

**Class 2 Permit Modification Request**

**Allow the Use of Either Track or Non-Track Mounted Conveyance Cars**

**Waste Isolation Pilot Plant  
Carlsbad, New Mexico**

**WIPP HWFP #NM4890139088-TSDF**

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## Acronyms and Abbreviations

CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
DOE	Department of Energy
HWDU	Hazardous Waste Disposal Unit
HWFP	Hazardous Waste Facility Permit
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PMR	Permit Modification Request
TSDf	Treatment, Storage and Disposal Facility
U.S.	United States
WHB	Waste Handling Building
WIPP	Waste Isolation Pilot Plant
WTS	Washington TRU Solutions LLC

## Overview of the Permit Modification Request

This document contains a Class 2 Permit Modification Request (**PMR**) for the Hazardous Waste Facility Permit (**HWFP**) at the Waste Isolation Pilot Plant (**WIPP**), Permit Number NM4890139088-TSDF hereinafter referred to as the WIPP HWFP.

This PMR is being submitted by the U.S. Department of Energy (**DOE**), Carlsbad Field Office (**CBFO**) and Washington TRU Solutions LLC (**WTS**), collectively referred to as the Permittees, in accordance with the WIPP HWFP, Condition I.B.1 (Title 20, Chapter 4, Part 1, Section 900 of the New Mexico Administrative Code (**NMAC**) incorporating Title 40 Code of Federal Regulations (**CFR**) §270.42(b)). The modification will allow the use of a facility transfer vehicle which may operate either on the floor or on tracks for movement of facility pallets. These changes do not reduce the ability of the Permittees to provide continued protection to human health and the environment.

The requested modification to the WIPP HWFP and related supporting documents is provided in this PMR. The proposed modification to the text of the WIPP HWFP has been identified using a double underline and a revision bar in the right hand margin for added information, and a ~~strikeout~~ font for deleted information. All direct quotations are indicated by italicized text. The following information specifically addresses how compliance has been achieved with the WIPP HWFP requirement, Permit Condition I.B.1, for submission of this Class 2 PMR.

- 1. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(i)), requires the applicant to describe the exact change to be made to the permit conditions and supporting documents referenced by the permit.**

The Permittees are upgrading the aboveground conveyance car with a non-track mounted facility transfer vehicle. Either the current track mounted vehicle or the new automated system will be used to transfer facility pallets at the WIPP site. Both systems will be in use at the WIPP facility and therefore the term “conveyance vehicle” has been changed to “facility transfer vehicle” which will include the current track mounted conveyance vehicle and the new automated transfer vehicles. The automated vehicles operate with an internal guidance system programmed to follow a particular path or may be operated on the existing tracks within the Waste Handling Building (**WHB**). Attachments C and D indicate the features of the automated vehicles.

Automated transfer vehicles may operate on either the existing tracks within the WHB or on the floor of the WHB. For this reason the references in the HWFP related to tracks have been revised to read path.

The requirement to move facility pallets using forklifts has been revised to indicate that facility pallets may be moved by either a forklift or a facility transfer vehicle.

Conflicting statements in the HWFP indicate that the waste will be elevated approximately 9.5 inches off of the floor (Attachment F and M1) or that they shall be elevated at least 6 inches off of the floor (Attachment M1). The HWFP has been revised to indicate that the waste will be elevated off of the floor. The minimum six inch height will be retained.

Tables M1-2 and M2-1 have been revised to correct the capacity for the facility transfer vehicles which are incorrect in the current HWFP.

Finally, several figures have been deleted since either the current conveyance car or the automated transfer vehicles may be used.

**2. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(ii)), requires the applicant to identify that the modification is a Class 2 modification.**

The Permittees believe that this request could be classified as a Class 1 notification (equipment replacement or upgrading with functionally equivalent components). However, because this is a first time application of this technology at WIPP the Permittees believe that public participation regarding this change is appropriate. Therefore, in accordance with 20.4.1.900 NMAC incorporating 40 CFR 270.42 (a)(3) the Permittees are requesting that the New Mexico Environment Department process this request as a Class 2 modification.

**3. 20.4.1.900 NMAC (incorporating 40 CFR §270.42(b)(1)(iii)), requires the applicant to explain why the modification is needed.**

The current conveyance car is approaching retirement and replacement parts are becoming more difficult to obtain. The Permittees are requesting the ability to use either the current conveyance car or the automated vehicles. The DOE's Hanford Site has been using automated vehicles successfully for over five years to move TRU waste for characterization and have found them to operate both efficiently and safely.

Information on the Hanford automated vehicles is included as Attachment C

Information on typical automated vehicles is included as Attachment D. The vehicles will be purchased by the Permittees after approval of this PMR.

**4. 20.4.1.900 NMAC (incorporating 40 CFR §270.42 (b)(1)(iv)), requires the applicant to provide the applicable information required by 40 CFR §§270.13 through 270.21, 270.62 and 270.63.**

The regulatory crosswalk describes those portions of the WIPP HWFP that are affected by this PMR. Where applicable, regulatory citations in this modification reference 20.4.1, NMAC, revised October 1, 2003, incorporating 40 CFR Parts 264 and 270. In addition, 40 CFR §§270.16 through 270.22, 270.62, 270.63 and 270.66 are not applicable at WIPP. Consequently, they are not listed in the regulatory crosswalk table. Furthermore, 40 CFR §270.23 is applicable to the WIPP Hazardous Waste Disposal Units (**HWDUs**). This modification does not impact the conditions associated with the HWDUs.

5. **20.4.1.900 NMAC (incorporating 40 CFR §270.11(d)(1) and 40 CFR §270.30(k)), requires any person signing under paragraph a and b must certify the document in accordance with 20.4.1.900 NMAC.**

The transmittal letter for this PMR contains the signed certification statement in accordance with Module I.F of the WIPP HWFP. The certification statement is also included as part of this PMR.

