

WP 05-WH1726

Revision 0

RH Waste Downloading/Emplacement Using Distributed Controls

Technical Procedure

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Craig Suggs
APPROVED FOR USE

CONTINUOUS USE PROCEDURE

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INTRODUCTION ^{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}

This procedure provides instructions for preparing the remote-handled (RH) waste canisters for downloading and emplacement in the underground (U/G) disposal area using distributed controls.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- Attachment 1 - RH Waste Processing Data Sheet
- U/G Emplacement Map
- Narrative Logbook

REFERENCES

BASELINE DOCUMENTS

- Title 10 *Code of Federal Regulations* (CFR) Part 71, "Packaging and Transportation of Radioactive Material"
- 10 CFR Part 835, "Occupational Radiation Protection"
- 40 CFR Part 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"
- DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
- DOE Standard 1090-2007, *Hoisting and Rigging*
- DOE/WIPP-09-3427, *Waste Data System User's Manual*
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- NRC-Docket-71-9212, *RH-TRU Certificate of Compliance*
- NRC-Docket-71-9212, *Safety Analysis Report for the RH-TRU 72-B Waste Shipping Package*
- WTSD-TME-044, *Horizontal Emplacement and Retrieval Equipment Operation and Maintenance Manual*

- WP 05-WH1602, 41-Ton Diesel Forklift 52-H-005A
- WP 05-WH1700, Horizontal Emplacement and Retrieval Equipment Assembly
- WP 04-IM1000, Issues Management Processing of WIPP Forms
- WP 05-WH1711, 6-Ton Toyota Forklift 52-H-007C
- WP 08-PT.03, WIPP Quality Assurance Program Plan for Type "B" Packages
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description

REFERENCED DOCUMENTS

- WP 04-AD-3001, Facility Mode Compliance
- WP 05-WH.02, WIPP Waste Handling Operations WDS User's Manual
- WP 05-WH1704, Facility Cask Transfer Car (41-H-003) Operation
- WP 05-WH1710, 72-B RH Processing
- WP 05-WH1713, Facility Cask and Facility Cask Rotating Device
- WP 05-WH1722, 10-160B RH Processing
- WP 05-WH1723, Underground RH Transuranic Mixed Waste Disposal Area Inspections
- WP 05-WH4401, Waste Handling Operator Event Response
- WP 08-NT3001, Volume Control of Parking Area Storage Unit
- WP 12-HP1100, Radiological Surveys
- WP 12-HP2001, Abnormal Radiological Conditions
- WP 12-HP4000, Emergency Radiological Control Responses
- EA04IM1000-1-0, WIPP Form
- EA04AD3001-SR23, Surveillance Data Sheet
- EA04AD3001-SR24, Surveillance Data Sheet
- EA04AD3001-SR30, Surveillance Data Sheet

- EA04AD3001-SR37, Surveillance Data Sheet

PRECAUTIONS AND LIMITATIONS

The Technical Safety Requirements (TSRs) contains Limiting Conditions for Operations (LCOs) and Specific Administrative Controls (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 per WP 04-AD3001.

The specific safety requirements that apply during performance of this procedure are as follows:

- The fire suppression system on the WASTE HANDLING EQUIPMENT selected for use SHALL be OPERABLE. **[LCO 3.1.2]**
- Propane powered vehicles are prohibited in the underground at all times. **[LCO 3.3.4]**
- The lube truck SHALL be prohibited in DISPOSAL ROOMS at all times. **[LCO 3.3.5]**
- The lube truck SHALL be prohibited in the VEHICLE EXCLUSION ZONE at all times. **[LCO 3.3.5]**
- The TRANSPORT PATH SHALL be established prior to WASTE movement (the transport path is situationally determined). **[LOC 3.3.6]**
- A VEHICLE EXCLUSION ZONE SHALL be established to escort the WASTE through the TRANSPORT PATH with a leading and lagging escort. **[LCO 3.3.6]**
- The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance. **[LCO 3.3.6]**
- WASTE SHALL be moved in a VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**
- Non-WASTE handling vehicles/equipment SHALL be prohibited in the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**

