

Progress Towards Closure of Material Disposal Area G at the Los Alamos National Laboratory - 11472

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ABSTRACT

Los Alamos National Security, LLC (LANS) and the Los Alamos Site Office (LASO) are implementing a multi-year processing strategy and prioritization to accelerate the disposition of Los Alamos National Laboratory (LANL) legacy transuranic (TRU) waste inventory currently stored in Technical Area 54, Material Disposal Area (MDA) G. The strategy is integrated with the Department of Energy's TRU Waste Acceleration Plan under the auspices of the National TRU Program located in Carlsbad, New Mexico. As the strategy has evolved, the easier waste streams have been certified and shipped leaving the harder more challenging wastes to be dispositioned. Investments in several new drum remediation and repackaging lines during Fiscal Year (FY) 2010 contributed to a 40% increase from FY 2009 in the number of shipments sent to the Waste Isolation Pilot Plant (WIPP). Meanwhile additional investments currently underway in waste characterization capability will allow certification of waste packaged into larger standard waste boxes and problematic waste forms such as lead-lined cemented solids. The LANL Waste Disposition Project is responsible for the removal of both the above ground and below grade, retrievably stored TRU waste in time to support the negotiated consent order with the State of New Mexico which requires closure of MDA G by the year 2015. The solutions and strategy employed at LANL are applicable to any organization that is currently managing legacy TRU waste.

INTRODUCTION

This paper is the third in a series of progress updates presented at WM Symposia on a multi-year project to disposition waste inventories, relocate waste operations, and close a waste storage and disposal site that has operated at the Los Alamos National Laboratory (LANL) for over 50 years [1, 2].

The LANL Waste Disposition Project (WDP) is partnering with multiple businesses to develop and implement innovative solutions to retrieve, package and characterize its remaining transuranic (TRU) waste inventory. The Washington TRU Solutions Central Characterization Project has been an essential partner in the development and implementation of certified characterization methods to support this effort. The project team, including the Los Alamos Site Office, Department of Energy (DOE) Carlsbad Field Office (CBFO), and numerous subcontractors, has utilized a disciplined, problem solving technique to clearly identify issues, assess hazards and develop solutions.

SITE BACKGROUND

The Los Alamos National Laboratory is an existing site administered by the National Nuclear Security Administration (NNSA) within the U.S. Department of Energy (DOE) and operated by LANS. The laboratory came into existence as “Project Y” in early 1943 for the sole purpose of designing and building an atomic bomb. To this day, maintaining the effectiveness of the nation’s nuclear deterrent remains a core mission at Los Alamos.

LANL is located at an altitude ranging from 1,800 meters to 2,500 meters (6,000 to 8,000 feet) on the eastern slopes of the Jemez Mountains in northern New Mexico. The primary site for disposal of low-level radioactive waste, and storage of mixed low-level, hazardous, and transuranic waste generated at the laboratory is TA-54 Material Disposal Area G (see Fig. 1). This area comprises 63 acres located atop Mesita del Buey, a narrow mesa approximately 3 kilometers long and 0.4 kilometers wide. The mesa is bounded on its north and south sides by vertical or near-vertical cliffs that transition into the adjacent canyons. The northern boundary of MDA G is within several hundred meters of the LANL site boundary, with the adjacent lands belonging to the San Ildefonso Pueblo. MDA G is located within 8 kilometers of the Los Alamos town site and 1,600 meters from the town of White Rock. Activities at MDA G are scheduled to cease before December, 2015 under a Consent Order signed with the State of New Mexico.

Low-level waste (LLW) disposal in pits and shafts has occurred in MDA G since 1957. Current estimates indicate that the remaining on-site disposal capacity in MDA G will be exhausted within the next two years. LANL is currently transitioning from on-site LLW disposal to off-site transportation and disposal at DOE and commercial sites. Within the last year, LANL achieved a greater-than-90% offsite to onsite disposal ratio (by volume) and is expanding waste stream profiles at receiving sites to cover all operational LLW. In the future, LANL will likely retain a small amount of onsite disposal capacity mainly for low-volume, high-activity waste that is problematic for off-site transportation.

Historical storage practices for contact-handled TRU waste have included stacking containers in below grade modified burial pits; placement of Pu-238 and U-233 contaminated waste in below-grade concrete casks; and stacking containers on above-grade asphalt pads under earthen cover. Remote-handled transuranic wastes were placed in modified shafts. While the above-grade TRU was exhumed by early 2000 and moved into fabric-covered domes, LANL still retains nearly 2,500 m³ of waste inventory stored below grade.



Fig. 1. Aerial view of Technical Area 54 Material Disposal Area G.