## Regulatory Crosswalk

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.13		Contents of Part A permit application	Attachment O, Part A	✓	
§270.14(b)(1)		General facility description	Attachment A		✓
§270.14(b)(2)	§264.13(a)	Chemical and physical analyses	Attachment B		✓
§270.14(b)(3)	§264.13(b)	Development and implementation of waste analysis plan	Attachment B		✓
	§264.13(c)	Off-site waste analysis requirements	Attachment B		✓
§270.14(b)(4)	§264.14(a-c)	Security procedures and equipment	Attachment C		✓
§270.14(b)(5)	§264.15(a-d)	General inspection requirements	Attachment D	✓	
	§264.174	Container inspections	Attachment D		✓
§270.23(a)(2)	§264.602	Miscellaneous units inspections	Attachment D		✓
§270.14(b)(6)		Request for waiver from preparedness and prevention requirements of Part 264 Subpart C	NA		
§270.14(b)(7)	264 Subpart D	Contingency plan requirements	Attachment F		✓
	§264.51	Contingency plan design and implementation	Attachment F		✓
	§264.52 (a) & (c-f)	Contingency plan content	Attachment F		✓
	§264.53	Contingency plan copies	Attachment F		✓
	§264.54	Contingency plan amendment	Attachment F		✓
	§264.55	Emergency coordinator	Attachment F		✓
	§264.56	Emergency procedures	Attachment F		✓
§270.14(b)(8)		Description of procedures, structures or equipment for:	Attachment E		✓
§270.14(b)(8) (i)		Prevention of hazards in unloading operations (e.g., ramps and special forklifts)	Attachment E	✓	
§270.14(b)(8) (ii)		Runoff or flood prevention (e.g., berms, trenches, and dikes)	Attachment E		✓
§270.14(b)(8) (iii)		Prevention of contamination of water supplies	Attachment E		✓
§270.14(b)(8) (iv)		Mitigation of effects of equipment failure and power outages	Attachment E		✓
§270.14(b)(8) (v)		Prevention of undue exposure of personnel (e.g., personal protective equipment)	Attachment E		✓
§270.14(b)(8) (vi) §270.23(a)(2)	§264.601	Prevention of releases to the atmosphere	Module II Module IV Attachment M2 Attachment N		✓
	264 Subpart C	Preparedness and Prevention	Attachment E		✓
	§264.31	Design and operation of facility	Attachment E	✓	
	§264.32	Required equipment	Attachment E Attachment F		✓
	§264.33	Testing and maintenance of equipment	Attachment D		✓
	§264.34	Access to communication/alarm system	Attachment E		✓
	§264.35	Required aisle space	Attachment E		✓
	§264.37	Arrangements with local authorities	Attachment F		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.14(b)(9)	§264.17(a-c)	Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes	Attachment E		✓
§270.14(b)(10)		Traffic pattern, volume, and controls, for example: Identification of turn lanes Identification of traffic/stacking lanes, if appropriate Description of access road surface Description of access road load-bearing capacity Identification of traffic controls	Attachment G	✓	
§270.14(b)(11)(i) and (ii)	§264.18(a)	Seismic standard applicability and requirements	Part B, Rev. 6 Chapter B		✓
§270.14(b)(11)(iii-v)	§264.18(b)	100-year floodplain standard	Part B, Rev. 6 Chapter B		✓
	§264.18(c)	Other location standards	Part B, Rev. 6 Chapter B		✓
§270.14(b)(12)	§264.16(a-e)	Personnel training program	Permit Module II Attachment H		✓
§270.14(b)(13)	264 Subpart G	Closure and post-closure plans	Attachment I & J		✓
§270.14(b)(13)	§264.111	Closure performance standard	Attachment I		✓
§270.14(b)(13)	§264.112(a), (b)	Written content of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(c)	Amendment of closure plan	Attachment I		✓
§270.14(b)(13)	§264.112(d)	Notification of partial and final closure	Attachment I		✓
§270.14(b)(13)	§264.112(e)	Removal of wastes and decontamination/dismantling of equipment	Attachment I		✓
§270.14(b)(13)	§264.113	Time allowed for closure	Attachment I		✓
§270.14(b)(13)	§264.114	Disposal/decontamination	Attachment I		✓
§270.14(b)(13)	§264.115	Certification of closure	Attachment I		✓
§270.14(b)(13)	§264.116	Survey plat	Attachment I		✓
§270.14(b)(13)	§264.117	Post-closure care and use of property	Attachment J		✓
§270.14(b)(13)	§264.118	Post-closure plan; amendment of plan	Attachment J		✓
§270.14(b)(13)	§264.178	Closure/containers	Attachment I		✓
§270.14(b)(13)	§264.601	Environmental performance standards-Miscellaneous units	Attachment I		✓
§270.14(b)(13)	§264.603	Post-closure care	Attachment I		✓
§270.14(b)(14)	§264.119	Post-closure notices	Attachment J		✓
§270.14(b)(15)	§264.142	Closure cost estimate	NA		✓
	§264.143	Financial assurance	NA		✓
§270.14(b)(16)	§264.144	Post-closure cost estimate	NA		✓
	§264.145	Post-closure care financial assurance	NA		✓
§270.14(b)(17)	§264.147	Liability insurance	NA		✓
§270.14(b)(18)	§264.149-150	Proof of financial coverage	NA		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
§270.14(b)(19)(i), (vi), (vii), and (x)		Topographic map requirements Map scale and date Map orientation Legal boundaries Buildings Treatment, storage, and disposal operations Run-on/run-off control systems Fire control facilities	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(ii)	§264.18(b)	100-year floodplain	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iii)		Surface waters	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(iv)		Surrounding Land use	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(v)		Wind rose	Attachment O Part A Part B, Rev. 6 Chapter B, E		✓
§270.14(b)(19)(viii)	§264.14(b)	Access controls	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(ix)		Injection and withdrawal wells	Attachment O Part A Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xi)		Drainage on flood control barriers	Part B, Rev. 6 Chapter B, E, F		✓
§270.14(b)(19)(xii)		Location of operational units	Part B, Rev. 6 Chapter B		✓
§270.14(b)(20)		Other federal laws Wild and Scenic Rivers Act National Historic Preservation Act Endangered Species Act Coastal Zone Management Act Fish and Wildlife Coordination Act Executive Orders	Part B, Rev. 6 Chapter K		✓
§270.15	§264 Subpart I	Containers	Attachment M1		✓
	§264.171	Condition of containers	Attachment M1		✓
	§264.172	Compatibility of waste with containers	Attachment M1		✓
	§264.173	Management of containers	Attachment M1	✓	
	§264.174	Inspections	Attachment D Attachment M1		✓
§270.15(a)	§264.175	Containment systems	Attachment M1		✓
§270.15(c)	§264.176	Special requirements for ignitable or reactive waste	Attachment E Permit Module II		✓
§270.15(d)	§264.177	Special requirements for incompatible wastes	Attachment E Permit Module II		✓