- Only one liquid-fueled vehicle/equipment SHALL be in the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**
- Liquid-fueled vehicle/equipment and non-WASTE handling equipment may enter the VEHICLE EXCLUSION ZONE to repair **OR** replace disabled WASTE HANDLING EQUIPMENT.
- Only WASTE HANDLING EQUIPMENT selected for WASTE HANDLING ACTIVITIES may approach the WASTE FACE during emplacement. **[LCO 3.3.7]**
- Non-WASTE handling vehicle/equipment support emplacement activities SHALL be > 25 feet from the WASTE FACE. **[LCO 3.3.7]**
- Liquid-fueled WASTE HANDLING EQUIPMENT emplacing WASTE SHALL be ATTENDED. **[LCO 3.3.7]**
- Liquid-fueled vehicles/equipment SHALL be > 25 feet from the WASTE FACE. **[LCO 3.3.8]**
- The WASTE hoist conveyance SHALL be present prior to opening Door 155 **OR** Door 156. **[LCO 3.5.2]**
- Designated storage areas for non-flammable compressed gas cylinders SHALL be > 25 feet from WASTE. **[LCO 3.6.1]**
- Designated storage areas for flammable compressed gas cylinders SHALL be > 100 feet from WASTE. **[LCO 3.6.1]**
- Only personnel qualified as a RH-Transuranic (TRU) U/G Process Waste Handling Technician/Waste Handling Engineer (WHT/WHE), or trainees operating under the direct supervision of a qualified RH-TRU U/G Process WHT/WHE, are authorized to perform the waste handling (WH) activities specified in this procedure.
- If procedure cannot be performed as written or in sequence, WHE shall be contacted.
- WH may switch between screens, as needed.
- Safety glasses and a long-sleeve 100% cotton shirt must be worn when opening and closing breakers.
- If abnormal conditions are found during operations and/or inspections, user shall stop work and notify WHE.
- Radiological surveys are performed in accordance with WP 12-HP1100.

- The U/G RH air compressor may be turned **ON** or **OFF** and drained, as needed.
- WP 08-NT3001 shall be used if WH activities are suspended or interrupted. Notify Site Environmental Compliance (SEC) if suspension or interruption will exceed 72 hours.
- During emplacement, if hydraulic pressure on digital display for Transfer Mechanism (TM) exceeds 500 pounds per square inch (psi), stop operation and contact WHE.
- While extending or retracting the Staging Platform (SP) or the Transfer Carriage (TC) on the Horizontal Emplacement and Retrieval Equipment (HERE), the operators must be alert to prevent personnel from being caught between the moving parts.
- If the Control Console (CC) will be left unattended with the CC POWER switch turned **ON**, **ENSURE** the Main Circuit Breaker (M-CB) actuator on front of Motor Control Center (MCC) is **OFF**. Performing this will eliminate control power to HERE controls and multiple re-boots of CC.
- During retrieval, if hydraulic pressure on the digital display for the TM exceeds 2,200 psi, operation must be stopped and the WHE contacted.
- Personnel must stay in the vicinity of CC during emplacement and must approach the machine only as necessary to place the facility cask (FC) or the Shield Plug Carriage (SPC) on the Waste Transfer Machine Assembly (WTMA).
- Spotters are required to assist the forklift drivers in maneuvering the FC and SPC into place using standard forklift hand signals.
- At any time during the emplacement process, the HERE may be leveled if an unlevel indication is present on the Tilt Status Array.
- The Alignment Fixture Assembly (AFA) and the TC locking mechanisms switches must be held for at least 15 seconds to ensure full rotation of all locking mechanisms.
- Waste may be transferred to the U/G via the Waste Shaft only.
- Abnormal and/or Emergency events that require the cessation of this procedure, such as a radiological event, shall be performed in accordance with WP 05-WH4401, WP 12-HP4000, and WP 12-HP2001, as applicable.
- Loaded and unloaded shipment transportation must be coordinated with contact-handled (CH) WHE.