TRANSURANIC WASTE INVENTORY MANAGEMENT

Transuranic waste stored in Area G consists of both newly generated TRU waste, (generated post FY1998), and legacy TRU waste. The management and disposition of stored legacy TRU waste is the responsibility of the DOE-Environmental Management (EM) organization, while the NNSA is responsible for all newly generated TRU. LANL also has programmatic responsibility for the DOE Off-site Source Recovery Project (OSRP); sealed source drums are stored in Area G while characterization and packaging documents are prepared for disposal at the Waste Isolation Pilot Plant (WIPP). The LANS Waste Disposition Project has programmatic responsibility for disposition of all TRU waste at the site.

The distribution of LANL's TRU waste is shown in Fig. 2. Since the WIPP first opened in 1999, LANL has shipped almost 3,500 cubic meters of waste to the repository in southern New Mexico. Over 1,000 additional cubic meters of the TRU inventory has been reclassified as alpha-contaminated mixed low-level waste, with TRU isotopic concentration averaging between 10 and 100 nCi per gram. Mixed low-level waste is treated offsite at commercial facilities prior to disposal at the Nevada Test Site (NTS). Newly generated TRU contributes about 100 to 150 cubic meters per year to the Area G inventory. A significant volume of newly generated waste could be introduced in the coming years as the plutonium processing facilities at LANL begin to de-inventory their storage vaults of surplus plutonium-bearing materials.