Regulatory Citation(s) 20.4.1.900 NMAC (incorporating 40 CFR Part 270)	Regulatory Citation(s) 20.4.1.500 NMAC (incorporating 40 CFR Part 264)	Description of Requirement	Added or Clarified Information		
			Section of the HWFP or Permit Application	Yes	No
	§264.178	Closure	Attachment I		✓
§270.15(e)	§264.179	Air emission standards	Attachment E Attachment N		✓
§270.23	264 Subpart X	Miscellaneous units	Attachment M2	✓	
§270.23(a)	§264.601	Detailed unit description	Attachment M2		✓
§270.23(b)	§264.601	Hydrologic, geologic, and meteorologic assessments	Permit Module IV Attachment M2		✓
§270.23(c)	§264.601	Potential exposure pathways	Permit Module IV Attachment M2 Attachment N		✓
§270.23(d)		Demonstration of treatment effectiveness	Permit Module IV Attachment M2 Attachment N		✓
	§264.602	Monitoring, analysis, inspection, response, reporting, and corrective action	Permit Module IV Attachment M2 Attachment N		✓
	§264.603	Post-closure care	Attachment J Attachment J1		✓
	264 Subpart E	Manifest system, record keeping, and reporting	Permit Module I Permit Module II Permit Module IV Attachment B		✓

**Attachment A**  
**Table of Changes**

## Table of Changes

Affected Permit Section	Explanation of Changes
a.1 Attachment D	Revise Table D-1 to change tracks to path and changed conveyance loading car to facility transfer vehicle
b.1 Attachment E	Revise to allow movement by facility transfer vehicle or forklift
b.2 Attachment E	Revise conveyance loading car to facility transfer vehicle
c.1 Attachment F	Revise to read that the waste will be elevated at least six inches off the floor
c.2 Attachment F	Revise to read that the waste will be elevated at least six inches off the floor
d.1 Attachment G	Revise to allow movement by facility transfer vehicle or forklift
e.1 Attachment M1	Delete Figure M1-11
e.2 Attachment M1	Revise to allow movement by facility transfer vehicle or forklift and to remove references to the waste being 9.5 inches off of the floor
e.3 Attachment M1	Describes the facility transfer vehicle and deletes the definition of conveyance loading car
e.4 Attachment M1	Revise Table M1-2 (to correct the capacity of the conveyance loading car)
f.1 Attachment M2	Revise to allow movement by facility transfer vehicle or forklift
f.2 Attachment M2	Revise Table M2-1 (to correct the capacity of the conveyance loading car)
g.1 Attachment O	Delete Figure O4-7

**Attachment B**  
**Proposed Revised Permit Text**

**Proposed Revised Permit Text:**

a. 1. Attachment D

<b>TABLE D-1 INSPECTION SCHEDULE/PROCEDURES</b>			
System/Equipment Name	Responsible Organization	Inspection <sup>a</sup> Frequency and Job Title of Personnel Normally Making Inspection	Procedure Number and Inspection Criteria
Air Intake Shaft Hoist	Underground Operations	Preoperational <sup>c</sup> See Lists 1b and c	WP 04-HO1004 Inspecting for Deterioration <sup>b</sup> , Safety Equipment, Communication Systems, and Mechanical Operability <sup>m</sup> in accordance with Mine Safety and Health Administration (MSHA) requirements
Ambulances (Surface and Underground) and related emergency supplies and equipment	Emergency Services	Weekly See List 11	PM000030 Inspecting for Mechanical Operability <sup>m</sup> , Deterioration <sup>b</sup> , and Required Equipment <sup>f</sup>
Adjustable Center of Gravity Lift Fixture	Waste Handling	Preoperational See List 8	WP 05-WH1410 Inspecting for Mechanical Operability <sup>m</sup> and Deterioration <sup>b</sup>
Backup Power Supply Diesel Generators	Facility Operations	Monthly See List 3	WP 04-ED1301 Inspecting for Mechanical Operability <sup>m</sup> and Leaks/Spills by, starting and operating both generators. Results of this inspection are logged in accordance with WP 04-AD3008.
Facility Inspections (Water Diversion Berms)	Facility Engineering	Annually See List 4	WP 10-WC3008 Inspecting for Damage, Impediments to water flow, and Deterioration <sup>b</sup>
Central Monitoring Systems (CMS)	Facility Operations	Continuous See List 3	Automatic Self-Checking
Contact-Handled (CH) TRU Underground Transporter	Waste Handling	Preoperational See List 8	WP 05-WH1603 Inspecting for Mechanical Operability <sup>m</sup> , Deterioration <sup>b</sup> , and area around transporter clear of obstacles
<del>Conveyance Loading Car</del> <u>Facility Transfer Vehicle</u>	Waste Handling	Preoperational See List 8	WP 05-WH1406 Inspecting for Mechanical Operability <sup>m</sup> , Deterioration <sup>b</sup> , <u>tracks path</u> clear of obstacles, and guards in the proper place
Exhaust Shaft	Underground Operations	Quarterly See List 1a	PM041099 Inspecting for Deterioration <sup>b</sup> and Leaks/Spills
Eye Wash and Shower Equipment	Equipment Custodian	Weekly See List 5	WP 12-IS1832 Inspecting for Deterioration <sup>b</sup>
		Semi-annually See List 2a	WP 12-IS1832 Inspecting for Deterioration <sup>b</sup> and Fluid Levels—Replace as Required
Fire Detection and Alarm System	Emergency Services	Semiannually See List 11	PM000027 Inspecting for Deterioration <sup>b</sup> , Operability of indicator lights and, underground fuel station dry chemical suppression system. Inspection is per NFPA 72