- If the canister to be loaded into the FC exceeds 3,220 lb, hoisting supervisor must be notified for work bonnet removal prior to loading the FC containing RH waste onto the waste hoist conveyance.
- Mechanical means may be used to assist in the opening and closing of the FC lock pins, if necessary.
- Equipment weight:

– Facility Cask	67,389 lb
– Facility Cask Transfer Car	9,400 lb
– Waste Hoist Work Bonnet	10,000 lb
- If the WH process cannot be completed in its entirety, the WHE shall determine where and when to start and stop the process during the shift, and where to stop the process for the end of shift.
- When the Facility Cask Transfer Car (FCTC) is not over the telescoping port shield, or being operated, the Facility Cask Rotating Device (FCRD) gates shall be closed or the open hole covered.
- No RH waste shall be moved to a location outside the designated disposal path.
- A spotter is required when operating the 41-ton forklift or 6-ton forklift when moving waste or vision is impaired.
- A spotter is required when operating the 41-ton or 6-ton forklift within 75 ft of the CH disposal array face.
- A spotter is required when operating any diesel equipment within 75 ft of the HERE/FC aligned on a borehole.
- RH WH personnel will be responsible for determining if a WIPP Form (EA04IM1000-1-0) is required to be generated for documentation purposes or the tracking and closure of an off-normal event.
- Personnel operating the HERE must drain the compressor used for FC valve operation prior to leaving the U/G.

PREREQUISITE ACTIONS

- 1.0 Ensure the applicable section of WP 05-WH1710, and/or the applicable section of WP 05-WH1722, has been completed.
- 2.0 Ensure the applicable section of WP 05-WH1723 has been completed.

3.0 Ensure the following applicable equipment preoperational inspections have been completed:

3.1 Equipment on surface:

- FCRD and FC per WP 05-WH1713
- FCTC per WP 05-WH1704

4.0 WH, ensure adequate WH Operations staff is available to support RH WH.

SIGN-OFF WH

5.0 WH, ensure SHAFT ACCESS AREA is configured for RH WASTE HANDLING MODE.

SIGN-OFF WH

6.0 Verify announcement for RH WASTE HANDLING MODE has been made and sign off on Attachment 1.

SIGN-OFF WH

7.0 Using WDS Shipment Summary Report, or WP 05-WH1722, Attachment 2, enter canister number.

SIGN-OFF WH

PERFORMANCE

NOTE

During the performance of this procedure, if proper indications are not received, the WHE may authorize performing steps or repeating steps of this procedure to ensure proper indications are received. Steps may be reversed or the sequencing of steps may be performed per direction of WHE in order to maintain a safe configuration. This is not intended to circumvent the intent of a "continuous use" procedure and prior to restarting the procedure, it must be re-entered at the same point it was stopped. Radiological Control hold points may not be bypassed. Any step or steps performed at the discretion of the WHE will be documented in the WH narrative log.

1.0 WASTE DOWNLOADING

1.1 Ensure waste hoist conveyance is staged at collar for FC loading and Surveillance Data Sheet(s), EA04AD3001-SR30, for **LCO Surveillance Requirement (SR) 4.5.2.1** has been signed. **[LCO 3.5.2] [SR 4.5.2.1]**

- 1.2 WH, ensure U/G is configured for RH WASTE HANDING Mode.

SIGN-OFF WH

CAUTION

If the canister to be loaded into the FC exceeds 3,220 lb, hoisting supervisor must be notified for work bonnet removal prior to loading the FC containing RH waste onto the waste hoist conveyance.

- 1.3 Contact the U/G and ensure a Radiological Control Technician (RCT) is present for downloading.
 - 1.4 Drive FCTC on to Waste Shaft conveyance.
 - 1.5 Ensure conveyance lock pin is in place on FCTC.
 - 1.6 Ensure power cable is disconnected from FCTC.
 - 1.7 Close gates and/or cover telescoping port shield.
 - 1.8 Transfer waste to U/G.
- 2.0 FACILITY CASK TRANSFER TO EMPLACEMENT ROOM

NOTE

U/G Services must be contacted if waste transport notification system is not working.

