will allow waste shipments to travel the same way, and save hundreds of miles per shipment round-trip.

WIPP PLANS

With the completion of the hazardous waste permit renewal and the recertification processes, DOE plans several changes which will likely be considered quite significant by WIPP's critics (compared with previous changes). One of these is a footprint change, which will seek approval to replace disposal panels 9 and 10 (interior common access drifts in the north-south mains) with panels 9A and 10A, which would be situated just south of existing panels 4 and 5. See Figure 1.

Initial discussions with EPA indicate it believes that a rule making would not be required to make this change in layout, since it is simple design change. The long-term repository performance would not be affected by simply changing the geometric location of the 9th and 10th panels. However, it is likely that WIPP critics will reflexively oppose any changes, and this will likely result in NMED requiring that such a change in the HWFP be made via a class 3 permit modification request. If a class 3 modification is required, this process could take several years. A companion paper in session 063 (11238) provides a more detailed look at how DOE plans to seek approval from both EPA and NMED for this disposal layout change [7].

Another significant upcoming change will be for a new panel closure design. The approved panel closure design (by both EPA and NMED) calls for a very large robust engineered plug involving several hundred cubic meters of special salt-based concrete. DOE presented five options for panel closure in its initial compliance certification application in 1996. At that time, DOE did not recommend a particular design choice, but simply described five concepts that would survive a postulated flammable gas deflagration. While unlikely, the postulated presence of flammable gases was considered possible because of incomplete knowledge of the gas generation mechanisms that might be observed once waste disposal rooms were filled. It was considered prudent to plan for the worst. Both regulatory bodies imposed the most robust closure design, referred to as "Option D", as their concept of a conservatively effective way to "seal" each disposal panel from other parts of the underground.

When Option D was written into the EPA certification and the HWFP, DOE conducted a feasibility test to see if the specifications for the special concrete could even be met. These tests indicated it would be extremely difficult to produce such a large and massive structure underground that would meet the restrictive specifications. DOE believed at the time of application, and continues to believe today, that such a robust structure is not necessary to effectively close individual disposal panels. A companion paper in session 063 at Waste Management Symposium 2011, No 11240, is entirely focused on this topic and the reader is encouraged to consult that paper for more information [8]. DOE intends to submit a planned change request to EPA to change the panel closure design to a relatively simple plug consisting of ~30 meters of run of mine salt pushed and potentially blown floor-to-ceiling along both the inlet and outlet drifts of each disposal panel. Ironically, DOE believes this design will be more effective than Option D in precluding inter-panel communication (in the event of a hypothetical future intrusion that introduces brine into the repository). EPA has committed that this panel closure design change will require a rule making. NMED has indicated that it considers this change to require a Class 3 permit modification request.

Another near-term goal that has been in planning for several years will see regulatory progress in 2011. DOE has developed several new payload containers and licensed their use in the existing TRUPACT-II, HalfPact and RH-72B shipping packages by NRC [9]. Application was made to EPA in the form of a planned change request in 2007 for use of a gamma shielded container. The second recertification process began while EPA was in the middle of deliberating that application. EPA decided to postpone their review of the planned change during the recertification process. Now with the second recertification approved (November 2010), EPA will resume its evaluation of the 3-year old planned change request. Now that the RCRA 10-year renewal process is completed, and NMED has issued a new HWFP, DOE will also submit a permit modification request for use of the gamma shielded containers.

In March 2010, NRC issued a Certificate of Compliance for the TRUPACT-III, which is a large rectangular Type B shipping package. DOE plans to ship large boxes from the Savannah River Site (SRS) without repackaging them into smaller containers, such as drums or standard waste boxes. With the ability to ship boxes almost 2 x 2 x 2.5 meters, SRS can avoid the high cost of facility modifications to build a glove box capability to re-package theses large legacy waste containers. There are also many large boxes at Hanford that may be shipped using the TRUPACT-III after 2012. Receipt and unloading of the TRUPACT-III containers and the handling of the boxes that will be emplaced in the permitted disposal units underground will require a HWFP modification. DOE intends to seek approval and a change in the permit to allow TRUPACT-III operations by the end of 2011. Five TRUPACT-III units were in various stages of fabrication at press time, with all five planned to be placed into service by then.

