

# WP 05-WH1722

Revision 11

## 10-160B RH Processing

Technical Procedure

EFFECTIVE DATE: 12/17/09

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APPROVED FOR USE

**CONTINUOUS USE PROCEDURE**

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## INTRODUCTION <sup>1, 2, 3, 4</sup>

This procedure provides instructions for unloading the remote-handled (RH) Chem-Nuclear Systems (CNS) 10-160B Cask and for canisterizing RH 55-gallon drums into the Waste Isolation Pilot Plant (WIPP) facility canister for disposal in the underground area.

This procedure begins after the completion of CNS 10-160B Trailer unloading.

The following quality records are generated as a result of performing this procedure:

- Attachment 1 - CNS 10-160B RH Waste Processing Data Sheet
- Attachment 2 - CNS 10-160B RH Canisterization Data Sheet

## REFERENCES

### BASELINE DOCUMENTS

- Title 10 *Code of Federal Regulations* (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/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- DOE/WIPP-09-3427, *Waste Data System User's Manual*
- NRC DOCKET 71-9204, *Safety Analysis Report for the CNS 10-160B Shipping Package*
- Safety Analysis Report for Chem-Nuclear Systems Model CNS 10-160B Type B Radwaste Shipping Cask
- WP 04-IM1000, Issues Management Processing of WIPP Forms

### REFERENCED DOCUMENTS

- WP 05-WH1701, Road Cask Transfer Car Operation

- WP 05-WH1704, Facility Cask Transfer Car (41-H-003) Operation
- WP 05-WH1705, RH Canister Transfer System
- WP 05-WH1713, Facility Cask and Facility Cask Rotating Device
- WP 05-WH1714, RH Cask Preparation Station 41-Z-076
- WP 05-WH1717, Cask Unloading Room Shield Door Operation
- WP 05-WH1719, 25-Ton Cask Unloading Room Crane
- WP 05-WH1721, 6.25-Ton Fixed Hoist and Facility Grapple
- WP 05-WH1741, 140/25-Ton Remote Handling Crane 41-T-104
- WP 05-WH1742, Hot Cell Bridge Crane 41-T-104
- WP 05-WH1743, Bridge Mounted Power Manipulator 41-T-101
- WP 05-WH1744, Surface RH Transuranic Mixed Waste Handling Area Inspections
- WP 05-WH1746, 2.5-Ton Jib Crane 41-T-201
- WP 05-WH1749, Hot Cell Transfer Drawer Operation (41-H-106)
- WP 05-WH1750, Master-Slave Manipulator (41-T-103A, B, C, & D)
- WP 05-WH1752, 10-160B Shielded Insert Installation and Removal
- WP 05-WH1757, RH Closed-Circuit TV System
- WP 05-WH4401, Waste Handling Operator Event Response
- WP 08-NT3001, Volume Control of Packing Area Storage Unit
- WP 12-HP1100, Radiological Surveys
- WP 12-HP4000, Emergency Radiological Control Responses
- WP 13-1, Washington TRU Solutions LLC Quality Assurance Program Description
- EA04IM1000-1-0, WIPP Form

## PRECAUTIONS AND LIMITATIONS

- Only personnel qualified as a CNS 10-160B Process Waste Handling Technician Engineer (WHT/WHE), or trainees operating under the direct supervision of a qualified CNS 10-160B Process WHT/WHE, are authorized to perform the waste handling (WH) activities specified in this procedure.
- If this procedure cannot be performed as written or in sequence, WHE shall be contacted.
- If abnormal conditions are found during operations and/or inspections, stop work and notify WHE and Quality Assurance (QA).
- Acceptable limits for radiological surveys are based on 10 CFR Part 835.
- WP 08-NT3001 shall be used if WH activities are suspended or interrupted.
- Hearing and eye protection must be worn when using impact wrench.
- The loading/unloading operation shall be performed only in a dry (no precipitation) environment. In the event of sudden precipitation during outdoor loading operations, precautions, such as covering the cavity, shall be implemented to prevent water from entering the cavity. If precipitation does enter interior cavities, all freestanding water shall be removed prior to loading package for shipment and handling according to the site's waste management procedures.
- Use mechanical means to assist in the opening and closing of the Facility Cask (FC) lock pins, as necessary.
- Approximate weight of grapple is 350 pounds (lb).
- When crossing over power manipulator with Hot Cell Crane, or vice versa, grapple must be in highest position, and there must be a minimum distance of 4.5 ft between centerline on Hot Cell Crane trolley and power manipulator carriage.
- A loaded CNS 10-160B Cask shall not be left unattended in the RH Bay with the lid bolts loosened.
- Suspended loads shall not be placed over "No Load Areas" (grating) of Hot Cell floor.
- All facility canisters will be downloaded with three drums (dunnage or waste).

