WP 05-WH1725

Revision 8

RH Waste Downloading and Emplacement

Technical Procedure

EFFECTIVE DATE: 01/28/11

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APPROVED FOR USE

CONTINUOUS USE PROCEDURE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	ISSUED DATE	DESCRIPTION OF CHANGES
6	09/10/10	Added steps and notes for the proper handling of the ACO Key.
7	10/27/10	Added the associated JHA to the Precautions and Limitations section. Revised Step 8.3 to add a new requirement.
8	01/28/11	Moved Precautions and Limitations bullet on U./G RH air compressor to Note above Step 3.6. Deleted Precautions and Limitations bullet stating mechanical means may be used to assist in opening and closing of the FC lock pins, if necessary. Added Note above Step 1.0 in Prerequisite Actions for performance of Prerequisite Actions. Deleted in Precautions and Limitations and in Att. 1, verification of announcement by CMRO for RH Waste Handling Mode. Relocated existing Step 2.25 to 2.29 location for instruction of completed SRs. Deleted Note above 7.19 for ACO key logging in RH U/G narrative log. Delete Step 9.4 for ensuring SPC is resting against FC.

INTRODUCTION [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12]

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

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-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- DOE/WIPP-09-3427, *Waste Data System User's Manual*
- 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.

- Only personnel who are familiar with the current version of JHA PROD-293, RH U/G Emplacement, may perform this procedure.

- If procedure cannot be performed as written or in sequence, WHE shall be contacted.

- Safety glasses, a long-sleeve 100% cotton shirt, and leather gloves 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.

- 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.

- During retrieval, if hydraulic pressure on the digital display for the TM exceeds 2,200 psi, operation must be stopped and the WHE contacted.

- 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.

- Once the HERE Control Console (CC) is set up and power is available, the CC must not be left unattended with the POWER switch turned **ON**.

- 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.

- 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.

- 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.

- 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.
- Administrative Controlled Override (ACO) Key will be controlled through the RH WHE/Waste Handling Manager (WHM) and will be required to be checked out/in with each evolutional need. WHT must receive approval from the RH WHM/WHE prior to checking out the key. Approval and checkout will be logged in the RH U/G narrative log annotating who checked out, time checked out, and who granted approval. If the WHE/WHM are on surface and grant approval, they shall annotate in the RH surface narrative log, who they gave approval to, and time approval was given.

PREREQUISITE ACTIONS

NOTE

Prerequisite actions must be performed, but may be performed in any order and in parallel as long as radiological sign-offs are not bypassed.

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

SIGN-OFF WH

2.0 WH, ensure Shaft Access Area is configured for RH WASTE HANDLING MODE.

SIGN-OFF WH

3.0 Using WIPP Waste Information System (WWIS)/ Waste Data System (WDS) Shipment Summary Report, enter canister number.

SIGN-OFF WH

PERFORMANCE

NOTE

During the performance of this procedure, if proper indications are not received, operator response is to stop to prevent potential damage to equipment and notify WHE. 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.

WARNING

Proper PPE, including long sleeve 100% cotton shirt, safety glasses, and leather gloves, must be worn while opening and closing breakers.

1.4 **IF** the FCTC power cable is connected,
THEN continue to Step 1.6.

1.5 If FCTC power cable is **NOT** connected, perform the following:

1.5.1 Ensure disconnect switch, 41P-SW04/42 is in the **OFF** position.

1.5.2 Connect the FCTC power cable from the cable reel to the near side receptacle on the car labeled CAR POWER 480V/3PH/60HZ.

1.6 Ensure circuit breaker on the travel motor starter box door is in the **ON** position.

1.7 Ensure disconnect switch, 41P-SW04/42 is in the **ON** position.

NOTE

Appropriate drying agent may be utilized to allow for FCTC placement on waste conveyance.

