WP 05-WH1603

Revision 8

CH TRU Underground Transporter, 52-H-008A, B, and C

Technical Procedure

EFFECTIVE DATE: 06/24/09

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APPROVED FOR USE

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INTRODUCTION [2,3,4]

This procedure provides guidance for operating the Contact-Handled (CH) Transuranic (TRU) Underground (U/G) Transporter at the Waste Isolation Pilot Plant (WIPP).

This procedure meets the **Surveillance Requirements (SR) 4.1.2.1** and **4.1.2.3** and **Specific Administrative Controls (SACs) 5.1.1.2** of **Limiting Conditions of Operations (LCO) 3.1.2**.

Performance of this procedure generates the following record(s), as applicable:

- Equipment Logbook

REFERENCES

BASELINE DOCUMENTS

- Title 40 *Code of Federal Regulations* (CFR) §264.15, "General Inspection Requirements"
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- Hazardous Waste Facility Permit, Waste Isolation Pilot Plant, Permit No. NM4890139088-TSDF, issued by New Mexico Environment Department
- 52-H-008, *Owner and Operator Manual for Underground CH TRU Transporter*
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- WP 04-AD3001, Facility Mode Compliance
- WP 04-IM1000, Issues Management Processing of WIPP Forms
- EA04IM1000-1-0, WIPP Form
- WP 05-WH1810, Underground Transuranic Mixed Waste Disposal Area Inspection

PRECAUTIONS AND LIMITATIONS [1]

The Technical Safety Requirements (TSRs) contain LCOs and SACs which provide specific preventative or mitigative limits and required actions for identified accident scenarios. Failure to comply with LCOs or SACs may constitute a violation and must be immediately reported to the Facility Shift Manager (FSM). The step affected by the LCO/SAC is followed by the LCO/SAC number in bold brackets (e.g. **[LCO 3.X.X]**). Applicable LCO/SAC Surveillance Data Sheets SHALL be completed as required by WP 04-AD3001.

- Preoperational Checks are required prior to operating the U/G Transporter on each shift.
- The Transporter is **NOT** to be operated with U/G ventilation out of service.
- Transporter is **NOT** to be operated without load fully secured.
- Steering is **NOT** functional with the circuit selector valve in the PALLET DRIVE position.
- Running the pallet into stops with excessive speed will induce excessive shock to the drive system components, causing premature failure.
- Riders are allowed to sit in the Helper's seat **ONLY**.
- Holding the hook actuation switch for more than three seconds can cause switch damage.
- Equipment horn must be sounded whenever:
  - Starting or moving equipment
  - Approaching an intersection
  - Encountering an area of limited visibility
  - Approaching pedestrian(s)
- Airlock doors must be in the open position prior to entering/exiting with mobile equipment.
- Mobile equipment must be in the center of the airlock prior to opening/closing airlock doors before exiting.
- Wedge must be installed on circuit selector valve prior to tramming the 52-H-008C.
- Screw mechanism protective cover must be removed prior to operating the Transporter.
- Screw mechanism protective cover must be installed when daily operations are complete and the facility pallet is removed.

- If equipment becomes inoperable, Waste Handling Engineer (WHE) must be notified.
- No non-waste handling vehicles are allowed in the active disposal room during waste handling operations.
- A spotter is required when diesel-powered vehicles are operating within 100 feet of the waste face.
- In the U/G, no waste shall be moved to a location outside the designated disposal path.
- No more than two transporters loaded with waste shall be in transit in the U/G at any one time.
- Two transporters loaded with waste in the U/G shall maintain greater than 100 feet separation between them. This separation distance does not apply if a transporter becomes disabled while loaded with waste and it is necessary to either move another loaded transporter past or move waste from disabled transporter to another transporter. If this situation occurs, a fire watch is required.

PREREQUISITE ACTIONS

1.0 Verify U/G ventilation is aligned to allow Transporter operation.

2.0 If a required inspection goes delinquent, perform the following:

2.1 Immediately notify Site Environmental Compliance (SEC) of the delinquent inspection.

2.2 Schedule and complete the inspection.

2.3 Document the following in a letter to SEC within five working days:

- Schedule for inspection
- Reason(s) why the inspection was not performed
- Any measures taken to offset negative impacts resulting from not performing the inspection
- Actions to prevent further delinquencies
- SEC, **GO TO** WP 04-IM1000, and ensure a WIPP Form (EA04IM1000-1-0) is initiated.