- One loaded Cask may be stored in the Cask Unloading Room (CUR) (on a Cask Transfer Car [CTC]).
- The Waste Handling Building (WHB) storage area cannot exceed 387 cubic ft of RH waste that contains PCBs.
- Attachment 2 must be generated for each canister to be loaded.
- One canister may be stored in the Transfer Cell.
- One canister may be stored in the FC in the Facility Cask Loading Room (FCLR).
- A single 55-gallon drum shall not exceed 200 Fissile Gram Equivalent (FGE) in the Upper Hot Cell.
- A facility canister containing three 55-gallon drums shall not exceed 600 FGE.
- The CUR is required to be unoccupied with the CUR shield door closed when removing drums from a CNS 10-160B cask or when RH waste is in the Upper Hot Cell and the shield plugs are removed.
- A CNS 10-160B Cask containing RH waste shall only be stored in the CUR with the CUR shield door closed when the lid bolts are loosened.
- The shielded insert must be installed per WP 05-WH1752 before transferring canister from Hot Cell to Transfer Cell.
- Shielded insert must be removed per WP 05-WH1752 before processing RH 72-B canisters.
- Storage limit in the RH Bay shall not exceed two loaded RH packages. A minimum spacing of 44 in. shall be maintained between loaded packages.
- Storage limit in the Hot Cell is 12 waste drums and one site-derived waste drum.
- A maximum of 10 drums of RH waste, including one drum of site-derived waste, can be stored outside a facility canister in the Hot Cell.
- Drums may not be stacked prior to being emplaced in a facility canister. Stacked waste containers in a facility canister shall not exceed 3 high.
- Since RH waste could contain small amounts of non-transuranic (TRU) fissionable isotopes and fission by-product isotopes, any observed contamination or activity may also contain non-TRU activity, in addition to TRU activity. However, TRU activity is the limiting condition.

- Waste drums that are stored in the Hot Cell are either on a drum carriage or in a facility canister.
- Abnormal events that require the cessation of this procedure, such as a radiological event, shall be addressed in accordance with WP 05-WH4401 and WP 12-HP4000.
- Loaded canisters are stored in the Upper Hot Cell storage wells.
- The Transportation Engineer (TE) may be notified at any time that container identification (ID) numbers match WIPP Waste Information System (WWIS)/Waste Data System (WDS) Shipment Summary Report.
- If a manifest discrepancy is discovered during the processing of RH waste that contains PCBs, the discrepancy must be resolved or waste placed back into the CNS 10-160B Cask prior to the end-of-shift.
- Equipment weight:
 

–	Facility Cask	67,389 lb
–	Facility Cask Transfer Car (FCTC)	9,400 lb
–	Waste Hoist Work Bonnet	10,000 lb
- 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.
- RH waste drums shall be removed from the CNS 10-160B Cask only inside the CUR with the CUR shield door closed.
- Safety glasses and a long-sleeve 100% cotton shirt must be worn when opening and closing breakers.
- When the 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.
- Non-waste handling vehicles shall not be allowed in the RH portion of the WHB when RH waste is present in the RH Bay and when the CNS 10-160B Cask containing RH waste has its lid bolts loosened.
- At any point during waste processing, the Hot Cell shield plugs or CNS 10-160B lid may be installed and/or removed to maintain equipment configuration as determined by the WHE.

- 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.
- RH waste shall not be stored in the RH WHB for longer than 60 days. RH waste shall not be stored in the Upper Hot Cell for longer than 25 days.
- Door 109 in the RH Bay must not be opened while handling a loaded cask.
- Loaded casks in the RH Bay can be stored only on a transport trailer or CTC.
- Loaded shipping casks (waste) may be transferred into the WHB via the RH Bay shield door only.
- Waste may be transferred to the underground (U/G) via the Waste Shaft only.
- In the event WH activities will be performed on the back shift (or off-shift), Waste Handling Manager (WHM) or WHE contact Facility Shift Manager to assess the need for additional firefighting capabilities. Concurrent activities during WH such as ventilation testing, equipment maintenance, waste receipt, and construction activities may indicate the need to evaluate the possibility for additional firefighting capabilities. This will be assessed on a case-by-case basis.
- 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.
- If a manifest discrepancy cannot be resolved and does not allow the unloading of a CNS 10-160B Cask, the shipment will be returned to the generator site within 30 days after receipt at WIPP, or prior to the expiration of the 60-day U.S. Nuclear Regulatory Commission (NRC) vent period, whichever comes sooner.
- If equipment malfunctions do not allow the unloading of a CNS 10-160B Cask, the shipment will be returned to the generator site prior to the expiration of the 60-day NRC vent period.

## PREREQUISITE ACTIONS

- | 1.0 WHE, obtain WWIS/WDS Shipment Summary Report.
- | 1.1 Verify, using WWIS/WDS Shipment Summary Report, seal date at generator site does not exceed 60-Day NRC vent period or 59-day New Mexico Environment Department (NMED) limit.