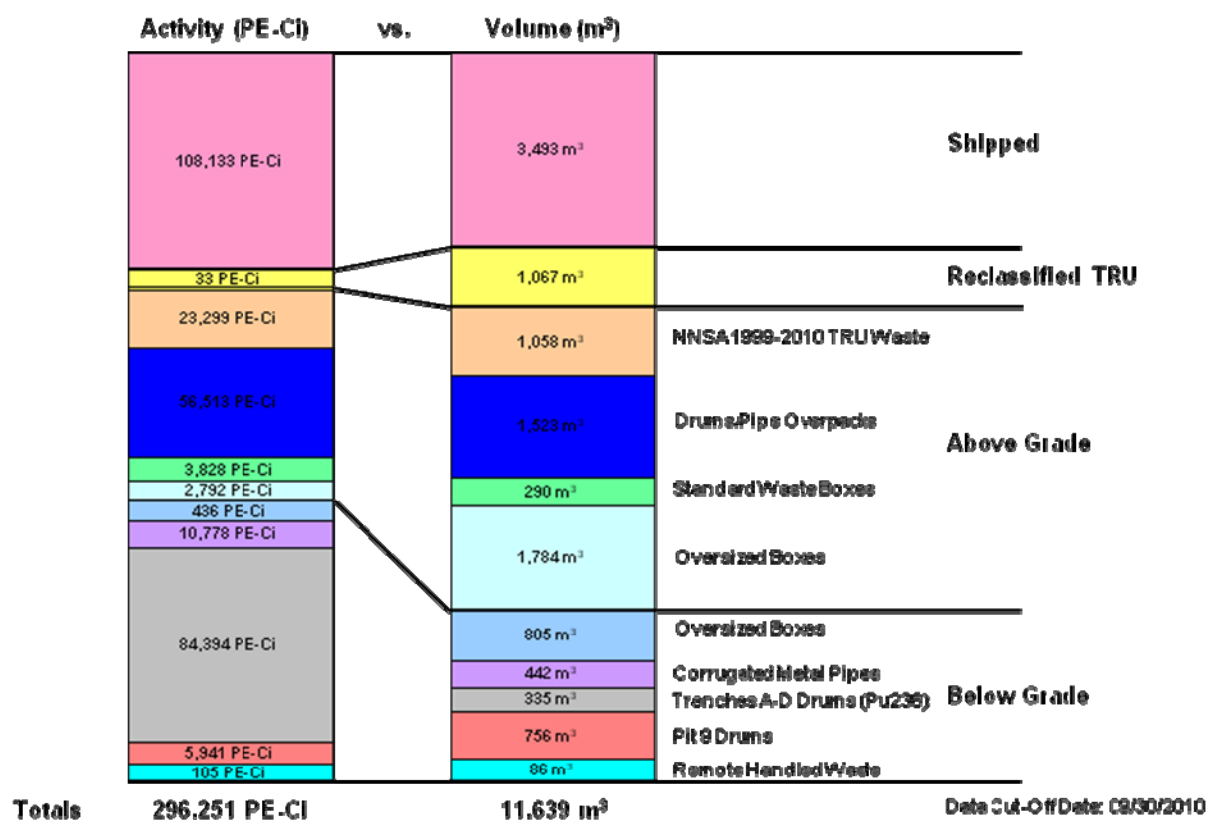


Fig. 2. Distribution of Transuranic Waste Inventory at LANL

The above-grade TRU inventory comprises drums, oversized waste boxes, and miscellaneous containers. The drum population consists primarily of 55-gallon drums and 85-gallon overpacks containing 55-gallon drums inside. There are four primary waste forms packaged in drums: debris; non-cemented sludge and absorbed liquids; cemented monoliths; and cemented cans. Above-grade boxes and miscellaneous containers in storage consist of standard waste boxes (direct loaded and overpacks); fiberglass reinforced plywood boxes; metal boxes; metal crates; and Bolas Grande¹ spheres.

The retrievably stored below-grade TRU inventory includes drums, boxes and miscellaneous containers. This inventory is in Pit 9; Trenches A through D; Pit 29 (Corrugated Metal Pipes); Shafts 200 through 232 (RH TRU); and Shafts 30 through 306 (RH Hot Cell Liners).

As of October 1, 2010, there were approximately 4,600 cubic meters of above-grade TRU and approximately 2,500 cubic meters of below-grade TRU in retrievable storage. In the past year, the volume of the TRU inventory has been reduced by about 750 cubic meters, or about 9.5%. The Waste Disposition Project tracks the status of its TRU inventory in terms of “net” volume dispositioned, which takes into account the volume disposed offsite (either as TRU or MLLW reclassified from TRU); incoming volumes of newly generated waste and TRU sealed sources;

¹ The Bolas Grandes are 3-ft and 6-ft diameter vessels that contain residual contamination from explosive tests.

and volume adjustments realized when waste is repackaged or size reduced from one container to another. Since all of the TRU inventory must be dispositioned in order to close the Area G site this calculation provides the best measure of “volume to go” for both planning and reporting purposes. Other volume-based metrics, such as annual project-specific goals, performance-based incentives, and EM-Headquarters strategic goals for legacy waste disposition, are also tracked and reported.

As of October 1, 2010, the material at risk (MAR) of the above-grade TRU inventory was approximately 81,150 plutonium-equivalent curies (PE-Ci), while the below grade waste contained another 100,000 PE-Ci of material. Note the calculation of MAR for the TRU inventory in MDA G only pertains to the above-grade waste, and takes credit for special form encapsulation of transuranic sealed sources. Thus the MDA G MAR is less than the total plutonium equivalent activity of the above-grade TRU inventory.

The Waste Disposition Project is responsible for the remediation, prohibited item removal, size reduction, repackaging, venting, retrieval, characterization and shipping of LANL’s TRU waste inventory at MDA G. In mid-2007 prescreening of the above-ground drum inventory using portable assay equipment and real-time radiography was completed. While certified characterization efforts were ongoing at the time, the prescreening was successful at segregating out drums that would have a high probability of being reclassified to LLW, and drums that would fail one or more of the WIPP Waste Acceptance Criteria (WIPP-WAC). The combined pre-screen and certified characterization results indicated that the failure rate would exceed 70% for one or more physical criteria in the WIPP-WAC, and that approximately 38% of the drums could be reclassified as LLW. Note that these numbers are not mutually exclusive on the above-grade drum population - some of containers that failed the WIPP-WAC also ended up being reclassified. This prescreening had the added benefit of saving the WIPP characterization contractor countless hours from not having to generate non-conformance reports as required in their waste certification program.

The above-grade drum prescreening campaign helped define scope and gave the project a new direction and focus. The Waste Disposition Project immediately set about developing additional drum remediation and repackaging capacity. The direction the project has taken for drum processing is further described in the drum processing activity section below.

Most of the remaining above-grade TRU waste containers have been characterized as having one or more of the following technical challenges; high activity, internal items with a high-dose component, remote handled (i.e., >200 mrem/hr contact dose), classified shapes, questionable container integrity, packaged in non-standard containers, containing prohibited items or requiring repackaging and size reduction to meet transportation requirements. The retrievably stored, below grade TRU waste exhibits similar challenges and must be properly vented on retrieval.

The LANS team has developed an aggressive plan to disposition all of the above grade TRU waste in storage as well as any new receipts and OSRP containers within the next five years, pending funding availability. The plan also includes contact-handled and remote-handled TRU waste retrieved from various locations in Area G.

PROGRESS IN DRUM PROCESSING

Processing non-compliant debris waste includes mating a drum to the glovebag or glovebox, transferring the contents of the drum onto the sorting table, removing (by bagging out) or remediating prohibited items, and repackaging the waste into a daughter drum mated on the opposite end of the glovebag or through drum ports at the bottom of the glovebox.