1.8 Drive FCTC on to Waste Shaft conveyance.

1.9 Ensure conveyance lock pin is in place on FCTC.

1.10 Place disconnect switch, 41P-SW04/42 in the **OFF** position.

1.11 Disconnect the FCTC power cable from the FCTC.

1.12 Close gates and/or cover telescoping port shield.

1.13 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.

WARNING

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

2.3 WH, ensure cable reel power supply disconnect switch, 53P-SW04/105 is in the **OFF** position.

2.4 Connect the FCTC 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 in the **ON** position.

2.6 Place disconnect switch, 53P-SW04/105 is in the **ON** position.

NOTE

Appropriate drying agent may be utilized to allow for FCTC placement on waste conveyance.

2.7 WH, drive FCTC off waste conveyance toward E-140 drift until FCTC is past cable reel, using mechanical means to assist car, if necessary.

2.8 Place disconnect switch, 53P-SW04/105 in the **OFF** position.

2.9 Disconnect the FCTC power cable from the receptacle.

2.10 Connect the FCTC power cable to the opposite side receptacle on the car labeled CAR POWER 480V/3PH/60HZ.

2.11 Place disconnect switch, 53P-SW04/105 in the **ON** position.

2.12 Drive FCTC to E-140 drift for FC removal.

CAUTION

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

2.13 Remove FC using the 41-ton forklift.

2.14 Move FCTC to a location so that it does not interfere with normal mine operations.

2.15 Place disconnect switch, 53P-SW04/105 in the **OFF** position.

2.16 Disconnect the FCTC car power cable 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.

2.17 Establish a WASTE TRANSPORT PATH prior to WASTE movement. **[LCO 3.3.6]**

2.18 Establish a VEHICLE EXCLUSION ZONE to escort the WASTE through the TRANSPORT PATH with the leading and lagging escort. **[LCO 3.3.6]**

2.19 The VEHICLE EXCLUSION ZONE SHALL be maintained from the S-400/E-140 intersection to the DISPOSAL ROOM entrance. **[LCO 3.3.6]**

2.20 Ensure WASTE is moved within the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**

2.21 Ensure non-WASTE handling vehicles/equipment are NOT within the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**

2.22 Only one liquid-fueled vehicle SHALL be in the VEHICLE EXCLUSION ZONE. **[LCO 3.3.6]**

2.23 Transport FC to waste emplacement room.

2.24 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.

2.25 Contact waste station to de-energize waste transport notification system.

2.26 Once EACH SHIFT while in WASTE HANDLING MODE, VERIFY only one WASTE HANDLING EQUIPMENT is emplacing WASTE. **[LCO 3.3.7]**

2.27 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.

2.28 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.

2.29 Forward the completed Surveillance Data Sheet(s) and all associated documentation to the FSM for review and approval prior to end of shift.

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 chamferred 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

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

3.5 WH, ensure motor control center (MCC) breaker is in the **OFF** position.

NOTE

The U/G RH air compressor may be turned **ON** or **OFF** and drained, as needed.

3.6 WH, 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, and leather gloves must be worn when operating power supply breaker or disconnect to prevent injury.

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

3.8 Place main circuit breaker on front of MCC to **ON** position.

3.9 Place POWER KEY on CC to the **ON** position.

3.10 **IF** tilt status array Light-Emitting Diode (LEDs) are green, **THEN** continue to Step 3.13.

3.11 **IF** tilt status array LEDs are **NOT** all green, perform the following:

3.11.1 Ensure MODE SELECT SW 1 in ASSY/DISASSY and ASSY/DISASSY LED is **ON**.

3.11.2 Place TRANSFER CARRIAGE PUMP switch to **ON**.

3.11.3 Place ALIGNMENT FIXTURE PUMP switch to **ON**.

3.11.4 Ensure all other switches are **OFF**.

3.12 Operate leveling jack switches, as necessary, to obtain level indication (green LEDs only) on TILT STATUS ARRAYs.

3.13 Ensure MODE SELECT SW 1 is in ASSY/DISASSY.

3.14 Ensure visually that AFA and TC locking mechanisms are in UNLOCKED position.

3.15 Ensure TRANSFER CARRIAGE PUMP switch is **OFF**.

3.16 Ensure ALIGNMENT FIXTURE PUMP switch is **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 Place SP switch to EXTEND.