2.0 WH, record CNS 10-160B Cask number on Attachment 1.

**SIGN-OFF WH**

3.0 WH, record shipment number on Attachment 1.

**SIGN-OFF WH**

4.0 Verify applicable section of WP 05-WH1744 has been completed.

5.0 WH, verify the following applicable equipment preoperational inspections have been completed:

5.1 Equipment categorized as pre-evolution equipment:

- Canister Transfer System per WP 05-WH1705
- CUR Shield Door (41-N-001) per WP 05-WH1717
- CNS 10-160B Road Cask Transfer Car (41-H-115) per WP 05-WH1701
- Cask Preparation Station per WP 05-WH1714

5.2 Equipment categorized as pre-shift equipment:

- 140/25-Ton RH Crane (41-T-001) per WP 05-WH1741
- 2.5-Ton Jib Crane (41-T-201) per WP 05-WH1746
- 15-Ton Hot Cell Crane (41-T-104) per WP 05-WH1742
- Bridge Mounted Power Manipulator (41-T-101) per WP 05-WH1743
- Hot Cell Transfer Drawer (41-H-106) per WP 05-WH1749
- 25-Ton CUR per WP 05-WH1719, if needed
- Master-Slave Manipulator (41-T-103A, B, C, and D) per WP 05-WH1750, as applicable

6.0 Verify Door 109 in RH Bay is closed.

7.0 WH, verify adequate Waste Handling Operations (WHO) staff is available to support RH WH.

**SIGN-OFF WH**

- 8.0 WH, verify WHB is configured for RH WH by contacting Central Monitoring Room Operator (CMRO). Inform CMRO that a CNS 10-160B Cask will be processed.

**SIGN-OFF WH**

- 9.0 WH, sign off Attachment 1 when CMRO announces RH WH Mode. N/A this step on Attachment 1 if WHB is already in RH WH Mode.

**SIGN-OFF WH or N/A**

- 10.0 Prior to closing the CUR shield door (41-N-001), Door 149, perform the following:
- 10.1 Notify CMRO that the alarm test for Door 149 is being conducted.
  - 10.2 Place the OFF/AUTO switch in **AUTO** position on control panel 411-CP-112-01.
  - 10.3 Press the RESET push button.
  - 10.4 Open Door 149 and verify horn and red alarm light comes **ON**.
  - 10.5 Close Door 149.
  - 10.6 Press the RESET push button.
  - 10.7 Verify Central Monitoring Room (CMR) receives alarm.
  - 10.8 Verify Crane Maintenance Room Shield Door, Door 404, is **CLOSED**.
  - 10.9 Verify Hot Cell shield valve is **CLOSED**.
- 11.0 Log results in the narrative logbook.
- 12.0 Verify there are enough facility canisters available to complete canisterization process.
- 13.0 Obtain key to Hot Cell Camera TV Main Controller Rack from RH key box.

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**NOTE**

Hot Cell camera recording is motion activated. Recording is set up to begin automatically after power up and system log on.

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- 14.0 If necessary, using WP 05-WH1757, ensure Hot Cell cameras are recording.

## PERFORMANCE

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### 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. 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. This includes, but is not limited to:

- Moving/repositioning the Canister Shuttle Car
- Raising/lowering a grapple
- Opening and closing a grapple not under a load
- Resetting a robot and repeating robot sequence, as necessary

Any step or steps performed at the discretion of the WHE will be documented in the RH Waste Handling narrative log.

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### 1.0 CNS 10-160B CASK PREPARATION

1.1 Perform a visual inspection of the CNS 10-160B Cask.

#### **SIGN-OFF WH**

1.2 Place the CTC with CNS 10-160B cask in the prep stand.

1.3 Verify the anti-tamper seals on primary and secondary lid are in place.  
**IF** tamper indicating device is broken or missing,  
**THEN** contact WHE and record findings in the remark section of Attachment 1.

#### **SIGN-OFF WH**

1.4 Remove the anti-tamper seal from the primary lid.

1.5 Vent the CNS 10-160B Cask Cavity as follows:

1.5.1 Install CNS 10-160B step plates on Cask Prep Station.

1.5.2 Radiological Control Technician (RCT), record survey number on Attachment 1.

#### **SIGN-OFF RCT**

1.5.3 RCT, position Continuous Air Monitor (CAM) for venting CNS 10-160B Cask.

- 1.5.4 Wipe down top of cask around vent port prior to vent tool installation.
- 1.5.5 WH, remove vent port cap.
- 1.5.6 Install vent tool and Radiological Assessment Filter (RAF) assembly on the vent port.
- 1.5.7 Ensure ball valve is closed.
- 1.5.8 Plug control box into applicable power supply.
- 1.5.9 Ensure CNS 10-160B vent tool has the vacuum line connected to control box.
- 1.5.10 Install vacuum line into RAF.
- 1.5.11 Ensure the magnet is plugged into the control box.
- 1.5.12 Place control switch on PUMP and MAGNET.
- 1.5.13 WH, remove vent port plug.
- 1.5.14 Evacuate for approximately five minutes to make TRU activity determination on a multichannel analyzer.
- 1.5.15 Turn switch to MAGNETS **ON**.
- 1.5.16 Disconnect vacuum line from RAF assembly.
- 1.5.17 Remove RAF assembly from vent tool.
- 1.5.18 RCT, perform smear of RAF assembly quick connect.
- 1.5.19 Remove filter from RAF.
- 1.5.20 RCT, monitor smear and RAF for gross levels of activity.
- 1.5.21 RCT, place filter in Alpha-6 monitor with no flow, or into an equivalent multichannel analyzer (MCA) instrument.
- 1.5.22 RCT, let filter count at least five minutes on Alpha-6 monitor or the determined amount of time for an equivalent MCA instrument.
- 1.5.23 RCT, examine spectrum for TRU activity.
- 1.5.24 RCT, if there is observable TRU activity, **STOP** waste processing, notify WHM, CMRO, Radiological Control Manager (RCM).