3.0 Review Equipment Logbook for outstanding deficiencies and Action Requests (ARs).

4.0 WHE, review Equipment Logbook on a weekly basis, generally the last day of the work week.

5.0 Record hour meter reading and equipment number in Equipment Logbook.

PERFORMANCE

1.0 PREOPERATIONAL CHECKS

1.1 Inspect area around Transporter for the following:

- Obstacles that may be damaged by Transporter
- Obstacles that may cause damage to Transporter

NOTE

Fluid levels may need to be re-checked after Transporter is positioned on level ground to ensure accuracy.

1.2 Inspect the following prior to engine start:

- Fire suppression system status lights are functioning properly and no trouble lights are seen or unusual sounds are heard on the automatic fire suppression control module. **[LCO 3.1.2]**
- Visually verify that the automatic/manual fire suppression system has not discharged. **[LCO 3.1.2]**
- Visually verify that there are no excessive leaks (i.e., battery compartment, hydraulic lines, fuel lines) as indicated by visible flow of fluid under pressure, puddles beneath the equipment, or abnormal loss of hydraulic fluid. **[SAC 5.1.1.2]**
- Engine oil level is in proper range on dipstick. **[SAC 5.1.1.2]**
- Transmission oil level is in proper range on dipstick. **[SAC 5.1.1.2]**
- Hydraulic tank level is as follows: **[SAC 5.1.1.2]**
  - Above lower sight gauge.
  - Below upper sight gauge.

CAUTION

Brake system does **NOT** use automobile brake fluid. The reservoir contains a mineral-based oil. Failure to use proper fluid could damage equipment.

- Brake actuator fluid level is within HI and LOW level marks, if applicable. **[SAC 5.1.1.2]**
- Air cleaner indicator is yellow. If filter indicator locks in RED, Maintenance must be notified to service air filter.
- Frame joint safety bar is **NOT** connected.
- Battery compartment is free from acid spills and has **NO** loose or missing caps or cables. **[SAC 5.1.1.2]**
- General condition is as follows: **[SAC 5.1.1.2]**
  - **NO** damage or loose parts
  - **NO** major oil leaks, grease, oil, or trash
- General condition of tires is as follows:
  - **NOT** excessively worn or cracked
  - All wheel lugs are tight and torque paint applied
- Sufficient fuel for intended operations

1.3 Remove wheel chocks.

1.4 Turn battery disconnect switch to **ON** and inspect the following:

- Pedals and levers are working properly.
- Fire suppression system is intact.
- Horn is operational. **[SAC 5.1.1.2]**

1.5 Place light switch to Position 4 and verify all lights illuminate (Position 3 for 52-H-008C). **[SAC 5.1.1.2]**

1.6 Adjust seat for easy access to Transporter controls.

1.7 Verify seat locking mechanism is engaged.

1.8 Verify seat belt is in good condition.

1.9 Fasten seat belt.

1.10 Start engine as follows:

1.10.1 Shift transmission to "N" (Neutral).

1.10.2 Ensure parking/emergency brake button is pushed in.

1.10.3 Push in engine stop knob (if applicable).

NOTE

Start switch Position 1 is used for cold starts.

1.10.4 Turn and hold start switch to Position 2 until engine starts.

1.10.5 Allow engine to idle at low rpm (revolutions per minute) for about two minutes.

1.10.6 Verify the following:

- Engine oil pressure at idle: > 25 psi
- Voltmeter: 24 - 30 volts
- Overheat indicator "STOP" light **OFF**
- Air pressure: 90 - 105 psi (if applicable)
- Transmission oil pressure: 180 - 220 psi
- Braking system hydraulic pressure: 1500 - 2200 psi (if applicable)

1.10.7 **IF** indications are outside normal range,
THEN stop engine immediately by pulling out engine stop knob
AND notify WHE immediately.