Two new debris drum processing lines were commissioned within MDA G during FY2010. Both consisted of soft-sided glove bags that serve as the primary containment. One line was installed in the existing Permacon® structure in Dome 231; the second went into a containment hut inside Building 412. At the beginning of the year, both of these process lines were established as radiological operations and covered by the existing safety basis for Area G with focus primarily on contamination control.

Remediation of debris drums continued throughout FY2010 at the Waste Characterization, Reduction and Repackaging Facility (WCRRF) located in Technical Area 50, which is authorized to process Hazard Category 2 quantities of nuclear material. The waste characterization glovebox (WCG) at the WCRRF is used exclusively for disposition of prohibited items in debris wastes (Fig. 3). WCRRF provides significant repackaging capability for the Waste Disposition Project and is often referred to as the “workhorse”. The principal disadvantage is that it is located approximately 5 miles from the TRU storage units in MDA G,



Fig. 3. Waste Characterization Glovebox in the LANL WCRR Facility

so all waste must be transferred back and forth, sometimes multiple times daily. All on-site transportation of radioactive materials is subject to the requirements of the laboratory's Transportation Safety Document.

At the end of FY2010, LANS went into a 60-day outage at the WCRRF to perform safety and operational upgrades. The principal improvement was the installation of a fire-suppression system in the WCG; however, other upgrades to electrical and HVAC systems were also completed. The fire protection upgrade will allow an increase in the WCG MAR limits to accommodate several drums of high-activity combustible waste in above-grade storage, and much of the Pu-238 contaminated waste stored below grade in Trenches A through D.

Several hundred drums of non-cemented sludge were remediated in the Dome 231 Permacon® during FY2010. This process involves the application of vacuum to extract residual liquids that have pooled either on top of the sludge monolith or between the sludge and liner wall. This effort is part an ongoing campaign to dewater all of the drums in this waste stream.

At the close of FY2010, LANS implemented a page change to the TA-54 Area G Technical Safety Requirements (TSRs) to allow processing waste packages containing up to 2.5 combustible equivalent PE-Ci. This upgrade provided several significant advantages for the project: 1) it allowed for expansion of processing capabilities within MDA G to include both drums and oversized boxes as well as sorting, segregating, and size-reduction activities; and 2) it expanded the universe of TRU containers that could be opened and processed in MDA G without having to transport them to the WCRRF. Because the TSR activity limits are based on combustible-equivalent criteria, individual containers of homogeneous solids and other solidified, non-combustible waste matrices may contain significantly higher activity.

The Waste Disposition Project remediated or repackaged 1,893 drums (425 m³) in FY2010. All drums were processed in one of the three remediation lines discussed above. At the beginning of FY2011, there were approximately 4,300 drums remaining in the above-grade TRU inventory to remediate or repackage to meet the WIPP-WAC. As discussed below, the addition of new characterization will help reduce the overall need for processing these drums.

NON-DRUM PROCESSING

There are approximately 280 fiberglass reinforced plywood boxes, metal crates and metal boxes in above-grade storage and another 200 wooden boxes below grade. The above-grade oversized boxes comprise about 38% of the inventory by volume but less than 4% of the current above-grade MAR. The volume of below-grade boxes is approximately 800 m³ and all are located in Pit 9. All of the containers are non-compliant and require either repackaging or size reduction. It is estimated that up to 50% of the volume in these containers is void space. LANL has not processed any oversized boxes since mid-2003, when about 20 boxes were repackaged during a 9-month pilot project in Building 412. To the extent possible, all waste boxes will be repackaged into standard waste boxes (SWBs) to increase disposal efficiency at the Waste Isolation Pilot Plant.

In FY2011, a radiological box processing line is being designed and will be installed in Building 412² which provides containment, fire suppression, heat and cooling, and power requirements (see Fig. 4). This process line will focus on contamination control and will include in-process characterization and segregation of items into a mixed low-level waste stream; identification and removal of higher activity items; opening and size reduction of the outer packaging, and size reduction and repacking waste items into Standard Waste Boxes or suitable LLW packages. This operation will be performed manually using material handling lifts, small cranes and portable tools to open, segregate and size reduce. Based on airborne activity levels, operators will either be in air-purifying respirators or in supplied air plastic suits to complete the work. Due to the process being radiological, there are no additional safety basis requirements and a line management assessment will be utilized to support start-up. Oversized box processing in Building 412 is scheduled to start up in the third quarter of FY2011.