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**NOTE**

Additional RAF samples may be taken as directed by WHM or RCM to determine TRU activity.

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- 1.5.25 RCT, record the following on Attachment 2, Radiological Survey Report, Section B, of WP 12-HP1100:
- Time
  - Pu239 cpm (count per minute) or dpm (disintegrations per minute)
  - Peak Channel or peak energy as applicable
- 1.5.26 RCT, verify activity on smear of RAF assembly and RAF is below acceptable limits.

**SIGN-OFF RCT**

- 1.5.27 WH, turn control switch to **OFF** on vent tool controls and unplug control box.
- 1.5.28 Open ball valve on vent tool and allow pressure to equalize.
- 1.5.29 Install vent port plug hand tight.
- 1.5.30 Remove vent tool from CNS 10-160B Cask.
- 1.5.31 Install vent port cap hand-tight.
- 1.6 Preparing Primary Lid for Removal
- 1.6.1 Loosen and remove 24 primary lid bolts (24, 1-3/4 in. - 8 UN).
- 1.6.2 Install primary lid lift fixture to lifting lugs located on secondary lid.
- 1.6.3 Remove rigging from lid lift fixture.
- 1.6.4 Install lid alignment pins.
- 1.6.5 RCT, secure CAM for Cask Prep Stand PASS THRU.
- 1.6.6 Remove CNS 10-160B step plates from Cask Prep Station.

## 1.7 Staging CNS 10-160B Cask into CUR

### 1.7.1 Verify the following:

- CUR crane is centered under the Hot Cell shield plugs.
- CUR shield door (41-N-001) is in **OPEN** position.
- Rail sections are installed over CUR shield door sill.

### 1.7.2 Raise the cask Prep Stand to PASS THRU.

### 1.7.3 Stage CNS 10-160B Cask in CUR.

### 1.7.4 Prepare CUR for closure.

[ A ] Perform walk-through of CUR and verify all personnel are clear of the room.

[ B ] Ensure nobody enters the CUR while the door is closing.

### 1.7.5 **GO TO** WP 05-WH1717 to close CUR shield door (41-N-001), **THEN RETURN TO** Step 1.7.6.

### 1.7.6 Perform visual sweep of CUR using closed-circuit TV (CCTV) cameras to ensure personnel are not in the CUR.

### 1.7.7 Log CUR closure and results in narrative logbook.

## 2.0 HOT CELL OPERATIONS

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### **NOTE**

Subsections in Section 2.0 may be performed in any order, or repeated, as specified by the WHE, as long as no radiological control steps are bypassed.

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### 2.1 Hot Cell Shield Plug Removal

### **WARNING**

Removing Hot Cell Shield Plugs with the CUR shield door in the OPEN position could allow a possible streaming of radiation.

### 2.1.1 Verify bridge and trolley position indications are correct for the position above the shield plug lift fixture.

### 2.1.2 Verify GRAPPLE is FULLY **OPEN**.

- 2.1.3 Lower grapple onto large shield plug lift fixture pintle until GRAPPLE CONTACT light comes **ON**.
- 2.1.4 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **CLOSE** position.
- 2.1.5 Verify GRAPPLE is FULLY **CLOSED**.
- 2.1.6 Remove shield plugs using large shield plug lift fixture and stage in shield plug lay-down area.

**CAUTION**

Prior to attempting to open Grapple, pintle contact must be obtained to ensure load is properly seated and will **NOT** be dropped.

- 2.1.7 Lower grapple onto large plug lift fixture pintle until GRAPPLE CONTACT light comes **ON**.
  - 2.1.8 Place GRAPPLE **OPEN-CLOSE** switch in **OPEN** position.
  - 2.1.9 Verify GRAPPLE is FULLY **OPEN**.
  - 2.1.10 Verify load is actually released by observing the following:
    - HOIST LOAD indication remains at approximately 350 lb.
    - Load is free from grapple upon visual inspection.
- 2.2 Primary Lid Removal
- 2.2.1 Verify GRAPPLE FULLY **OPEN** light is **ON**.

**NOTE**

Approximate weight of the grapple is 350 lb.

- 2.2.2 Lower grapple onto primary lid lift fixture pintle until GRAPPLE CONTACT light comes **ON**.
- 2.2.3 Place GRAPPLE **OPEN-CLOSE** switch in **CLOSE** position.
- 2.2.4 Verify GRAPPLE is FULLY **CLOSED**.

**CAUTION**

A load cell indication of 10,000 lb indicates that the primary lid is binding, and may cause damage to the lid or lift clips.

2.2.5 Slowly lift primary lid until it is clear of Hot Cell floor.

**CAUTION**

The Hot Cell grating is a "No Load Area." The following step shall be performed over the concrete floor or over the canister wells to avoid damage to the grating.

2.2.6 Move primary lid to inspection station area.

**NOTE**

Substeps 2.2.7[ A ] through 2.2.7[ E ] may be performed concurrently with Steps 2.2.8 through 2.2.12.

2.2.7 RCT, perform smears using master-slave manipulator on bottom side of lid.

**WARNING**

Only one transfer drawer shield plug can be opened at a time to prevent a possible streaming of radiation.