b.1 Attachment E

E-2a Unloading Operations

The WIPP facility's equipment, structures, and procedures are specially designed for the safe handling of TRU mixed waste. Permit Attachments M1 and M2 detail how contact-handled (**CH**) TRU mixed waste is handled, including unloading and transport operations. The following is a summary of the activities, structures, and equipment that were developed to prevent hazards in unloading of TRU mixed waste, as required by 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(8)(i)).

The TRUPACT-II shipping container has a gross loaded weight of 19,265 lbs (8,737 kgs). The HalfPACT shipping container has a gross loaded weight of 18,100 lbs (8,210 kgs). The gross loaded weight is defined as the weight of the payload and the weight of the Contact Handled Package itself. The Contact Handled Packages have forklift pockets at the bottom of the container specifically for lifting the container with a forklift (see Figure M1-8 in Permit Attachment M1). The 13 ton (11.8 metric tons) electric forklift unloads the TRUPACT-II from the trailer and transfers it to an unloading dock in the WHB Unit (see Figure M1-9 in Permit Attachment M1). The unloading dock is designed to accommodate the Contact Handled Package and functions as a work platform, providing TRU mixed waste handling and health physics personnel with easy access to the container during unloading operations.

An overhead 6-ton (5.4-metric ton) crane and adjustable center-of-gravity lift fixture transfer TRU mixed waste containers from the Contact Handled Package to the facility pallet on the WHB Unit floor. The facility pallet is a fabricated steel structure designed to securely hold waste containers. Each facility pallet has a rated load capacity of 25,000 lb (11,340 kg). The upper surface of the facility pallet has two recesses sized to accept the waste containers, ensuring that the containers are held in place. Up to four SWBs, four 7-packs of 55-gallon drums, four 4-packs consisting of 85-gallon drums, four 3-packs of 100-gallon drums, or two TDOPs may be placed on a facility pallet. Each stack of waste containers is strapped down to holding bars in the top reinforcement plate of the facility pallet to avoid spillage during movement. Two rectangular tube openings in the bed allow the facility pallet to be securely lifted by forklift. In order to assure a facility pallet is not overloaded, operationally it will hold the contents of two Contact Handled Packages, as specified in Permit Attachment M1.

The WIPP facility has the capability to handle each of the CH TRU containers singly using forklifts and single container attachments. In such cases, the container would be loaded on the waste shaft conveyance and moved underground as a single unit.

All unloading equipment is inspected in accordance with the schedule shown in Table D-1. Cranes that are used in the unloading and handling of TRU mixed waste have been designed and constructed so that they will retain their loads in the event of a loss of power. Cranes in the WHB Unit are also designed to withstand a design basis earthquake without moving off of their rails and without dropping their load. Lowering loads is a priority activity after a disruptive event.

The following is a summary of the activities, structures, and equipment that were developed to prevent hazards in transporting TRU mixed waste.

Palletized TRU mixed waste is either transferred by a 13-ton (11.8-metric ton) forklift to or the conveyance loading car facility transfer vehicle (see Figure M2-6 in Permit Attachment M2), which is designed with an adjustable bed height that is used to transfer the facility pallets to the special pallet-support stands in the waste hoist cage.

b.2 Attachment E-2e

The following description of procedures, structures, or equipment used at the facility to prevent undue exposure of personnel to hazardous waste is required by 20.4.1.900 NMAC (incorporating 40 CFR §270.14(b)(8)(v)).

Procedures used at the WIPP facility to prevent undue exposure of personnel to hazardous waste and the sections in this permit application where these procedures are discussed in detail are listed below.

- ! The TSDf-WAC are criteria designed to prevent the shipment or acceptance of TRU mixed waste exhibiting the characteristics of ignitability, corrosivity, or reactivity.
- ! Written procedures to prevent the addition of materials to the TRU mixed waste that could exhibit incompatibility or the characteristics of reactivity and/or ignitability are discussed in Section E-3 of this Permit Attachment.
- ! The shipping containers, forklifts, unloading dock, crane, facility pallets, conveyance loading car facility transfer vehicle, waste hoist cage, and underground waste transporter were designed or selected for use in order to minimize the need for TRU mixed waste handling personnel to come into contact with TRU mixed waste. Each of these items are discussed in detail in Permit Attachments M1 and M2; Section E-2a of this Permit Attachment discusses prevention of hazards to personnel during unloading operations.

c.1 Attachment F-1

Containment

The WHB Unit has concrete floors, which are sealed with a coating designed to resist all but the strongest oxidizing agents. Such oxidizing agents do not meet the TSDf-WAC and will not be accepted in TRU mixed waste at the WIPP facility. Therefore, TRU mixed wastes pose no compatibility problems with respect to the WHB Unit floor.

During normal operations, the floor of the normal storage areas within the CH Bay shall be visually inspected on a weekly basis to verify that it is in good condition and free of cracks and gaps.

Floor areas of the WHB used during off-normal events will be inspected prior to use and weekly while in use. Containers located in the permitted storage areas shall be elevated from the surface of the floor. Facility pallets provide ~~about 9.5~~ at least 6 in (~~24~~ 15 centimeters [cm]). of elevation from the surface of the floor. TRU mixed waste containers that have been removed from Contact Handled Packages shall be stored ~~at a~~ designated storage area inside the WHB so as to preclude exposure to the elements.