In order to meet the MDA G closure timeline, two concurrent box processing lines will be needed to operate in parallel. The WDP is also beginning design of a more robust box processing line that will provide containment and fire protection, and will be operated as a Hazard Category 3 nuclear operation. The current plan is to site this facility in one of the existing storage domes in MDA G which will provide an environmental cover for the operation (see Fig. 4). The techniques and processes are very similar to those proposed for the radiological boxes, but there will also be remote size reduction tools available. Design requirements for the second box repackaging line will also include the capability to break up concrete monolith drums that are nonconforming, size-reduce the concrete waste in corrugated metal pipes, and handle other forms of problematic waste.

The new box repackaging lines are expected to utilize existing safety basis controls for sorting, segregating and size reduction processing. The MAR limits will be increased as operational experience and confidence are obtained and after some of the systems, structures, and components are credited (such as MAR inventory controls and fire protection system). This process line is scheduled to commence operations no later than the fourth quarter of FY2011.

OTHER PLANNED CAPABILITIES

As the path toward MDA G closure continues, the WDP will add characterization and processing capabilities to safely disposition the remaining TRU inventories. The various processing capabilities that will support both above grade and below grade waste drums and oversized boxes are depicted in Fig. 4.

The installation of a high energy Real Time Radiography (HE-RTR) unit is in progress. This unit will allow examination of wastes in SWBs and high-density waste forms such as concrete monoliths and lead-shielded containers. The foundation and pad for the HE-RTR system will be completed in the first quarter of FY2011 and the shield walls and equipment will be installed during the second quarter of FY2011. The unit will be capable of operating at the 3.2 MeV and 6 MeV power levels. A MAR inventory control of 90 combustible equivalent PE-Ci is anticipated for the high-energy RTR system, and industry standards for radiographic equipment

² Building 412 was formerly referred to as the Decontamination and Volume Reduction System (DVRS).

will be applied (i.e. shielding, access control, emergency stops, warning lights, and audible alarms).

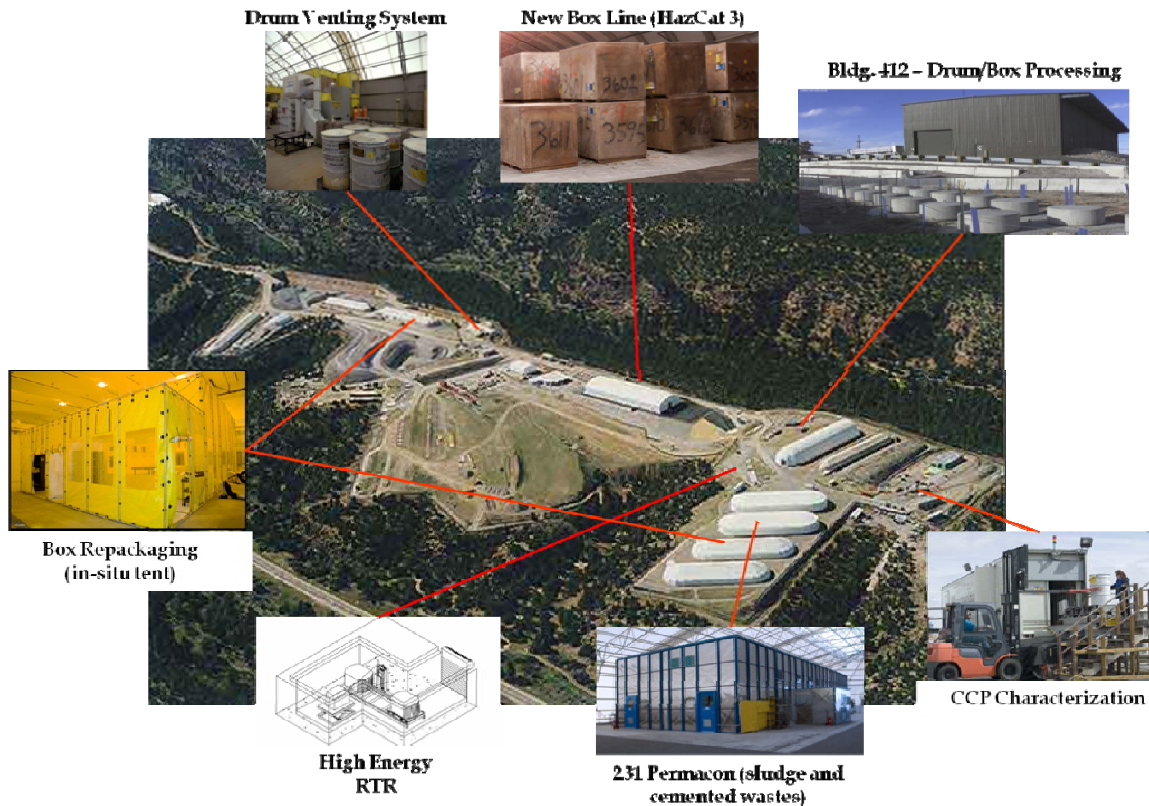


Fig. 4. Planned locations of drum and box processing in Area G.