- [ A ] Transfer smears to Hot Cell transfer drawer.
- [ B ] Transfer smears from Hot Cell to operator's gallery per WP 05-WH1749.
- [ C ] RCT, monitor smears for gross levels of activity.
- [ D ] Remove smears from Hot Cell transfer drawer rolling tray.
- [ E ] RCT, verify activity on smears is below acceptable limits and initial on Attachment 1.

**SIGN-OFF RCT**

2.2.8 Stage primary lid in designated lay-down area.

**CAUTION**

Prior to attempting to open Grapple, pintle contact must be obtained to ensure load is properly seated and will **NOT** be dropped.

**NOTE**

Approximate weight of the grapple is 350 lb.

- 2.2.9 Lower grapple onto primary lid lift fixture pintle until GRAPPLE CONTACT light comes **ON**.
- 2.2.10 Place GRAPPLE **OPEN-CLOSE** switch to **OPEN** position.
- 2.2.11 Verify GRAPPLE is **FULLY OPEN**.
- 2.2.12 Verify load is actually released by observing the following:
  - HOIST LOAD indication remains at approximately 350 lb.
  - Load is free from grapple upon visual inspection.
- 2.3 Drum Assembly Removal
  - 2.3.1 Verify GRAPPLE is **FULLY OPEN**.
  - 2.3.2 Lower grapple onto pentapod pintle until GRAPPLE CONTACT light comes **ON**.
  - 2.3.3 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **CLOSE** position.
  - 2.3.4 Verify GRAPPLE is **FULLY CLOSED**.
  - 2.3.5 Position pentapod over CNS 10-160B Cask.
  - 2.3.6 Fully lower pentapod aligning guide shaft with 5-pack carriage receiver and each pentapod leg with its respective receiver.
  - 2.3.7 Rotate grapple rotating block to attach pentapod to 5-pack carriage.
  - 2.3.8 Slowly raise 5-pack carriage until it is clear of Hot Cell floor.

**CAUTION**

The Hot Cell grating is a "No Load Area." The following step shall be performed over the concrete floor or over the canister wells to avoid damage to the grating.

- 2.3.9 Move 5-pack carriage until it is suspended over canister inspection station.
- 2.3.10 RCT, perform dose rates in occupied areas of Hot Cell operating gallery.

**NOTE**

If a manifest discrepancy is discovered during the processing of RH waste that contains PCBs, the discrepancy must be resolved or waste placed back into the CNS 10-160B Cask prior to the end-of-shift.

- 2.3.11 WH, verify all five drum identification numbers match WWIS/WDS Shipment Summary Report.  
**IF** drum identification does not match WWIS/WDS,  
**THEN** WHE, notify CMRO, TE, and RH WHM of discrepant load.
- 2.3.12 Using CCTV system, inspect drums for obvious deformation, excessive rust, holes, and leaks.
- 2.3.13 WH, if there is a discrepancy for drum identification numbers, record findings in the "Remarks" section of Attachment 1.
- 2.3.14 RCT, perform smears on bottom of drum carriage.
- 2.3.15 Stage 5-pack carriage in designated lay-down area.
- 2.3.16 Transfer smears to Hot Cell transfer drawer.

**WARNING**

Only one transfer drawer shield plug can be opened at a time to prevent a possible streaming of radiation.

- 2.3.17 RCT, transfer smears from Hot Cell to operator's gallery per WP 05-WH1749.
- 2.3.18 RCT, monitor smears for gross levels of activity.
- 2.3.19 RCT, remove smears from Hot Cell transfer drawer.

2.3.20 RCT, verify activity on smears is below acceptable limits.

### **SIGN-OFF RCT**

2.3.21 Position pentapod over CNS 10-160B Cask.

2.3.22 Fully lower pentapod aligning guide shaft with 5-pack carriage receiver and each pentapod leg with its respective receiver.

2.3.23 Rotate grapple rotating block to attach pentapod to 5-pack carriage.

2.3.24 Slowly raise 5-pack carriage until it is clear of Hot Cell floor.

### **CAUTION**

The Hot Cell grating is a "No Load Area." The following step shall be performed over the concrete floor or over the canister wells to avoid damage to the grating.

2.3.25 Move 5-pack carriage until it is suspended over canister inspection station.

2.3.26 RCT, perform dose rates in occupied areas of Hot Cell operating gallery.

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### **NOTE**

If a manifest discrepancy is discovered during the processing of RH waste that contains PCBs, the discrepancy must be resolved or waste placed back into the CNS 10-160B Cask prior to the end-of-shift.

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2.3.27 WH, verify all five drum identification numbers match WWIS/WDS Shipment Summary Report.

**IF** drum identification does not match WWIS/WDS,  
**THEN** WHE, notify CMRO, TE, and RH WHM of discrepant load.

2.3.28 Using CCTV system, inspect drums for obvious deformation, excessive rust, holes and leaks.

2.3.29 WH, if there is a discrepancy for drum identification numbers, record findings in the "Remarks" section of Attachment 1.

2.3.30 Perform one of the following:

- [ A ] If RH waste shipment contains PCBs, verify waste containers are labeled with a PCB warning label and initial Attachment 1.
- [ B ] If RH waste shipment does **NOT** contain PCBs, on Attachment 1 circle N/A and initial.