Secondary containment at permitted storage areas inside the WHB Unit shall be provided by the floor. The Parking Area Unit and TRUDOCK storage area of the WHB Unit do not require engineered secondary containment, since waste is not stored there unless it is protected by the Contact Handled Packages. Floor drains, the fire suppression water collection sump, and portable dikes, if needed, will provide containment for liquids that may be generated by fire fighting. Sump capacities and locations are shown in Drawing 41-F-087-014. Residual fire fighting liquids will be placed in containers and managed as described above.

c.2 Attachment F-1

CH Bay Operations

The typical processing rate for CH waste is 14 Contact Handled Packages per day, and the maximum is 28 per day. Two shifts per day are planned; four days per week. The fifth day is for equipment maintenance with weekends available for more extensive maintenance, when necessary.

Once unloaded from the Contact Handled Package, CH waste containers (7-packs of 55-gal drums, 3-packs of 100-gal drums, 4-packs of 85-gal drums, SWBs, or TDOPs) are placed in one of two positions on the facility pallet. The waste containers are stacked on the facility pallets (one- or two-high, depending on weight considerations). The use of facility pallets will elevate the waste at least about 6 in (~~24~~15 centimeters [cm]) from the floor surface. Pallets of waste will then be relocated to the northeast area of the CH bay for normal storage. This storage area will be clearly marked to indicate the lateral limits of the storage area. This storage area will have a maximum capacity of seven facility pallets of waste during normal operations. These pallets will typically be staged in this area for a period of up to five days.

d.1 Attachment G-1

Waste Handling Building Traffic

CH TRU mixed waste will arrive by tractor-trailer at the WIPP facility in sealed Contact Handled Packages. Upon receipt, security checks, radiological surveys, and shipping documentation reviews will be performed. A forklift will remove the Contact Handled Packages and transport them a short distance through an air lock that is designed to maintain differential pressure in the WHB. The forklift will place the shipping containers at one of the two TRUPACT-II unloading docks (**TRUDOCK**) inside the WHB.

The TRUPACT-II may hold up to two 55-gallon drum seven (7)-packs, two 85-gallon drum four (4)-packs, two 100-gallon drum three (3)-packs, two standard waste boxes (SWB), or one ten-drum overpack (**TDOP**). A HalfPACT may hold seven 55-gallon drums, one SWB, or four 85-gallon drums. A six-ton overhead bridge crane will be used to remove the contents of the Contact Handled Package. Waste containers will be surveyed for radioactive contamination and decontaminated or returned to the Contact Handled Package as necessary.

Each facility pallet will accommodate four seven(7)-packs of 55-gallon drums, four SWBs, four four(4)-packs of 85-gallon drums, four three(3)-packs of 100-gallon drums, two TDOPs, or any

combination thereof. Waste containers will be secured to the facility pallet prior to transfer. A forklift or facility transfer vehicle will transport the loaded facility pallet to the conveyance loading car inside the air lock at the Waste Shaft (Figure G-3). The conveyance loading car facility transfer vehicle will be driven onto the waste hoist deck, where the loaded facility pallet will be transferred to the waste hoist, and the loading car facility transfer vehicle will be backed out.

e.1 Attachment M1, Table of Contents

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e.2 Attachment M1

M1-1c(1) Waste Handling Building Container Storage Unit (WHB Unit)

The Waste Handling Building (**WHB**) is the surface facility where TRU mixed waste handling activities will take place (Figure M1-1). The WHB has a total area of approximately 84,000 square feet (ft<sup>2</sup>) (7,804 square meters (m<sup>2</sup>)) of which 33,175 ft<sup>2</sup> (3,082 m<sup>2</sup>) are designated for the waste handling and container storage of CH TRU mixed waste, as shown in Figure M1-1. This area is being permitted as the WHB Unit. The concrete floors are sealed with a coating that is sufficiently impervious to the chemicals in TRU mixed waste to meet the requirements of 20.4.1.500 NMAC (incorporating 40 CFR §264.175(b)(1)).

The Contact Handled Packages used to transport TRU mixed waste containers will be received through one of three air-lock entries to the CH Bay of the WHB Unit. The WHB heating, ventilation and air conditioning (**HVAC**) system maintains the interior of the WHB at a pressure lower than the ambient atmosphere to ensure that air flows into the WHB, preventing the inadvertent release of any hazardous or radioactive constituents contamination as the result of

a contamination event. The doors at each end of the air lock are interlocked to prevent both from opening simultaneously and equalizing CH Bay pressure with outside atmospheric pressure. The CH Bay houses two TRUPACT-II Docks (**TRUDOCKs**), each equipped with overhead cranes for opening and unloading Contact Handled Packages. The TRUDOCKs are within the TRUDOCK Storage Area of the WHB Unit.

The cranes are rated to lift the Contact Handled Packaging lids as well as their contents. The cranes are designed to remain on their tracks and hold their load even in the event of a design-basis earthquake.

Upon receipt and removal of CH TRU mixed waste containers from the Contact Handled Packaging, the waste containers are required to be in good condition as provided in Permit Module III. The waste containers will be visually inspected for physical damage (severe rusting, apparent structural defects, signs of pressurization, etc.) and leakage to ensure they are good condition prior to storage. Waste containers will also be checked for external surface contamination. If a primary waste container is not in good condition, the Permittees will overpack the container, repair/patch the container in accordance with 49 CFR §173 and §178 (e.g., 49 CFR §173.28), or return the container to the generator. The Permittees may initiate local decontamination, return unacceptable containers to a DOE generator site or send the Contact Handled Package to the third party contractor. Decontamination activities will not be conducted on containers which are not in good condition, or which are leaking. If local decontamination activities are opted for, the work will be conducted in the WHB Unit on the TRUDOCK. These processes are described in Section M1-1d. The area previously designated as the Overpack and Repair Room will not be used for TRU mixed waste management in any instances.