- 2.1 RCT, energize waste transport notification system.
- 2.2 RCT, perform dose rate survey and access control.
- 2.3 WH, ensure cable reel power supply disconnect switch, 53P-SW04/105 is in the **OFF** position.
- 2.4 Connect the power cable from the cable reel to the near side receptacle on the car labeled CAR POWER 480V/3PH/60HZ.
- 2.5 Ensure circuit breaker on the travel motor starter box door is **ON**.
- 2.6 Place disconnect switch, 53P-SW04/105 in the **ON** position.
- 2.7 WH, drive FCTC off waste conveyance to E140 drift for FC removal, using mechanical means to assist car, if necessary.

CAUTION

Forklift driver and spotter must watch for electrical and air lines in the transport path to avoid damage to the FC or Forklift.

- 2.8 Remove FC using the 41-ton forklift.
- 2.9 Move FCTC to a location so that it does not interfere with normal mine operations.
- 2.10 Place disconnect switch, 53P-SW04/105 in the **OFF** position.
- 2.11 Disconnect the car power cable reel from the FCTC.

NOTE

The WASTE TRANSPORT PATH is defined as the route from S-400/E-140 to the active panel/room. When the Waste In Transit lights are activated, the WASTE TRANSPORT PATH is established. In the event the Waste In Transit lights become inoperable, movement of waste must stop and U/G Services is to be notified. The roving watch must sweep the WASTE TRANSPORT PATH and make notification via the mine pager system that waste is in transit.

- 2.12 Establish a WASTE TRANSPORT PATH prior to WASTE movement.
[LCO 3.3.6]
- 2.13 Establish a VEHICLE EXCLUSION ZONE to escort the WASTE through the TRANSPORT PATH with the leading and lagging escort.
[LCO 3.3.6]
- 2.14 The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance.
[LCO 3.3.6]
- 2.15 Ensure WASTE is moved within the VEHICLE EXCLUSION ZONE.
[LCO 3.3.6]
- 2.16 Ensure non-WASTE handling vehicles/equipment are NOT within the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**
- 2.17 Only one liquid-fueled vehicle SHALL be in the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**
- 2.18 Transport FC to waste emplacement room.

- 2.19 Complete the Surveillance Data Sheet(s), EA04AD3001-SR23 and EA04AD3001-SR37, for **SRs 4.3.6.1, 4.3.6.2, and 4.3.6.3** as found in WP 04-AD3001.
- 2.20 Forward the completed Surveillance Data Sheet(s) and all associated documentation to the FSM for review and approval prior to end of shift.
- 2.21 Contact waste station to de-energize waste transport notification system.
- 2.22 Once EACH SHIFT while in WASTE HANDLING MODE, VERIFY only one WASTE HANDLING EQUIPMENT is emplacing WASTE.
[LCO 3.3.7]
- 2.23 Once EACH SHIFT, while in WASTE HANDLING MODE, VERIFY non-WASTE HANDLING EQUIPMENT is > 25 feet from WASTE FACE.
[LCO 3.3.7]

NOTE

Surveillance Data Sheets for **SR 4.3.7.1** and **4.3.7.3** SHALL be completed once EACH SHIFT while in WASTE HANDLING MODE.

- 2.24 Complete Surveillance Data Sheet(s), EA04AD3001-SR24, for **LCO 3.3.7, SR 4.3.7.1** and **4.3.7.3**, as found in WP 04-AD3001 and submit to the FSM.

CAUTION

The FC is designed to go on the SP in one direction only. The FC rotation trunnions are on the rear shield valve (RSV) end, and will be on the side away from the face of the borehole when oriented properly. Additionally, the shield valve housings have different chamfers to assure proper orientation. Failure to orient the FC correctly may result in damage to the FC mounting blocks on the SP.

The weight of the FC is sufficient to change the alignment of the WTMA and AFA if it is misaligned as it is set down.

3.0 FACILITY CASK INSTALLATION

- 3.1 Lift FC with 41-ton forklift and position it above SP.
- 3.2 Slowly lower FC until it is properly oriented between chamfered mounting blocks, and between front and rear positioning blocks.
- 3.3 Lower forks and back out forklift.

3.4 RCT, perform radiation survey of FC and CC area, and record CC area dose rate on Attachment 1.

SIGN-OFF RCT

WARNING

Proper Personal Protective Equipment (PPE), including a long-sleeve 100% cotton shirt, safety glasses, voltage gloves, and leather gloves must be worn when operating power supply breaker or disconnect to prevent injury.