1.11 Test parking brake as follows:

1.11.1 Shift transmission to "F" (Forward) or "R" (Reverse).

1.11.2 Shift gear lever to "2" (Second Gear).

NOTE

Oil pressure at full engine power is normally 60 - 80 psi.

1.11.3 Press accelerator.

1.11.4 Verify Transporter does **NOT** move.

1.11.5 Shift transmission to "N" (Neutral).

NOTE

If pallet is on Transporter, Step 1.12 or Step 1.13 will be completed during unloading operation.

NOTE

If operating 52-H-008A or 52-H-008B proceed to Step 1.12. If operating 52-H-008C proceed to Step 1.13.

1.12 Test pallet mover and hook activator operation for 52-H-008A and 52-H-008B as follows:

1.12.1 Move circuit selector valve to PALLET MOVER DRIVE circuit.

1.12.2 Push and hold pallet mover drive lever toward rear of Transporter and verify pallet mover travels toward rear of Transporter.

1.12.3 Verify hook actuator is operable by rotating hook actuation switch clockwise or counterclockwise.

1.12.4 Verify hook actuator is **NOT** sticking or binding.

1.12.5 Pull and hold pallet mover drive lever toward front of Transporter, and verify pallet mover travels toward front of Transporter.

1.12.6 Move circuit selector valve to STEERING mode.

1.13 Test pallet mover, hook cylinder, and lock cylinder for 52-H-008C as follows:

1.13.1 Move joystick mode switch to load/unload.

1.13.2 Push joystick up. Verify pallet mover moves toward rear of transporter.

1.13.3 Move joystick mode switch to hook cylinder.

1.13.4 Push joystick up to engage hook and down to disengage hook.

1.13.5 Move joystick mode switch to lock cylinder.

1.13.6 Push joystick up to unlock and down to lock.

1.14 Perform the following to complete checks:

1.14.1 Press and hold down brake pedal.

1.14.2 Check air pressure gauge and low pressure warning lights (if applicable).

1.14.3 Release parking brake by pulling out parking/emergency brake button.

1.14.4 Shift transmission to "F" (Forward).

1.14.5 Shift gear lever to "1" (Low Gear).

1.14.6 Drive Transporter forward and backward to test the following:

- Steering operates smoothly and does **NOT** pull right or left.
- Brakes appear good and are free of dragging during operation.
- Backup alarm operates while moving in reverse.

1.14.7 Stop Transporter.

1.14.8 Shift transmission to "N" (Neutral).

1.14.9 Push in parking/emergency brake button to engage parking brake.

1.14.10 Complete the **Surveillance Data Sheet**, EA04AD3001-SR10, for **LCO 3.1.2**, **SR 4.1.2.1** and **4.1.2.3** as found in WP 04-AD3001.

1.14.11 Forward the completed **Surveillance Data Sheet(s)** and all associated documentation to the Facility Shift Manager for review and approval.

1.15 Record the following in Equipment Logbook:

- Checks satisfactory or unsatisfactory.
- Addition of oil, water, or other fluids, including amount added.
- Identified deficiencies **NOT** corrected.

1.16 Enter date, time, and signature in Equipment Logbook to document performance of Preoperational Checks.

1.16.1 Notify WHE of the operational status of the transporter and of any deficiencies discovered during Preoperational Checks that **CANNOT** be corrected by Operator.

1.16.2 If applicable, record AR number in Equipment Logbook.

1.16.3 If applicable, complete appropriate sections of WP 05-WH1810, Attachment 2, Preoperational Waste Handling Mode Checklist.

2.0 TRANSPORTER OPERATION

2.1 While operating Transporter, monitor all of the following and take appropriate actions:

- If converter oil temperature approaches 250°F, perform the following:

  [A] Stop Transporter.

  [B] Shift transmission to "N" (Neutral).

  [C] Push in parking/emergency brake button to engage parking brake.

  [D] Maintain engine speed at 1000 to 1200 rpm until temperature returns to the normal range of 160 to 220°F.

- If torque converter temperature approaches 190°F while tramming up a grade, use a lower gear.

- If low air warning light illuminates (< 70 psi), perform the following:

  [A] Steer Transporter out of traffic areas.

  [B] Stop Transporter.

  [C] Allow air pressure to return to the normal range of 90 to 105 psi.