**SIGN-OFF or N/A**

2.3.31 RCT, perform smears on bottom of drum carriage.

2.3.32 Stage 5-pack carriage in designated lay-down area.

2.3.33 RCT, transfer smears to Hot Cell transfer drawer.

**WARNING**

Only one transfer drawer shield plug can be opened at a time to prevent a possible streaming of radiation.

2.3.34 RCT, transfer smears from Hot Cell to operator's gallery per WP 05-WH1749.

2.3.35 RCT, monitor smears for gross levels of activity.

2.3.36 RCT, remove smears from Hot Cell transfer drawer.

2.3.37 RCT, verify activity on smears is below acceptable limits.

**SIGN-OFF RCT**

2.3.38 WHE notify TE that ID numbers match WWIS/WDS Shipment Summary Report.

**SIGN-OFF WH**

2.3.39 WH using CCTV, perform visual inspection of cask interior, inspecting for water and/or debris.

2.4 Loading Empty Drum Carriages

2.4.1 **IF** dunnage and/or empty drums are to be returned, **THEN** ensure they are on a drum carriage.

- 2.4.2 **IF** no drum carriages are available to be loaded.  
**THEN GO TO** Step 2.4.11.
- 2.4.3 RCT, verify survey results are below acceptable limits on empty drum carriages, if available.

**SIGN-OFF RCT or N/A**

- 2.4.4 Lower pentapod onto empty drum carriage.
- 2.4.5 Attach pentapod to empty drum carriage.
- 2.4.6 Place empty drum carriage into CNS 10-160B Cask until weight of empty drum carriage is resting on bottom of CNS 10-160B Cask.
- 2.4.7 Release pentapod from empty drum carriage.
- 2.4.8 Verify the pentapod has released from the empty drum carriage by observing the following:
- Load cell indication of approximately 1,100 lb.
  - CCTV system
- 2.4.9 If necessary, slowly raise pentapod until it is clear of CNS 10-160B Cask and Hot Cell floor.
- 2.4.10 Repeat Steps 2.4.4 through 2.4.9 to load an additional empty drum carriage into CNS 10-160B Cask on top of the bottom carriage,  
**THEN GO TO** Step 2.4.11.
- 2.4.11 Stage pentapod in designated lay-down area.

**CAUTION**

Prior to attempting to open grapple, pintle contact must be obtained to ensure load is properly seated and will **NOT** be dropped.

- 2.4.12 Lower grapple onto pentapod pintle until GRAPPLE CONTACT light comes **ON**.
- 2.4.13 Place GRAPPLE MOTOR **OPEN-CLOSE** switch to **OPEN** position.
- 2.4.14 Verify GRAPPLE is **FULLY OPEN**.

2.4.15 Verify load is actually released by observing the following:

- HOIST LOAD indication remains at approximately 350 lb.
- Load is free from grapple upon visual inspection.

## 2.5 Reinstall Primary Lid

2.5.1 Verify GRAPPLE is FULLY **OPEN**.

2.5.2 Lower grapple onto primary lid lift fixture pintle until GRAPPLE CONTACT light comes **ON**.

2.5.3 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **CLOSE** position.

2.5.4 Verify GRAPPLE is FULLY **CLOSED**.

2.5.5 Place primary lid on the cask body.

### **CAUTION**

Prior to attempting to open Grapple, pintle contact must be obtained to ensure load is properly seated and will **NOT** be dropped.

2.5.6 Lower grapple onto primary lid lift fixture pintle until GRAPPLE CONTACT light comes **ON**.

2.5.7 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **OPEN** position.

2.5.8 Verify GRAPPLE is FULLY **OPEN**.

2.5.9 Verify load is actually released by observing the following:

- HOIST LOAD indication remains at approximately 350 lb.
- Load is free from grapple upon visual inspection.

2.5.10 Raise Hot Cell Crane grapple until it is clear of Hot Cell floor.

## 2.6 Installation of Hot Cell Shield Plugs

2.6.1 Verify GRAPPLE is FULLY **OPEN**.

2.6.2 Lower grapple onto large shield plug lift fixture pintle until GRAPPLE CONTACT light comes **ON**.

- 2.6.3 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **CLOSE** position.
- 2.6.4 Verify GRAPPLE is **FULLY CLOSED**.
- 2.6.5 Stage shield plugs over center of shield plug port.
- 2.6.6 Slowly lower shield plugs into shield plug port until shield plug is flush with Hot Cell floor.

**CAUTION**

Prior to attempting to open grapple, pintle contact must be obtained to ensure load is properly seated and will **NOT** be dropped.

- 2.6.7 Lower grapple onto large plug lift fixture pintle until GRAPPLE CONTACT light comes **ON**.
- 2.6.8 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **OPEN** position.
- 2.6.9 Verify GRAPPLE is **FULLY OPEN**.
- 2.6.10 Verify load is actually released by observing the following:
- HOIST LOAD indication remains at approximately 350 lb.
  - Load is free from grapple upon visual inspection.

**NOTE**

Steps 2.6.11[ A ] through 2.6.11[ C ] may be performed simultaneously with the remaining steps of this procedure.