3.5 WH, ensure site power and MCC breakers are in the **OFF** position and perform the following:

- Install cable harnesses 5 and 6 between the SP and FC.
- Connect two quick-disconnect hoses between SP and FC.
- Connect air supply to regulator.

WARNING

Proper PPE, including a long-sleeve 100% cotton shirt, safety glasses, voltage gloves, and leather gloves must be worn when operating power supply breaker or disconnect to prevent injury.

3.6 Ensure site power breaker is in the **ON** position.

CAUTION

A Boot-up of approximately 5 minutes must be performed and console must be turned on before activating MCC on HERE to prevent damage to equipment.

NOTE

Mode Select Switch #1 button - only "operate" or "assy/disassy" may be selected by pushing both "assy/dissay" and "operate" then push desired button ON.

Mode Select Switch #2 button - only "emplace" or "retrieve" may be selected by pushing both "emplace" and "retrieve" OFF then push desired button ON.

3.7 Turn POWER KEY on CC to **ON**.

- 3.8 Ensure H.E.R.E STARTUP screen appears.
 - 3.9 Place M-CB on front of MCC to **ON**.
 - 3.10 Once boot-up has been performed, Startup screen will appear. Press "Level" button to view level screen.
 - 3.11 On Level screen, verify that power plug is mated for AGA Power Check and WTMA Power Check on the bottom left of screen.
 - 3.12 Perform the following, if tilt status array lights are not all green:
 - 3.12.1 Ensure MODE SELECT Switch # 1 in ASSAY/DISASSAY and ASSAY/DISASSAY light is **ON**.
 - 3.12.2 Push TC PUMP button to **ON**.
 - 3.12.3 Push AFA PUMP button to **ON**.
 - 3.12.4 Ensure all other buttons are **OFF**.
 - 3.13 Operate leveling jack buttons with Show Level button pushed, as necessary, to obtain level indication (green lights only) on TILT STATUS ARRAYS.
 - 3.14 Ensure visually that AFA and TC locking mechanisms are in UNLOCKED position.
 - 3.15 Place TC PUMP button to **OFF**.
 - 3.16 Place AFA PUMP button to **OFF**.
- 4.0 FACILITY CASK TO ALIGNMENT FIXTURE ASSEMBLY EXTENSION

WARNING

When extending SP or TC on HERE, operators must be alert to prevent personnel from being caught between moving parts.

- 4.1 Push "Emplace Canister" button to view emplacement screen.
- 4.2 Push SP button to EXTEND.
- 4.3 Ensure SP is moving forward (toward borehole).

- 4.4 When TRAVEL LIMIT light flashes, push SP button to **OFF**.
 - 4.5 Ensure front of FC is against shield collar.
 - 4.6 Push AFA PUMP button to **ON**.
 - 4.7 Push ALIGNMENT FIXTURE button to LOCK, hold for approximately 15 seconds, then release.
 - 4.8 Push AFA PUMP button to **OFF**.
- 5.0 EMBLACEMENT MODE
- 5.1 Push MODE SELECT Switch # 1 button to OPERATE.
 - 5.2 Push MODE SELECT Switch # 2 button to EMPLACE.
- 6.0 TRANSFER CARRIAGE TO FACILITY CASK EXTENSION
- 6.1 Push TC PUMP button to **ON**.
 - 6.2 Push and hold TRANSFER CARRIAGE button to EXTEND.
 - 6.3 Ensure TC is moving forward.
 - 6.4 When TC stops moving and TRAVEL LIMIT light starts flashing, return TRANSFER CARRIAGE button to **OFF**.
 - 6.5 Ensure TC is against rear end of FC.
 - 6.6 Push MODE SELECT Switch # 1 button to ASSAY/DISASSAY.
 - 6.7 Push TRANSFER FIXTURE button to LOCK, hold for approximately 15 seconds, then release.
 - 6.8 Push MODE SELECT Switch #1 button to OPERATE.