4.2 Ensure SP is moving forward (toward borehole).

4.3 When TRAVEL LIMIT interlock LED flashes, place SP switch to **OFF**.

4.4 Ensure front of FC is against shield collar.

4.5 Place ALIGNMENT FIXTURE PUMP switch to **ON**.

4.6 Place ALIGNMENT FIXTURE switch to LOCK, hold for approximately 15 seconds, then release.

4.7 Place ALIGNMENT FIXTURE PUMP switch to **OFF**.

5.0 EMPLACEMENT MODE

5.1 Rotate MODE SELECT SW 1 to OPERATE.

5.2 Rotate MODE SELECT SW 2 to EMPLACE.

6.0 TRANSFER CARRIAGE TO FACILITY CASK EXTENSION

6.1 Place TRANSFER CARRIAGE PUMP switch to **ON**.

WARNING

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

6.2 Place and hold TRANSFER CARRIAGE switch in EXTEND position.

6.3 Ensure TC is moving forward.

6.4 When TC stops moving and TRAVEL LIMIT interlock LED starts flashing, return TRANSFER CARRIAGE switch to **OFF** position.

6.5 Ensure TC is against rear end of FC.

6.6 Place MODE SELECT SW 1 to ASSY/DISASSY position.

6.7 Place TRANSFER FIXTURE switch to LOCK, hold for approximately 15 seconds, then release.

6.8 Place MODE SELECT SW 1 to OPERATE position.

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

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

7.0 CANISTER EMPLACEMENT

7.1 Place CASK RSV switch in OPEN position.

NOTE

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

7.2 When CASK RSV OPEN LED starts flashing, return CASK RSV switch to **OFF** position.

CAUTION

Hydraulic pressure increases when grapple contacts waste container. If hydraulic pressure exceeds 500 psi, 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, equipment may be damaged. WHE must be contacted.

7.3 Place and hold TRANSFER MECHANISM control lever in EXTEND position.

7.4 Verify TRANSFER MECHANISM POSITION display is increasing.

7.5 Hold TRANSFER MECHANISM control lever in EXTEND position until TM automatically stops.

7.6 Return TRANSFER MECHANISM control lever to neutral.

7.7 Verify PINTLE DETECT LED is **ON**.

7.8 Place CASK Front Shield Valve (FSV) switch in OPEN position.

NOTE

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

7.9 When CASK FSV OPEN LED starts flashing, return CASK FSV switch to **OFF** position.

7.10 Place and hold TRANSFER MECHANISM control lever in EXTEND position.

7.11 Verify TRANSFER MECHANISM POSITION display is increasing.

NOTE

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

7.12 **IF** pintle contact is lost after 164.5 inches,
THEN STOP and obtain ACO Key.

7.13 **IF** pintle contact is **NOT** lost after 164.5 inches,
THEN GO TO Step 7.16.

NOTE

ACO Key will be controlled through the RH WHM/WHE. Checkout of the ACO Key will be performed by the WHM/WHE or WHT per telecom approval. Checkout will be logged in the RH U/G narrative log annotating who checked out, time checked out, and who granted approval.

7.14 WHE/WHT, checkout ACO Key and annotate in RH U/G narrative log.

7.15 WHT, place ACO switch **ON**.

NOTE

TM should be stopped automatically by TRAVEL LIMIT with waste package emplaced (approximately 269 to 279 inches).

NOTE

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

7.16 Hold TRANSFER MECHANISM control lever in EXTEND position until TRAVEL LIMIT INTERLOCK LED starts flashing and TM automatically stops or the TM displacement is in the 269 to 279 inch range.

7.17 Return TRANSFER MECHANISM control lever to NEUTRAL.

7.18 **IF** ACO switch is on,
THEN turn ACO switch **OFF**.