Once unloaded from the Contact Handled Packaging, CH TRU mixed waste containers (7-packs, 3-packs, 4-packs, SWBs, or TDOPs) are placed in one of two positions on the facility pallet. The waste containers are stacked, on the facility pallets (one- or two-high, depending on weight considerations). The use of facility pallets will elevate the waste ~~approximately 9.5 in. (24 cm) from~~ off the floor surface. Pallets of waste will then be relocated to the Northeast (**NE**) Storage Area of the WHB Unit for normal storage. This NE Storage Area, which is shown in Figure M1-7, will be clearly marked to indicate the lateral limits of the storage area. This NE Storage Area will have a maximum capacity of seven pallets (1,856 ft<sup>3</sup> [52.6 m<sup>3</sup>]) of TRU mixed waste containers during normal operations. These pallets will typically be staged in this area for a period of up to five days.

In addition, four Contact Handled Packages, containing up to eight 7-packs, 3-packs, 4-packs, SWBs, or four TDOPs, may occupy the staging positions at the TRUDOCK Storage Area of the WHB Unit. If waste containers are left in this area, they will be in the Contact Handled Package with or without the shipping container lids removed. The maximum volume of waste in containers in four Contact Handled Packages is 530.4 ft<sup>3</sup> (15 m<sup>3</sup>).

The Derived Waste Storage Area of the WHB Unit is on the north wall of the CH Bay. This area will contain containers up to the volume of a SWB for collecting derived waste from all TRU mixed waste handling processes in the WHB Unit. The Derived Waste Storage Area is being permitted to allow containers in size up to a SWB to be used to accumulate derived waste. The volume of TRU mixed waste stored in this area will be up to 66.3 ft<sup>3</sup> (1.88 m<sup>3</sup>). The derived waste containers in the Derived Waste Storage Area will be stored on standard drum pallets,

which are polyethylene trays with a grated deck, which will elevate the derived waste containers approximately 6 in. (15 cm) from the floor surface, and provide approximately 50 gal (190 L) of secondary containment capacity.

An area has also been designated for the temporary storage of waste containers for which manifest discrepancies were noted after the Contact Handled Package was opened. Discrepant payloads will be placed either in the Shielded Storage Area of the WHB Unit on a facility pallet or inside a Contact Handled Package, depending on when the discrepancy is discovered. In either case the waste containers will be elevated approximately six inches from the floor surface. The storage capacity of this area is one pallet load of TRU mixed waste containers (i.e., 4 SWBs, 2 TDOPs, or 28 drums, or combinations of all three).

Aisle space shall be maintained in all WHB Unit TRU mixed waste storage areas. The aisle space shall be adequate to allow unobstructed movement of fire-fighting personnel, spill-control equipment, and decontamination equipment that would be used in the event of an off-normal event. An aisle space of 44 in. (1.1 m) between facility pallets will be maintained in all WHB Unit TRU mixed waste storage areas.

The WHB has been designed to meet DOE design and associated quality assurance requirements. Table M1-1 summarizes basic design requirements, principal codes, and standards for the WIPP facility. Appendix D2 of the WIPP RCRA Part B Permit Application (DOE, 1997a) provided engineering design-basis earthquake and tornado reports. The design-basis earthquake report provides the basis for seismic design of WIPP facility structures, including the WHB foundation. The WIPP design-basis earthquake is 0.1 g. The WIPP design-basis tornado includes a maximum windspeed of 183 mi per hr (mi/hr) (294.5 km/hr), which is the vector sum of all velocity components. It is also limited to a translational velocity of 41 mi/hr (66 km/hr) and a tangential velocity of 124 mi/hr (200 km/hr). Other parameters are a radius of maximum wind of 325 ft (99 m), a pressure drop of 0.5 lb per in.<sup>2</sup> (3.4 kilopascals [kPa]), and a rate-of-pressure drop of 0.09 lb/in.<sup>2</sup>/s (0.6 kPa/s). A design-basis flood report is not available because flooding is not a credible phenomenon at the WIPP facility. Design calculations for the probable maximum precipitation (**PMP**) event, provided in Appendix D7 of the WIPP RCRA Part B Permit Application (DOE, 1997a), illustrated run-on protection for the WIPP facility.

The following are the major pieces of equipment that will be used to manage CH TRU waste in the container storage units. A summary of equipment capacities, as required by 20.4.1.500 NMAC is included in Table M1-2.

#### TRUPACT-II Type B Packaging

The TRUPACT-II (Figure M1-8a) is a double-contained cylindrical shipping container 8 ft (2.4 m) in diameter and 10 ft (3 m) high. It meets NRC Type B shipping container requirements and has successfully completed rigorous container-integrity tests. The payload consists of approximately 7,265 lbs (3,300 kg) gross weight in up to fourteen 55-gal (208-L) drums, eight 85-gal (322-L) drums, six 100-gal (379-L) drums, two SWBs, or one TDOP.

#### HalfPACT Type B Packaging

The HalfPACT (Figure M1-8b) is a double-contained right cylindrical shipping container 7.8 ft (2.4 m) in diameter and 7.6 ft (2.3 m) high. It meets NRC Type B shipping container

requirements and has successfully completed rigorous container-integrity tests. The payload consists of approximately 7,600 lbs (3,500 kg) gross weight in up to seven 55-gal (208-L) drums, one SWB, or four 85-gallon drums.

### Unloading Docks

Each TRUDOCK is designed to accommodate up to two Contact Handled Packages. The TRUDOCK functions as a work platform, providing TRU mixed waste handling personnel easy access to the container during unloading operations (see Figure M1-9) (Also see Drawing 41-M-001-W in Appendix D3 of the WIPP RCRA Part B Permit Application (DOE, 1997a)).