WARNING

Until shield plug is installed, radiation levels in vicinity of CC should be monitored, and compared to background readings obtained after FC arrived at emplacement site to detect evidence of development of streaming paths. WH personnel must be kept informed of any changes in background radiation level in operating area to prevent unnecessary radiation exposure.

NOTE

Canister screen will show emplacement of canister.

NOTE

Graphics changes: when using the shield valve motor, the light should change from green to red in operation. When limit is reached, the shield valve will show red for OPEN and green for CLOSED; lockpins show green for CLOSED and red for OPEN.

7.0 CANISTER EMLACEMENT

7.1 Push CASK RSV button to OPEN.

NOTE

If necessary, mechanical means may be used to assist the FC lockpins to OPEN.

7.2 When CASK RSV OPEN light starts flashing, push CASK RSV button to **OFF**.

CAUTION

Hydraulic pressure increases when grapple contacts waste container. **IF** hydraulic pressure exceeds 500 psi, **THEN** this may damage the hydraulic system, operation must be stopped and WHE must be contacted.

CAUTION

IF TM is not automatically stopped by PINTLE DETECT interlock prior to 33 inches, **THEN** equipment may be damaged. WHE must be contacted.

7.3 Place and hold TRANSFER MECHANISM joystick to EXTEND.

- 7.4 Verify TRANSFER MECHANISM POSITION display is increasing.
- 7.5 Hold TRANSFER MECHANISM joystick to EXTEND until TM automatically stops.
- 7.6 Return TRANSFER MECHANISM joystick to neutral.
- 7.7 Verify PINTLE DETECT light is flashing.
- 7.8 Push CASK Front Shield Valve (FSV) button to OPEN.

NOTE

If necessary, mechanical means may be used to assist the FC lockpins to OPEN.

- 7.9 When CASK FSV OPEN light starts flashing, push CASK FSV button to **OFF**.

NOTE

If pintle contact is lost after a displacement reading of approximately 164.5 inches, the Administrative Controlled Override (ACO) may be used to extend TM in order to obtain pintle contact.

- 7.10 Place and hold TRANSFER MECHANISM joystick to EXTEND.
- 7.11 Verify TRANSFER MECHANISM POSITION display is increasing.
- 7.12 **IF** pintle contact is lost after 164.5 inches,
THEN turn ACO key to **ON**.

NOTE

TM should be stopped automatically by TRAVEL LIMIT with waste package emplaced (approximately 269 to 275 inches).

- 7.13 Hold TRANSFER MECHANISM joystick to EXTEND until TRAVEL LIMIT INTERLOCK light starts flashing and TM automatically stops or the TM displacement is in the 269 to 275 inch range.
- 7.14 Return TRANSFER MECHANISM joystick to neutral.
- 7.15 **IF** ACO key is on,
THEN turn ACO key to **OFF**.
- 7.16 Place and hold TRANSFER MECHANISM joystick to RETRACT.
- 7.17 Verify TRANSFER MECHANISM POSITION display is decreasing.

NOTE

TM should be automatically stopped by CASK VALVE IMPROPER POSITION interlock with grapple inside FC (approximately 130 to 145 inches).

- 7.18 Hold TRANSFER MECHANISM joystick to RETRACT until CASK VALVE IMPROPER POSITION light flashes and TM automatically stops.
- 7.19 Return TRANSFER MECHANISM joystick to neutral.
-

NOTE

During the time the FSV is closing, TM IMPROPER POSITION interlock status light will flash. This is expected and does not affect operation.

- 7.20 Push CASK FSV button to CLOSED.
- 7.21 When CASK FSV CLOSED light starts flashing, push CASK FSV button to **OFF**.
-

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to CLOSE.

- 7.22 Ensure LOCKPINS CLOSED light is **ON**.
-

NOTE

TM should be stopped automatically by TRAVEL LIMIT interlock with grapple inside TC (approximately -1.0 to 1.0 inch).

- 7.23 Place and hold TRANSFER MECHANISM joystick to RETRACT.
- 7.24 Verify TRANSFER MECHANISM POSITION display is decreasing.
- 7.25 Hold TRANSFER MECHANISM joystick to RETRACT until TRAVEL LIMIT INTERLOCK light flashes and TM automatically stops.
- 7.26 Return TRANSFER MECHANISM joystick to neutral.
- 7.27 Push CASK RSV button to CLOSE .
- 7.28 When CASK RSV CLOSED light starts flashing, push CASK RSV button to **OFF**.