NOTE

ACO Key will be controlled RH WHM/WHE. Check in will be logged in the RH U/G narrative log annotating who checked in and time checked in.

7.19 WHE/WHT, return ACO Key in ACO storage location and annotate in RH U/G narrative log ACO Key when was returned.

7.20 Place and hold TRANSFER MECHANISM control lever in RETRACT position.

7.21 Verify TRANSFER MECHANISM POSITION display is decreasing.

NOTE

TM should be automatically stopped by CASK VALVE IMPROPER POSITION interlock with grapple inside FC (approximately 138 to 145 inches).

NOTE

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

7.22 Hold TRANSFER MECHANISM control lever in RETRACT position until CASK VALVE IMPROPER POSITION LED flashes and TM automatically stops.

7.23 Return TRANSFER MECHANISM control lever to neutral.

NOTE

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

7.24 Place CASK FSV in CLOSED position.

7.25 When CASK FSV CLOSED LED starts flashing, return CASK FSV switch to **OFF**.

NOTE

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

7.26 Ensure LOCKPINS CLOSED LED is **ON**.

NOTE

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

7.27 Place and hold TRANSFER MECHANISM control lever in RETRACT position.

7.28 Verify TRANSFER MECHANISM POSITION display is decreasing.

7.29 Hold TRANSFER MECHANISM control lever in RETRACT position until TRAVEL LIMIT INTERLOCK LED flashes and TM automatically stops.

7.30 Return TRANSFER MECHANISM control lever to neutral.

7.31 Place CASK RSV switch CLOSE position.

7.32 When CASK RSV CLOSED LED starts flashing, return CASK RSV switch to **OFF**.

NOTE

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

7.33 Ensure LOCKPINS CLOSED LED is **ON**.

7.34 Place MODE SELECT SW 1 in ASSY/DISASSY position.

7.35 Place TRANSFER FIXTURE switch in UNLOCK position, hold for approximately 15 seconds, then release.

7.36 Place MODE SELECT SW 1 in OPERATE position.

WARNING

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

8.0 TRANSFER CARRIAGE RETRACTION

8.1 Place and hold TRANSFER CARRIAGE switch in RETRACT position.

8.2 Ensure TC is moving away from AFA.

8.3 When TC automatically stops or is within approximately 2 inches of the rib, release TRANSFER CARRIAGE switch.

8.4 Place MODE SELECT SW 1 in ASSY/DISASSY position.

8.5 Place TRANSFER FIXTURE switch in LOCK until locks are in the fully locked position.

8.6 Place TRANSFER CARRIAGE PUMP in **OFF**.

8.7 Place all other switches in **OFF**.

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 four carriage roller bearings are engaged securely on rails.

9.4 Remove 6-ton forklift.

10.0 SHIELD PLUG EMPLACEMENT

10.1 Place POWER KEY on CC in **ON** position.

10.2 Ensure MODE SELECT SW 1 is in OPERATE.

10.3 Ensure MODE SELECT SW 2 is in EMPLACE.

10.4 Place TRANSFER CARRIAGE PUMP switch to **ON** position.

WARNING

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

10.5 Place and hold TRANSFER CARRIAGE switch in EXTEND position.

10.6 When TC is against SPC place TRANSFER CARRIAGE switch in **OFF**.

10.7 Place TRANSFER CARRIAGE PUMP switch in **OFF**.

10.8 Install clamps between TC and SP.

10.9 Place CASK RSV switch in OPEN position.

10.10 When CASK RSV OPEN LED starts flashing, return CASK RSV switch to **OFF** position.

10.11 Place TRANSFER CARRIAGE PUMP switch to **ON**.

NOTE

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

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 138 to 145 inches).

10.12 Place and hold TM control lever in EXTEND POSITION.

10.13 Verify TRANSFER MECHANISM POSITION display is increasing.

NOTE

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

10.14 Hold TRANSFER MECHANISM control lever in EXTEND position until CASK VALVE IMPROPER POSITION interlock flashes and TM automatically stops.