WDP has approximately 900 drums in above-grade storage that require venting the outer and inner packaging. These drums vary from 55-gallon, 85-gallon overpacks, or 110-gallon overpacks. Because of the potential for hydrogen generation in TRU waste containers, a venting capability has been obtained that safely penetrates the drums, obtains and analyzes a sample of the headspace and installs a WIPP-approved filter vent.

The Drum Venting System (Fig. 4) is owned and operated by a WDP subcontractor. It was installed and tested during late FY2010, and will undergo both contractor and DOE readiness assessments in the first quarter of FY2011 with startup scheduled for the second quarter of FY2011. This system will also support retrieval of containers from Pit 9 and Trenches A-D.

Additional characterization equipment will be provided by CCP throughout the life of the project. A new portable High-Efficiency Neutron Counter will begin operation in the second quarter of FY2011 and provide assay capability for SWBs and drums. Gas generation testing equipment will be installed in FY2012 for several waste streams with organic compounds. This equipment is procured and maintained in accordance with quality assurance programs administered and maintained by CCP and the Carlsbad Field Office. Characterization equipment

does not introduce new hazards and is considered primarily to be a container handling operation. As such, TSR page changes may be required to update descriptive sections of the safety basis, but no new controls other than those required to mitigate standard industrial hazards and radiological exposures.

As the additional characterization capability becomes operational, some of the more difficult waste streams will be tackled. A processing line in the 231 Permacon will be developed for remediating cemented can waste. There are approximately 1,900 55-gallon drums that contain cans of cemented waste. Each drum contains 35 one-gallon containers stacked seven per layer, five layers high. The drum configuration also includes a lead liner. The waste inside the drums was solidified when generated; however, interstitial liquid may have leached out of the matrix over time. The CCP HE-RTR system will be used to verify WIPP-WAC compliance. For drums found to be nonconforming, individual 1-gallon containers will be removed, drained onto absorbent, and repacked into new 55-gallon drums. The parent drum and lead liner will be size reduced and dispositioned as mixed low level waste.

There are also a number of inner cans in this waste stream suspected to have contact radiation doses that meet the definition of remote handled TRU waste. Therefore, the process line will segregate contact handled cans for packaging in 55-gallon drums and remote handled cans for packaging in a shielded 55-gallon container. This operation will be conducted under the existing Area G safety basis, relying primarily on MAR inventory controls and the radiation protection program (for contamination controls and radiation exposure controls).

As mentioned earlier, there are some containers that have integrity issues that preclude safe handling and movement. Temporary containment tents will be erected over these containers so that they can be size reduced and repackaged in-situ.

CONTACT-HANDLED TRU WASTE RETRIEVAL

WDP will begin the planning process for retrieving below-grade TRU wastes in FY2011. A DOE-EM-HQ memorandum in October, 2009 established a separate capital asset project entitled “Waste Retrieval Activities” for this scope of work. Below-grade retrievals are planned to begin in FY2012 assuming sufficient funding is received to support this work. The sequence of these retrievals will be established as part of the FY2011 planning effort. Fig. 5 shows the locations of TRU waste retrieval activities within MDA G. The scope of the waste retrieval effort is described in the following paragraphs.

Pit 9 contains approximately 1,560 cubic meters of TRU waste packaged in 517 30-gallon, 3363 55-gallon, and 3 85-gallon drums, and 191 fiberglass reinforced boxes. The pit is 400-feet long, 20-feet deep and 30-feet wide. The total activity in the pit is approximately 6,100 PECi. All of the waste in the pit is considered contact handled. The waste was generated over a period spanning from 1974 through 1979. The waste was placed in four cells with reinforced wood boxes at the perimeter and drums stacked inside. The drums were coated with rust inhibitor before placement in the pit and all are unvented.