### Forklifts

Forklifts will may be used to transfer the Contact Handled Packages into the WHB Unit and to transfer palletized CH TRU mixed waste containers to the ~~conveyance loading car~~ facility transfer vehicle. Another forklift will be used for general-purpose transfer operations. This forklift has attachments and adapters to handle individual TRU mixed waste containers, if required.

### Cranes and Adjustable Center-of-Gravity Lift Fixtures

At each TRUDOCK, an overhead bridge crane is used with a specially designed lift fixture for disassembly of the Contact Handled Packages. Separate lifting attachments have been specifically designed to accommodate SWBs and TDOPs. The lift fixture, attached to the crane, has built-in level indicators and two counterweights that can be moved to adjust the center of gravity of unbalanced loads and to keep them level.

### Facility Pallets

The facility pallet is a fabricated steel unit designed to support 7-packs, 4-packs, or 3-packs of drums, SWBs, or TDOPs, and has a rated load of 25,000 lbs. (11,430 kg). The facility pallet will accommodate up to four 7-packs, four 3-packs, or four 4-packs of drums or four SWBs (in two stacks of two units), two TDOPs, or any combination thereof. Loads are secured to the facility pallet during transport to the emplacement area. Facility pallets are shown in Figure M1-10. Fork pockets in the side of the pallet allow the facility pallet to be lifted and transferred by forklift or they may be moved by facility transfer vehicles to prevent direct contact between TRU mixed waste containers and forklift tines. This arrangement reduces the potential for puncture accidents. WIPP facility operational documents define the operational load of the facility pallet to ensure that the rated load of a facility pallet is not exceeded.

### ~~Conveyance Loading Car~~ Facility Transfer Vehicle

The ~~conveyance loading car~~ facility transfer vehicle is an electric vehicle that operates on rails a battery or electric powered automated vehicle which either operates on tracks or has an on-board guidance system which allows the vehicle to operate on the floor of the WHB. An integrated or removable roller bed will be used to move pallets on and off the vehicle. It is designed with a flat bed that has adjustable height capability and will transfer waste payloads

on facility pallets to the storage areas or be used to transfer facility pallets on or off the support stands in the waste hoist cage by raising and lowering the bed (see Figure M1-11).

e.3 Attachment M1

M1-1d(2) CH TRU Mixed Waste Handling

Each facility pallet has two recessed pockets to accommodate two sets of 7-packs, two sets of 4-packs, two sets of 3-packs, or two SWBs stacked two-high, two TDOPs, or any combination thereof. Each stack of waste containers will be secured prior to transport underground (see Figure M1-10). A forklift or the facility transfer vehicle will transport the loaded facility pallet to the conveyance loading car inside the conveyance loading room located adjacent to the Waste Shaft. The conveyance loading room serves as an air lock between the CH Bay and the Waste Hoist Shaft, preventing excessive air flow between the two areas. The conveyance loading car facility transfer vehicle will be driven onto the waste hoist deck, where the loaded facility pallet will be transferred to the waste hoist, and the loading car facility transfer vehicle will be backed off. Containers of CH TRU waste (55-gal (208 L) drums, SWBs, 85-gal (321 L) drums, 100-gal (379-L) drums, and TDOPs) can be handled individually, if needed, using the forklift and lifting attachments (i.e., drum handlers, parrot beaks).

e.4 Attachment M1, Table M1-2

**TABLE M1-2  
WASTE HANDLING EQUIPMENT CAPACITIES**

<b>CAPACITIES FOR EQUIPMENT</b>	
CH Bay overhead bridge crane	12,000 lbs.
CH Bay forklifts	26,000 lbs.
Facility Pallet	25,000 lbs.
Adjustable center-of-gravity lift fixture	10,000 lbs.
Conveyance Loading Car <u>Facility Transfer Vehicle</u>	<del>70</del> <u>26</u> ,000 lbs.
<b>MAXIMUM GROSS WEIGHTS OF CONTAINERS</b>	
Seven-pack of 55-gallon drums	7,000 lbs.
Four-pack of 85-gallon drums	4,500 lbs.
Three-pack of 100-gallon drums	3,000 lbs.
Ten-drum overpack	6,700 lbs.
Standard waste box	4,000 lbs.

MAXIMUM NET EMPTY WEIGHTS OF EQUIPMENT	
TRUPACT-II	13,140 lbs.
HalfPACT	10,500 lbs.
Adjustable center of gravity lift fixture	2,500 lbs.
Facility pallet	4,120 lbs.

f.1 Attachment M2

M2-2b Geologic Repository Process Description

Prior to receipt of TRU mixed waste at the WIPP facility, waste operators will be thoroughly trained in the safe use of TRU mixed waste handling and transport equipment. The training will include both classroom training and on-the-job training.

CH TRU mixed waste containers will arrive by tractor-trailer at the WIPP facility in sealed shipping containers (e.g., TRUPACT-IIs or HalfPACTs), at which time they will undergo security and radiological checks and shipping documentation reviews. The trailers carrying the shipping containers will be stored temporarily at the Parking Area Container Storage Unit (Parking Area Unit). A forklift will remove the Contact Handled Packages from the transport trailers and will transport them into the Waste Handling Building Container Storage Unit for unloading of the waste containers. Each TRUPACT-II may hold up to two 7-packs, two 4-packs, two 3-packs, two SWBs, or one TDOP. Each HalfPACT may hold up to seven 55-gal (208 L) drums, one SWB, or four 85-gal (321 L) drums. An overhead bridge crane will be used to remove the waste containers from the Contact Handled Packaging and place them on a facility pallet. Each facility pallet has two recessed pockets to accommodate two sets of 7-packs, two sets of 3-packs, two sets of 4-packs, two SWBs stacked two-high, or two TDOPs. Each stack of waste containers will be secured prior to transport underground (see Figure M2-3). A forklift and/or a facility transfer vehicle will transport the loaded facility pallet to the ~~conveyance loading car inside the conveyance loading room adjacent to the Waste Shaft.~~ The ~~conveyance loading car~~ facility transfer vehicle will be driven onto the waste hoist deck, where the loaded facility pallet will be transferred to the waste hoist, and the ~~loading car~~ facility transfer vehicle will be backed off. Containers of CH TRU waste (55-gal (208 L) drums, SWBs, 85-gal (321 L) drums, 100-gal (379 L) drums, and TDOPs) can be handled individually, if needed, using the forklift and lifting attachments (i.e., drum handlers, parrot beaks).

f.2 Attachment M2, Table M2-1

**TABLE M2-1  
WASTE HANDLING EQUIPMENT CAPACITIES**

CAPACITIES FOR EQUIPMENT	
Facility Pallet	25,000 lbs.