- 2.6.11 **IF** CNS 10-160B in CUR is empty,  
**THEN** perform the following as determined by the WHE:
- [ A ] Place Door 149 control panel 411-PC-112-01 in the **OFF** position.
- [ B ] **OPEN** CUR shield door (41-N-001) per WP 05-WH1717.
- [ C ] Stage the CNS 10-160B Cask at the Prep Stand.

## 2.7 Canisterizing Drums

- 2.7.1 Verify the canisterization tool is attached to Hot Cell Crane grapple, or the hook hand is attached to the power manipulator.
- 2.7.2 Verify the lid is removed from the facility canister to be used for canisterization at the inspection station.

### **CAUTION**

CCTV system and/or Hot Cell windows shall be used while maneuvering Hot Cell Crane or power manipulator to ensure there is adequate clearance between canisterization tool or hook hand and top of drum to avoid damage to the drum.

### **NOTE**

Canisterization may be performed using either the Hot Cell Crane with canisterization tool attached, or the power manipulator with the hook hand attached.

- 2.7.3 Stage canisterization tool or hook hand over one of the drums in CNS 10-160B carriage.
- 2.7.4 Grasp drum rigging with canisterization tool or hook hand.

### **CAUTION**

CCTV system or Hot Cell windows shall be used to ensure rigging is secure in canisterization tool or hook hand to avoid damage to the drum.

- 2.7.5 Using appropriate controls, raise canisterization tool or hook hand lifting drum out of carriage.
- 2.7.6 Stage drum so smears can be performed.

**NOTE**

Each facility canister will require a separate Attachment 2.

- 2.7.7 WH, record drum identification number to be canisterized on Attachment 2.
- If drums are empty or dunnage, document the number of empty or dunnage drums and the survey number in "Remarks" section on Attachment 2.

**SIGN-OFF WH**

- 2.7.8 RCT, perform smears on drum using master-slave manipulator.
- 2.7.9 Transfer smears to Hot Cell transfer drawer.
- 2.7.10 Transfer smears from Hot Cell to operator's gallery per WP 05-WH1749.
- 2.7.11 RCT, monitor smears for gross levels of activity.
- 2.7.12 Remove smears from Hot Cell transfer.
- 2.7.13 RCT, verify activity on smears is below acceptable limits and initial on Attachment 2.

**SIGN-OFF RCT****CAUTION**

CCTV system and/or Hot Cell windows shall be used while maneuvering canisterization tool or hook hand in and out of canister to prevent damage to canister.

- 2.7.14 **IF** drum is a dunnage drum,  
**THEN** set on Hot Cell floor for later return shipment **AND** return to Step 2.7.3.
- 2.7.15 Using appropriate controls, lower drum into canister until it comes to rest.
- 2.7.16 Using appropriate controls, release canisterization tool or hook hand from drum rigging.

**CAUTION**

CCTV system and/or Hot Cell windows shall be used while maneuvering Hot Cell Crane or power manipulator to ensure there is adequate clearance between canisterization tool or hook hand and top of drum, or drum could be damaged.

- 2.7.17 Slowly raise canisterization tool or hook hand until it is clear of canister.
- 2.7.18 Repeat Steps 2.7.3 through 2.7.17 until canister is full, **THEN** return to Section 2.8.
- 2.8 Installing Canister Lid
  - 2.8.1 Verify grapple is **OPEN**.
  - 2.8.2 Using the Hot Cell Crane, lower grapple onto lid until GRAPPLE CONTACT light comes **ON**.
  - 2.8.3 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **CLOSE** position.
  - 2.8.4 Verify GRAPPLE is **FULLY CLOSED**.
  - 2.8.5 Position lid above facility canister.
  - 2.8.6 Rotate grapple as necessary to align the tab on the lid with alignment slot.
  - 2.8.7 Place lid on the facility canister.
  - 2.8.8 Lower lid until GRAPPLE CONTACT light comes **ON**.
  - 2.8.9 Place GRAPPLE MOTOR **OPEN-CLOSE** switch in **OPEN** position.
  - 2.8.10 Verify GRAPPLE is **FULLY OPEN**.
  - 2.8.11 Raise grapple and position crane out of the way of the Inspection Station.
  - 2.8.12 Using Master/Slave Manipulator, rotate lock tab stops and push tabs in until all four are engaged.

**CAUTION**

The Hot Cell grating is a "No Load Area." The following step shall be performed over the concrete floor or over the canister wells to avoid damage to the grating.

- 2.8.13 **IF** canister is to be downloaded,  
**THEN GO TO** Section 2.9.
- 2.8.14 Move loaded facility canister to approved storage location (canister well).
- 2.8.15 Remove empty canister from canister storage area and stage at inspection station, if needed.
- 2.8.16 Remove the lid from the facility canister to be used for canisterization at the Inspection Station.
- 2.8.17 **IF** drums are still available for canisterization,  
**THEN** generate a new Attachment 2 data sheet **AND** repeat Steps 2.7.3 through 2.7.17; **AND** return to Section 2.8.
- 2.8.18 Enter canister and drum identification data into the WWIS/WDS before the end-of-shift.