2.2 To tram, perform the following:

2.2.1 Ensure light switch is in the appropriate position:

[A] Position 1 - all lights **OFF**

[B] Position 2 - engine end lights and red tail lights **ON**

[C] Position 3 - all utility end lights **ON** (52-H-008A and 52-H-008B)

[D] Position 3 - all light **ON** (52-H-008C)

[E] Position 4 - all lights **ON** (52-H-008A and 52-H-008B)

[F] Position 4 - all utility end lights **ON** (52-H-008C)

2.2.2 Press and hold down brake pedal.

2.2.3 Release parking brake by pulling out parking/emergency brake button.

2.2.4 Shift transmission to "F" (Forward) or "R" (Reverse).

2.2.5 Shift gear lever into one of three gears.

2.2.6 Release brake pedal.

2.2.7 Press accelerator to move Transporter.

3.0 LOADING FACILITY PALLET ONTO TRANSPORTER AT WASTE HOIST USING 52-H-008A AND 52-H-008B

NOTE

Maximum pallet travel speed is achieved with an engine speed of 1,250 rpm.

3.1 Push and hold pallet mover drive lever toward rear of Transporter **UNTIL** pallet mover is at rear of trailer.

3.2 Ensure chair pins in hoist are in DOWN position prior to aligning Transporter.

3.3 Align Transporter with facility pallet at the waste hoist.

3.4 Shift transmission to "N" (Neutral).

3.5 Push in parking/emergency brake button to engage parking brake.

3.6 Move circuit selector valve to PALLET MOVER DRIVE circuit.

3.7 Turn and hold hook actuation switch counterclockwise (ENGAGE) for three seconds.

3.8 Pull and hold pallet mover drive lever toward front of Transporter (pallet mover travels forward with pallet).

3.9 Increase rpm.

3.10 Slow pallet mover as pallet approaches pallet stops (pallet engages pallet stops at front of trailer).

3.11 Release pallet mover drive lever.

3.12 Move circuit selector valve to STEERING mode.

3.13 Prepare Transporter for tramming.

4.0 LOADING FACILITY PALLET ONTO TRANSPORTER AT WASTE HOIST USING 52-H-008C

4.1 With joystick mode switch in load/unload, push and hold joystick up until "green" fully unloaded light illuminates.

4.2 Ensure chair pins on hoist are in down position prior to aligning transporter.

4.3 Align transporter with facility pallet at the waste hoist.

4.4 Shift transmission to "N" (Neutral) and set park brake.

4.5 Remove wedge and pull circuit selector valve handle out for pallet.

4.6 Move joystick mode switch to load/unload.

4.7 Move joystick down to load pallet until "green" fully loaded and locked lights illuminate.

4.8 Move circuit selector valve handle in for steering and install wedge.

4.9 Prepare transporter for tramming.

5.0 UNLOADING PALLET FROM TRANSPORTER ONTO WASTE HOIST USING 52-H-008A AND 52-H-008B

5.1 Ensure chair pins in hoist are in DOWN position prior to aligning Transporter.

5.2 Align Transporter with waste hoist.

5.3 Shift transmission to "N" (Neutral).

5.4 Push in parking/emergency brake button to engage parking brake.

5.5 Move circuit selector valve to PALLET MOVER DRIVE circuit.

5.6 Push and hold pallet mover drive lever toward rear of Transporter.

5.7 Increase rpm.

5.8 When pallet mover is within six inches from rear of trailer, decrease rpm.

5.9 Move pallet slowly toward end of trailer until pallet is fully loaded into hoist cage.

5.10 Ensure pallet hook disengages from pallet pin.

5.11 Tram forward to clear pallet.

5.12 Move circuit selector valve to STEERING mode.

5.13 Prepare Transporter for tramming.

6.0 UNLOADING PALLET FROM TRANSPORTER ONTO WASTE HOIST USING 52-H-008C

6.1 Ensure chair pins on hoist are in the down position prior to aligning transporter.

6.2 Align transporter with waste hoist.

6.3 Shift transmission to "N" (Neutral) and set park brake.

6.4 Remove wedge and pull circuit selector valve out for pallet.

6.5 Move joystick mode switch to load/unload.