10.15 Return TRANSFER MECHANISM control lever to neutral.

10.16 Verify PINTLE DETECT LED is **ON**.

10.17 Place CASK FSV switch in OPEN position.

NOTE

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

10.18 When OPEN LED starts flashing, return CASK FSV switch to **OFF** position.

NOTE

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

10.19 Place and hold TRANSFER MECHANISM lever in EXTEND position.

10.20 Verify TRANSFER MECHANISM POSITION display is increasing.

NOTE

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

10.21 Hold TRANSFER MECHANISM control lever in EXTEND position until TRAVEL LIMIT INTERLOCK LED starts flashing and TM automatically stops or the TM displacement is in the 256 to 267 inch range.

10.22 Return TRANSFER MECHANISM control lever to neutral.

10.23 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 138 to 145 inches).

10.24 Verify GRAPPLE OPEN LED is **ON**.

10.25 Place and hold TRANSFER MECHANISM control lever in RETRACT position.

10.26 Verify TRANSFER MECHANISM POSITION display is decreasing.

NOTE

The second operator at the control console will be required to monitor pressure and distance indications during canister and shield plug emplacement to ensure that required parameters are not exceeded.

10.27 Hold TRANSFER MECHANISM control lever in RETRACT position until CASK VALVE IMPROPER POSITION LED flashes and TM automatically stops.

10.28 Return TRANSFER MECHANISM control lever to neutral.

10.29 Place CASK FSV in CLOSED position.

10.30 When CASK FSV CLOSED LED starts flashing, return CASK FSV switch to **OFF**.

NOTE

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

10.31 Ensure LOCKPINS CLOSED LED is **ON**.

NOTE

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

10.32 Place and hold TRANSFER MECHANISM control lever in RETRACT position.

10.33 Verify TRANSFER MECHANISM POSITION display is decreasing.

10.34 Hold TRANSFER MECHANISM control lever in RETRACT position until TRAVEL LIMIT INTERLOCK LED flashes and TM automatically stops.

10.35 Return TRANSFER MECHANISM control lever to neutral.

10.36 Place TRANSFER CARRIAGE PUMP switch to **OFF**.

10.37 RCT, perform contamination swipes on interior of FC.

NOTE

Steps 10.38 through 10.48 may be performed concurrently with Steps 10.37 and 10.38.1. Rear shield valve may be opened and additional swipes taken as directed by the RCT and WHE.

10.38 RCT, monitor swipes for gross levels of activity.

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

SIGN-OFF RCT

10.39 Place CASK RSV switch in **CLOSE** position.

10.40 When CASK RSV CLOSED LED starts flashing, return CASK RSV switch to **OFF**.

NOTE

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

10.41 Ensure LOCKPINS CLOSED LED is **ON**.

10.42 **IF** HERE disassembly will be performed immediately following emplacement,
THEN GO TO Step 10.44.

10.43 **IF** HERE disassembly will **NOT** be performed immediately following emplacement,
THEN perform the following:

10.43.1 Place all switches on CC to **OFF**.

10.43.2 Verify PC FAILURE LED is **ON**.

WARNING

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

10.44 If required, rotate main circuit breaker actuator on outside of MCC to **OFF** position.

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

SIGN-OFF WH

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

SIGN-OFF WH

10.47 Verify ACO Key is in ACO storage location and annotate in RH U/G narrative log.

10.48 Ensure the compressor used for FC valve operation is drained prior to leaving the U/G.

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.02, to enter emplacement data into the 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	
1.0	Adequate WH Operations staff available.	WH_____
2.0	Shaft Access Area is configured for RH WH Mode.	WH_____
3.0	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_____
10.23	Ensure shield plug is emplaced.	WH _____
10.38.1	Verify removable surface activity is below acceptable limits	RCT _____
10.45	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

Attachment 1 - RH Waste Processing Data Sheet

Remarks:

Review/Validation:

WHE (Print Name) Signature Date