Retrieval of the Pit 9 inventory will involve removal of the soil cover; inspection and removal of individual containers; application of unvented drum controls for drums; cleaning/removal of the rust inhibitor and any residual soils (or overpacking into vented drums); radiological surveys;

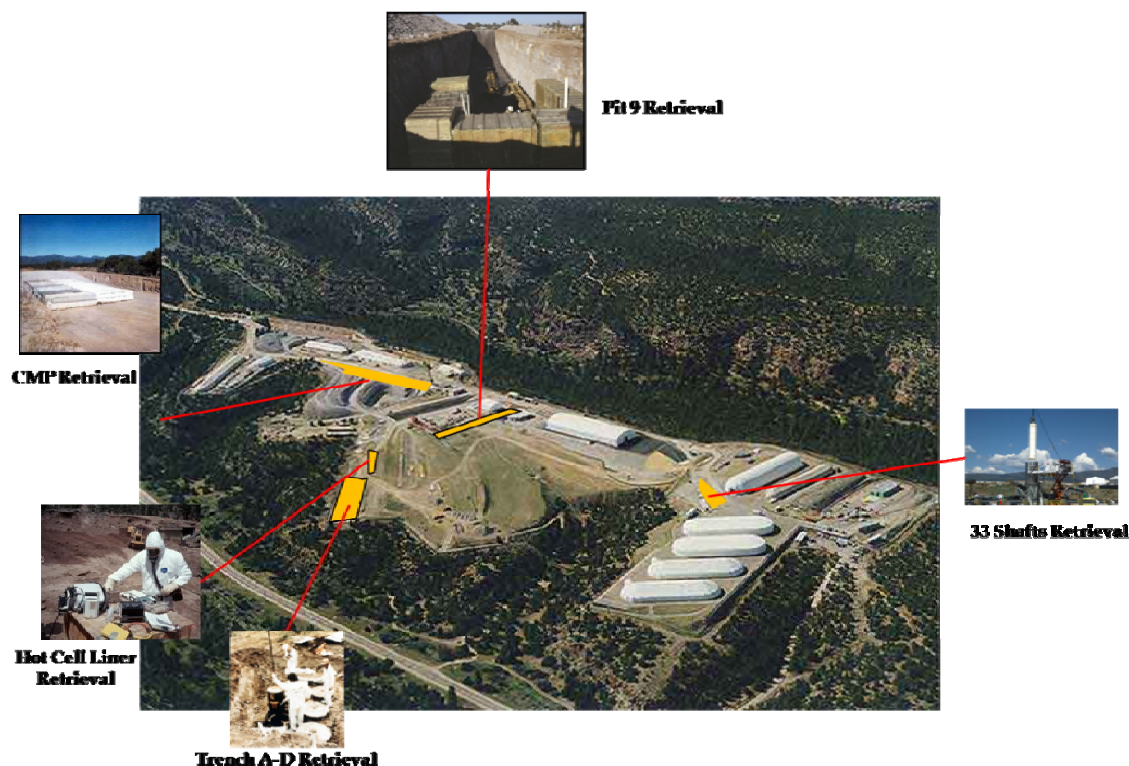


Fig. 5. Location of below-grade TRU waste to be retrieved in support of MDA G closure.

and application of appropriate labels and markings prior to placement into storage. Previous inspections of the pit have indicated that the container integrity is high, but in the event a breached container is unearthed, it will be contained and overpacked at the retrieval site before further processing. The primary controls for Pit 9 retrieval are contained in a FY2011 upgrade to the Area G Basis for Interim Operations and include MAR inventory control, limiting the source for fuel pool fire, and controls for unvented drums.

The corrugated metal pipes are located on top of Pit 29 (see CMP retrieval location in Fig. 5). There are 158 pipes to retrieve and process for WIPP disposal. They are 30 inches in diameter, 20 feet long, and they weigh between 10,000 and 14,000 pounds each. These wastes were generated between 1976 and 1978 from a wastewater treatment process located at TA-21. The pipes were vertically filled and capped on both ends with a non-contaminated 12-in grout plug. They were originally stored in TA-21, Area T, but were retrieved and placed in the current location at TA-54 in 1986. The total activity in all of the pipes is approximately 10,755 PECi.

The corrugated metal pipes are stored in a trench approximately 100-feet long, 40-feet wide and 9-feet deep. They were placed on top of Pit 29 in two rows and stacked two layers high then covered with approximately 4 feet of backfill. Retrieval operations will include removal of the soil cover; inspection and removal of individual containers; radiological surveys and cleaning to

remove residual soils; and application of appropriate labels and markings prior to placement into storage. Processing of the pipes will entail size-reduction to fit inside standard waste boxes. This waste is categorized in Summary Category Group S3000, Homogeneous Solids, and must be analyzed to meet the requirements of the Waste Analysis Plan in WIPP RCRA Permit. Because of the low release fraction and dispersability of the concrete waste, the primary controls from the Area G Basis for Interim Operations for retrieval activities will be MAR controls and limitations on excavation depth to ensure that Pit 29 is not unearthed.