6.6 Move joystick up to unload pallet onto hoist.

6.7 Move joystick mode switch to hook cylinder.

6.8 Move joystick down until pallet is unhooked (approximately three seconds).

6.9 Move circuit selector valve in for steering and install wedge.

6.10 Prepare transporter for tramming.

7.0 REMOVING PALLET FROM TRANSPORTER USING FORKLIFT 52-H-008A AND 52-H-008B

7.1 Shift transmission to "N" (Neutral).

7.2 Push in parking/emergency brake button to engage parking brake.

7.3 Move circuit selector valve to the PALLET MOVER DRIVE circuit.

7.4 Push and hold pallet mover drive lever toward rear of Transporter.

7.5 Move pallet mover until forklift pockets on side of Transporter line up with forklift pockets on pallet.

7.6 Ensure pallet mover hook is disengaged from pallet pin.

7.7 Use forklift to remove pallet.

7.8 Move circuit selector valve to STEERING mode.

7.9 Prepare Transporter for tramming.

8.0 REMOVING PALLET FROM TRANSPORTER USING FORKLIFT 52-H-008C

8.1 Shift transmission to "N" (Neutral) and set park brake.

8.2 Remove wedge and pull circuit selector valve handle out for pallet.

8.3 Move joystick mode switch to lock cylinder.

8.4 Move joystick up until "red" unlocked light illuminates.

8.5 Move joystick mode switch to hook cylinder.

8.6 Move joystick down to unhook pallet (approximately three seconds).

8.7 Use forklift to remove pallet.

8.8 Move circuit selector valve in for steering and install wedge.

8.9 Prepare transporter for tramming.

9.0 LOADING PALLET ONTO TRANSPORTER USING FORKLIFT 52-H-008A AND 52-H-008B

9.1 Shift transmission to "N" (Neutral).

9.2 Push in parking/emergency brake button to engage parking brake.

9.3 Move circuit selector valve to PALLET MOVER DRIVE circuit.

| 9.4 Ensure pallet mover is at front of Transporter.

9.5 Load pallet onto trailer using forklift.

| 9.6 Ensure pallet pin is correctly aligned.

9.7 Push and hold pallet mover drive lever toward rear of Transporter.

9.8 Move pallet hook slowly toward pallet until hook engages pallet pin.

| 9.9 Ensure pallet hook automatically engages pallet.

9.10 Pull and hold pallet mover drive lever forward toward front of Transporter.

9.11 Slow down pallet mover as pallet approaches pallet stops (pallet moves forward and engages pallet stops at front of trailer).

9.12 Move circuit selector valve to STEERING mode.

9.13 Prepare Transporter for tramming.

10.0 LOADING PALLET ONTO TRANSPORTER USING FORKLIFT 52-H-008C

10.1 Shift transmission to "N" (Neutral) and set park brake.

10.2 Remove wedge and pull circuit selector valve handle out for pallet.

| 10.3 Ensure pallet mover is at front of transporter.

| 10.4 Ensure lock cylinder is unlocked.

| 10.5 Ensure hook cylinder is unhooked.

10.6 Load pallet onto transporter using forklift.

10.7 Move joystick mode switch to hook cylinder.

10.8 Move joystick up to hook pallet (approximately three seconds).

10.9 Move joystick mode switch to load/unload.

10.10 Move joystick down until "green" full loaded and locked lights illuminate.

10.11 Move circuit selector valve handle in for steering and install wedge.

10.12 Prepare transporter for tramming.

11.0 TRANSPORTER SHUTDOWN

11.1 Steer Transporter out of traffic areas.

11.2 Shift transmission to "N" (Neutral).

11.3 Push in parking/emergency brake button to engage parking brake.

11.4 If Transporter was used to perform work just prior to parking, allow Transporter to idle for two to three minutes.

11.5 Turn lights **OFF** by moving switch to Position 1.

11.6 Turn ignition switch **OFF**. (52-H-008C)

11.7 Pull out engine stop knob until engine stops. (52-H-008A and 52-H-008B)

11.8 Push in engine stop knob. (52-H-008A and 52-H-008B)

11.9 Chock Transporter wheels.

11.10 Turn battery disconnect switch to **OFF**.