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to CLOSE.

- 7.29 Ensure LOCKPINS CLOSED light is **ON**.
- 7.30 Push MODE SELECT Switch #1 button to ASSAY/DISASSAY.
- 7.31 Push TRANSFER FIXTURE button to UNLOCK, hold for approximately 15 seconds, then release.
- 7.32 Push MODE SELECT Switch #1 button OPERATE.

8.0 TRANSFER CARRIAGE RETRACTION

- 8.1 Push and hold TRANSFER CARRIAGE button to RETRACT.
- 8.2 Ensure TC is moving away from AFA.
- 8.3 When TC automatically stops, release TRANSFER CARRIAGE button.
- 8.4 Push MODE SELECT Switch #1 button to ASSAY/DISASSAY.
- 8.5 Push TRANSFER FIXTURE button to LOCK until locks are in the fully locked position.
- 8.6 Push TC PUMP to **OFF**.

NOTE

Shield plug screen will show emplacement of shield plug.

- 8.7 Push "Emplace Shield Plug" to view shield plug emplacement screen.

9.0 SHIELD PLUG CARRIAGE INSTALLATION

- 9.1 Ensure pintle is attached to shield plug.
- 9.2 Position SPC and shield plug over rails between rear of FC and TC using 6-ton forklift.
- 9.3 Lower SPC slowly until carriage roller bearings are engaged securely on rails.
- 9.4 Ensure SPC is resting against FC.
- 9.5 Remove 6-ton forklift.

10.0 SHIELD PLUG EMPLACEMENT

- 10.1 Ensure MODE SELECT Switch #1 is in OPERATE.
- 10.2 Ensure MODE SELECT Switch #2 is in EMLPLACE.
- 10.3 Push TC PUMP button to **ON**.
- 10.4 Push and hold TRANSFER CARRIAGE button to EXTEND.
- 10.5 When TC is against SPC place TRANSFER CARRIAGE button to **OFF**.
- 10.6 Push TC PUMP button to **OFF**.
- 10.7 Install clamps between TC and SP.

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to OPEN.

- 10.8 Push CASK RSV button to OPEN.
- 10.9 When CASK RSV OPEN light starts flashing, push CASK RSV button to **OFF**.
- 10.10 Push TC PUMP button to **ON**.

NOTE

HYD PUMP PRESSURE display will increase when grapple contacts shield plug.

TM should be automatically stopped by CASK VALVE IMPROPER POSITION interlock with shield plug in FC (approximately 130 to 145 inches).

- 10.11 Place and hold TRANSFER MECHANISM joystick to EXTEND.
- 10.12 Verify TRANSFER MECHANISM POSITION display is increasing.
- 10.13 Hold TRANSFER MECHANISM joystick to EXTEND until CASK VALVE IMPROPER POSITION interlock flashes and TM automatically stops.
- 10.14 Return TRANSFER MECHANISM joystick to neutral.
- 10.15 Verify PINTLE DETECT light is **ON**.
- 10.16 Push CASK FSV button to OPEN.

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to OPEN.

10.17 When OPEN light starts flashing, push CASK FSV button to **OFF**.

NOTE

TM should be stopped automatically by TRAVEL LIMIT interlock with shield plug emplaced (approximately 256 to 267 inches).

- 10.18 Place and hold TRANSFER MECHANISM joystick to EXTEND.
- 10.19 Verify TRANSFER MECHANISM POSITION display is increasing.
- 10.20 Hold TRANSFER MECHANISM joystick to EXTEND until TRAVEL LIMIT INTERLOCK light starts flashing and TM automatically stops or the TM displacement is in the 256 to 267 inch range.
- 10.21 Return TRANSFER MECHANISM joystick to neutral.
- 10.22 WH, sign off on Attachment 1 that shield plug is emplaced.

SIGN-OFF WH

NOTE

TM should be automatically stopped by CASK VALVE IMPROPER POSITION interlock with grapple inside FC (approximately 130 to 145 inches).