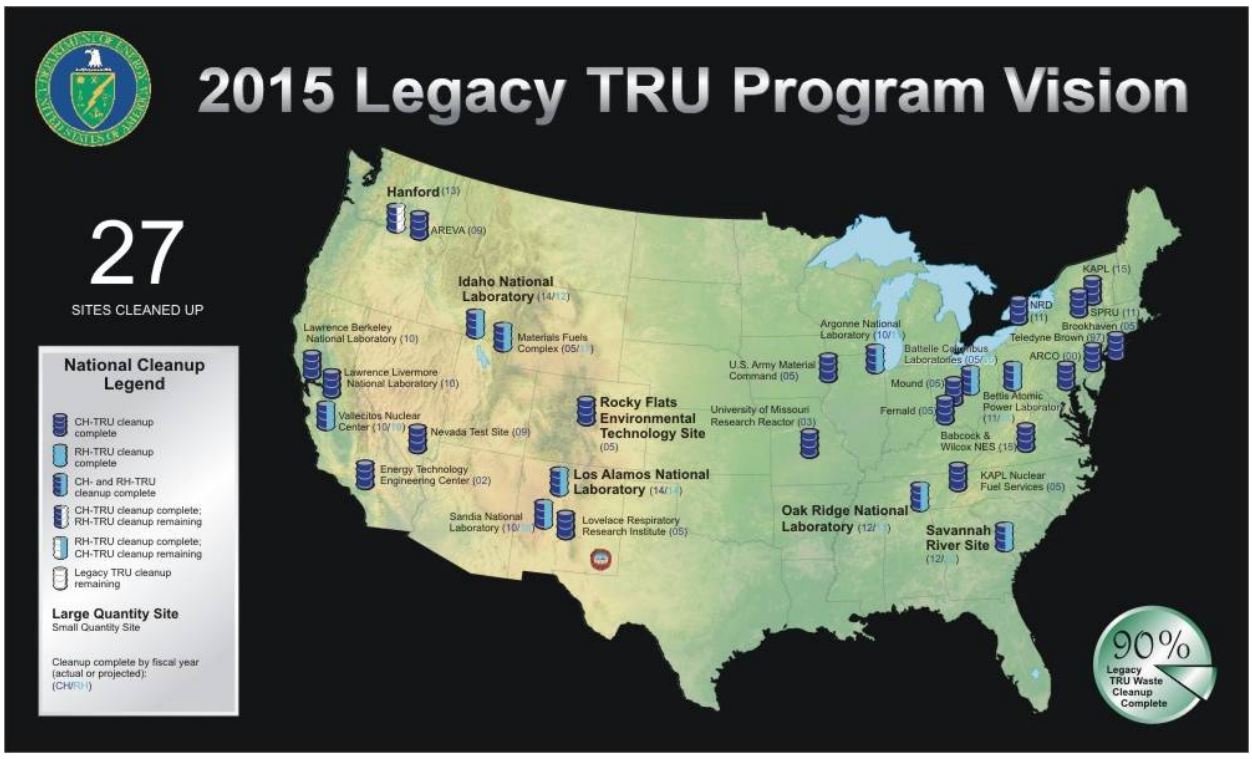

Fig. 2 Map showing TRU waste sites and their respective goals for removal and disposal of 90% of the legacy TRU waste by the year 2015.

Finally, DOE has established a goal of completing removal and disposal of 90% of the legacy TRU waste across the nation by 2015. This will require even more coordination between WIPP and the generator sites. Figure 2 indicates which sites will comprise this 90% goal.

CONCLUSIONS

This paper has presented an up-to-date look at the many aspects of America's only deep geologic long-lived radioactive waste repository. The Waste Isolation Pilot Plant is completing its 12th year of operations. A record year of safe and compliant shipments to WIPP, and the regulatory re-authorization by both federal and state agencies top the list of accomplishments in 2010. The 10-year RCRA permit renewal process by NMED and the 5-year recertification process by EPA were recently and successfully completed.

Small quantity sites are being de-inventoried by consolidating their waste through the certified characterization line at INL. In 2010, three sites were completed and next year, legacy TRU waste at Sandia National Laboratory and Bettis Atomic Power Laboratory are staged for completion.

New emplacement methods for remote-handled waste in shielded containers (gamma and neutron) are undergoing regulatory review. A new Type B shipping package, the TRUPACT-III is being added to the transportation fleet. WIPP plans to license a new criticality control payload container that will allow almost twice the fissile content to be shipped than previously (thereby reducing the number and cost of shipments of Special Nuclear Material SNM) declared as waste.

Regulatory modifications planned for 2011 include approval of a design change that would replace the disposal concept for panels 9 and 10 from using common access drifts (the "mains") with a new footprint south of panels 4 and 5. DOE also plans to begin the process of changing the panel closure design set forth in its certification by EPA and the HWFP by the NMED. The panel closure design change will be a rule making under EPA's procedures and a class 3 permit modification request under NMED procedures.

Plans for achieving 90% of legacy TRU waste retrieval and emplacement in WIPP by 2015 have been developed. Key to the success of this so-called 90/15 plan is adequate funding, both for WIPP operations, as well as for TRU retrieval programs at the generator sites.

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