Retrieval of Trenches A, B, C and D involves the retrieval of 721, 30-gallon drums overpacked in 363 concrete casks (two drums per cask). The waste was generated from 1974 to 1985. The casks were placed in trenches and the cask lids sealed with bituminous material. The casks are 32 inches in diameter and approximately six feet high. A corrugated metal plate was placed on top of the casks before they were buried under four feet of crushed tuff. The total activity in the trenches is approximately 94,000 PE-Ci, with 70% of the drums containing greater than 56 PE-Ci. All of the drums in Trenches A-D are unvented.

Retrieval operations include removal of the soil cover; inspection of individual casks; removal of the cask lid; visual inspection and radiological surveys of the inner 30-gallon drums; and removal of the drums. The 30-gallon drums will be overpacked in vented 55-gallon drums, labeled and placed into storage pending further processing and characterization. If contamination is discovered, a temporary containment structure will be constructed over the affected cask and the waste material retrieved and repackaged. Because of the high individual container MAR; nuclear material controls, container overpacking, unvented drum controls, restrictions on fuel pool sources, and combustible material controls will be utilized from the upgrade to the Area G Basis for Interim Operations.

REMOTE HANDLED TRU WASTE RETRIEVAL AND PROBLEMMATIC WASTE

Retrieval of remote-handled waste from the 33 lined shafts is currently undefined. The shaft fields (see Fig. 5) contain 3.4 cubic meters of waste and a total of approximately 97 PECi of activity. Thirty two of the shafts contain hot cell debris and one contains a sodium cooled experimental reactor vessel. Several engineering concepts have been proposed for retrieval and processing of the RH-TRU; however, no decisions have been finalized and preliminary cost estimates to date are highly variable.

The general retrieval process will involve soil removal; either removal of the shaft itself or removal of the waste in-situ; shielded transfer as required into a hot-cell or equivalent facility; and packaging to meet the WIPP RH waste acceptance requirements. Several packaging options are envisioned including the RH-TRU canister or 55-gallon shielded drum. Individual shafts have inventories less than 56 PE-Ci, and the controls for retrieval and processing will include MAR controls, fuel pool mitigation, combustible material restrictions and vehicle access.

The final planned RH-TRU retrieval is the Hot Cell Liners (see Fig. 5) which have a volume of approximately 51 cubic meters and a total activity of 0.5 PECi. The waste consists of liners from hot-cell operations packed in 6-ft wide, 6-ft high, and 10-ft long steel boxes. The items will be retrieved, surveyed, cleaned, labeled and moved to the box repackaging and size reduction

process lines to open, size reduce, characterize and disposition as either mixed low level waste or TRU waste.

As the LANL TRU waste inventory is processed and disposed, problematic TRU wastes will be identified, segregated and individual disposition strategies developed. Examples of these disposition strategies include time at risk arguments using existing controls and the use of existing temporary processes with additional administrative compensatory measures for short duration processing.

Current problematic TRU wastes being worked by the LANL team include:

- sodium cooled reactor vessel which contains potentially un-reacted sodium
- 4 tritium torpedoes and one 20-ft long tritium tank contaminated with alpha radionuclides
- approximately 10 boxes with activity levels greater than 56 PE-Ci
- 3-ft and 6-ft diameter confinement vessels which require venting, size reduction, and characterization
- TRU waste tank from the radioactive liquid waste facility
- Other waste that may eventually require RCRA-regulated treatment to meet WIPP waste acceptance requirements

Some of these problematic wastes may require movement from Area G, interim storage and processing in another location. As a result, storage contingencies are currently being developed that would allow closure of MDA G in accordance with the consent order timeline.

SUMMARY

Disposition of the legacy TRU waste inventories is on the critical path towards closure of MDA G at LANL. Since the WIPP first opened in 1999, the site has dispositioned almost 40% of its legacy TRU waste inventories, while sustaining the capability to characterize and dispose all newly generated TRU from the laboratory's ongoing nuclear weapons programs. Much of this progress has been realized over the last five years through a focus on stable programmatic funding; significant investment in waste processing and characterization capabilities; and through successful partnership between the DOE's Los Alamos Site Office and Carlsbad Field Office, Los Alamos National Security, Washington TRU Solutions, and numerous subcontractors.

Given the prospect of flat funding levels over the next several years, an estimated 1,400 cubic meters of the current TRU inventory in MDA G will be dispositioned by the end of FY2012, leaving about 5,700 cubic meters remaining to work off. LANL should have a multitude of new capabilities in operation at that time including new equipment for difficult to characterize wastes; a new box processing line for size reducing gloveboxes and other large items; and retrieval of below-grade waste. This rate of waste disposition will demonstrate significant risk reduction and progress toward regulatory commitments.

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