- 10.23 Verify GRAPPLE OPEN light is **ON**.
- 10.24 Place and hold TRANSFER MECHANISM joystick to RETRACT.
- 10.25 Verify TRANSFER MECHANISM POSITION display is decreasing.
- 10.26 Hold TRANSFER MECHANISM joystick to RETRACT until CASK VALVE IMPROPER POSITION light flashes and TM automatically stops.
- 10.27 Return TRANSFER MECHANISM joystick to neutral.
- 10.28 Push CASK FSV button to CLOSED.
- 10.29 When CASK FSV CLOSED light starts flashing, push CASK FSV button to **OFF**.

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to CLOSE.

10.30 Ensure LOCKPINS CLOSED light is **ON**.

NOTE

TM should be automatically stopped by TRAVEL LIMIT interlock with grapple inside TC (approximately -1.0 to 1.0 inch).

10.31 Place and hold TRANSFER MECHANISM joystick to RETRACT.

10.32 Verify TRANSFER MECHANISM POSITION display is decreasing.

10.33 Hold TRANSFER MECHANISM joystick to RETRACT until TRAVEL LIMIT INTERLOCK light flashes and TM automatically stops.

10.34 Return TRANSFER MECHANISM joystick to neutral.

10.35 Push TC PUMP button to **OFF**.

10.36 RCT, perform contamination swipes on interior of FC.

NOTE

Steps 10.37 through 10.45 may be performed concurrently with Steps 10.36 and 10.37.1. Rear shield valve may be opened and additional swipes taken as directed by the RCT and WHE.

10.37 RCT, monitor swipes for gross levels of activity.

10.37.1 RCT, verify removable surface activity is below acceptable limits and initial Attachment 1.

SIGN-OFF RCT

10.38 Push CASK RSV button to CLOSE.

10.39 When CASK RSV CLOSED light starts flashing, push CASK RSV button to **OFF**.

NOTE

If necessary, mechanical means may be used to assist the FC shield valve lockpins to CLOSE.

10.40 Ensure LOCKPINS CLOSED light is **ON**.

10.41 Push all buttons on CC to **OFF**.

10.42 If needed, turn power key to **OFF** on CC.

WARNING

Proper PPE, including a long-sleeve 100% cotton shirt, safety glasses, voltage gloves, and leather gloves must be worn when operating power supply breaker or disconnect to prevent injury.

10.43 If required, rotate M-CB actuator on outside of MCC to **OFF**.

10.44 WH, record canister number, panel number, room number, and borehole number on Attachment 1.

SIGN-OFF WH

10.45 Record canister emplacement location on U/G Emplacement Map and initial Attachment 1.

SIGN-OFF WH

11.0 REVIEW

11.1 WHE, perform the following:

11.1.1 Review Attachment 1 for completeness and sign Review/Validation line.

SIGN-OFF WHE

11.1.2 WHE, **GO TO** WP 05-WH.01, to enter emplacement data into the WIPP Waste Information System (WWIS)/WDS, and return to Step 11.1.3.

11.1.3 Forward Attachment 1 to Records Coordinator.

11.1.4 WHE, enter HERE evolution data into Tracking Table.

Attachment 1 - RH Waste Processing Data Sheet

STEP	DESCRIPTION	INITIAL
	PREREQUISITE ACTIONS	
4.0	Adequate WH Operations staff available.	WH _____
5.0	WHB is configured for RH WH Mode.	WH _____
6.0	CMRO announced RH WH Mode.	WH _____
7.0	Canister Number _____	WH _____
	PERFORMANCE	
1.2	U/G is configured for RH WH Mode.	WH _____
3.4	Dose rate observed at CC location: _____ mrem/hr	RCT _____
10.22	Ensure shield plug is emplaced.	WH _____
10.37.1	Verify removable surface activity is below acceptable limits	RCT _____
10.44	Canister Number _____ Panel Number _____ Room Number _____ Borehole Number _____	WH _____
10.45	Record canister emplacement location on U/G Emplacement Map	WH _____

Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials
Print Name	Signature	Date	Initials