Conveyance Loading Car <u>Facility Transfer Vehicle</u>	36 <del>26</del> ,000 lbs.
Underground transporter	28,000 lbs.
Underground fork lift	12,000 lbs.
<b>MAXIMUM GROSS WEIGHTS OF CONTAINERS</b>	
Seven-pack of 55-gallon drums	7,000 lbs.
Four-pack of 85-gallon drums	4,500 lbs.
Three-pack of 100-gallon drums	3,000 lbs.
Ten-drum overpack	6,700 lbs.
Standard waste box	4,000 lbs.
<b>MAXIMUM NET EMPTY WEIGHTS OF EQUIPMENT</b>	
TRUPACT-II	13,140 lbs.
HalfPACT	10,500 lbs. TRUPACT-IIs
Facility pallet	4,120 lbs.

g.1 Attachment O

## ATTACHMENT O

### HAZARDOUS WASTE PERMIT APPLICATION PART A

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Attachment C

Hanford Automated Vehicle Information



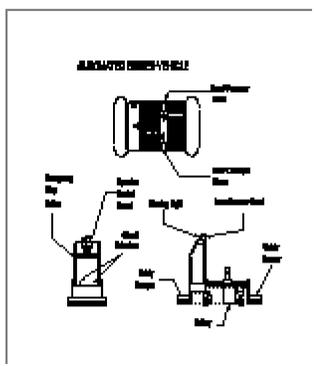
## Automated Guided Vehicles for Waste Drum Transport

### The Challenge

Waste drums and boxes processed at the 2336-W Waste Receiving and Process Facility (WRAP) are transported into and throughout the facility where they are examined, processed, and certified for permanent disposal or future treatment. As staff transport the containers, they are continually exposed to background radiation and radiation from the containers. They also face the potential for work injuries or accidents. The operation requires staffing of five forklift operators to maintain annual individual dose rates within acceptable limits at a volume of 2250 drums per year. In addition to exposure, safety and operational costs issues, material control and traceability are difficult to achieve in manually operated material-handling systems. When fully operational, approximately 6800 waste drums and boxes will be processed at the WRAP facility each year for an expected 30 years.



*Deploying Automated Guided Vehicles to transport waste drums and boxes provides opportunities for reducing worker exposure, cutting operating costs and enhancing safety and materials control.*



### Benefits and Features

Using AGVs offers

- reduced exposure--4 to 5 person-rems of exposure/year
- reduced operating costs
- reduced labor costs
- greater safety--eliminates potential for forklift/personnel accidents
- controlled and traceable material moves.

### Current Approach

The current method for transporting waste containers within the WRAP facility is by forklift. The forklift

operators move the containers back and forth along material transport pathways that service areas for a) shipping and receiving and b) nondestructive examination and assays.

## **New Technology**

Two Automated Guided Vehicles (AGVs) have been deployed in the WRAP facility to transport waste containers along predetermined guidepaths. The AGVs, which replace forklift operations, offer reduced exposure to radiation, cost savings and safer operations. By removing personnel from continual contact with the containers, the AGVs eliminate potential radiation exposure.

By automating the material-handling operations between the AGVs and conveyors, the new technology eliminates the potential for accidents and personnel injury associated with manual loading operations (e.g., back strain, etc.).

Each AGV can pick up or deposit containers at a number of predetermined locations within the WRAP facility. The AGVs are guided by an infrared laser device, which measures the AGVs' bearings relative to other objects in the plant to calculate the AGVs' exact locations. The AGVs continually follow the same path. Each AGV is 3.5m (11.5 ft) in length, and 2m (6.5 ft) from the floor to the top of the beacon. Each can carry 2 containers weighing up to 1,000 lbs each and can accommodate 55- and 85-gallon drums. Drums are carried on the AGVs' roller decks which match the height and configuration of the conveyors at the drop points.

The interface between the conveyors, carousels, and AGVs consists of photo-eye controls that are mounted on stationary equipment to sense the presence of the AGV. When an AGV arrives at a conveyor or carousel, the photo-eye signals the activation of both the stationary conveyors and the AGV conveyors. After the container is transferred, the AGV moves onto its next destination.

The AGVs can be operated in automatic, semi-automatic, or manual mode. The normal method of operation is automatic (controlled by the Production Control System operating WRAP). When the AGVs are in an automatic mode, they travel at a maximum speed of 120 ft/min or about 2 mph. In the semi-automatic mode, the AGV operator in the WRAP facility control room can direct the AGV by using menu commands in the AGV control system.

The automated material-handling system interfaces directly with the WRAP data management system. Although an operator with a barcode reader could obtain and input the data, the process would not be feasible because the time required to perform this operation would only further delay material storage and retrieval operations and impact facility shipping and receiving operations. Integrating the automated data collection system with the material-handling systems eliminates the potential for human error in terms of lost or incorrect material-handling data. The material-handling data are important in avoiding problems associated with commingling of non-compatible waste drums while in storage.

One AGV began servicing the shipping/receiving and nondestructive examination/assay area in March 1997. A second AGV will service the waste processing area in FY 1998.

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Fluor Daniel Hanford, Inc., Technology Management

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