**SIGN-OFF WHE**

- 2.9 Placing Canister in Transfer Cell Shuttle Car
- 2.9.1 Verify the following preoperational checks are complete:
- RH Canister Transfer System per WP 05-WH1705
  - FCTC (41-H-003) per WP 05-WH1704
  - FC and FCRD (41-H-114) per WP 05-WH1713
  - 6.25-ton fixed hoist and facility grapple (41-H-022) per WP 05-WH1721
- 2.9.2 If required, using procedure WP 05-WH1752, place the shielded insert in the Canister Shuttle Car and return to Step 2.9.3.
- 2.9.3 Verify Canister Shuttle Car is in position X.
- 2.9.4 Ensure transfer carriage (TC) recording system is operating.

**CAUTION**

The Hot Cell grating is a "No Load Area." The following step shall be performed over the concrete floor.

2.9.5 Stage canister over Hot Cell shield valve (41-N-101).

[ A ] WH, record canister identification number on Attachment 2.

**SIGN-OFF WH**

2.9.6 Verify PERMISSIVE TO OPEN SHIELD VALVE light is **ON**.

2.9.7 OPEN shield valve (41-N-101).

2.9.8 Verify shield valve is FULLY **OPEN** on 411-CP-236-09.

2.9.9 Lower canister into shielded insert.

2.9.10 Lower grapple onto facility canister lid pintle until GRAPPLE CONTACT light comes **ON**.

2.9.11 Place GRAPPLE **OPEN-CLOSE** switch to **OPEN** position.

2.9.12 Verify GRAPPLE is FULLY **OPEN**.

2.9.13 Verify load is actually released by observing that the HOIST LOAD indication remains at approximately 350 lb.

2.9.14 Raise Hot Cell Crane until PERMISSIVE TO CLOSE SHIELD VALVE light is **ON**.

2.9.15 Close shield valve (41-N-101).

2.9.16 Verify shield valve is FULLY **CLOSED** on 411-CP-236-09.

2.9.17 **IF** additional drums need to be canisterized, **THEN** return to Step 2.8.15.

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**NOTE**

Operations can continue with Section 3.0 while additional drums are being canisterized.

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**3.0 CANISTER TRANSFER TO FACILITY CASK**

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**NOTE**

Throughout Section 3.0, the interlock key may be switched from normal to override and back as required.

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- 3.1 At control panel 411-CP-264-04, place CANISTER TRANSFER SYSTEM MODE SWITCH in **XFER** position.
- 3.2 Verify CANISTER SHUTTLE CAR AUTO - MANUAL switch is in **AUTO**.
- 3.3 Push CLR PORT ROAD CASK POS Y1 button.
- 3.4 Verify CLR PORT ROAD CASK POS Y1 lamp is **ON**.
- 3.5 Verify position Y camera shows alignment with the cask basket using laser indication (Camera #5 with Diamond Marker #1).
- 3.6 **IF** laser indication is not in alignment,  
**THEN** perform the following:
  - 3.6.1 Verify CANISTER TRANSFER SYSTEM MODE SWITCH is in **XFER**.
  - 3.6.2 Place CANISTER SHUTTLE CAR switch in **MAN**.
  - 3.6.3 Press FORWARD or REVERSE button until laser indication is aligned properly.
  - 3.6.4 Place CANISTER SHUTTLE CAR switch in **AUTO**.
- 3.7 Turn FC CLOSURE VALVE TOP switch to **OPEN**.
- 3.8 Release switch when shield valve starts moving.
- 3.9 Verify the FC CLOSURE VALVE TOP is **OPEN**.
- 3.10 Push HOIST POS D button to lower grapple hoist to position D.
- 3.11 When hoist reaches position D, verify HOIST POS D indicating lamp is **ON**.
- 3.12 Verify PINTLE GRAPPLE CONTACT indicating lamp is **NOT ON**.

- 3.13 Place CANISTER TRANSFER SYSTEM MODE SWITCH in **ASSY**.
- 3.14 Press SHIELD VALVE (41-N-003) **OPEN** button to initiate opening of transfer cell shield valve.
- 3.15 Verify SHIELD VALVE (41-N-003) is **OPEN**.
- 3.16 Place CANISTER TRANSFER SYSTEM MODE SWITCH in **XFER**.
- 3.17 Turn FC CLOSURE VALVE BOTTOM switch to **OPEN**.
- 3.18 Release switch when shield valve starts moving.
- 3.19 Verify FC CLOSURE VALVE BOTTOM is **OPEN**.
- 3.20 Push HOIST POS H button to lower grapple hoist to position H.
- 3.21 When hoist reaches position H, verify HOIST POS H indicating lamp is **ON**.
- 3.22 Place GRAPPLE HOIST (41-H-022) MAN-OFF-AUTO switch from **AUTO** to **MAN**.
- 3.23 Press JOG LOWER button, lowering the grapple until a pintle contact indication is received.
- 3.24 **IF** pintle contact indication is not received,  
**THEN** press JOG LIFT and/or JOG LOWER button to properly set grapple on pintle until pintle contact indication is received.
- 3.25 Place FACILITY GRAPPLE (41-T-022) **OPEN-CLOSE** switch to **CLOSE** position.
- 3.26 Verify FACILITY GRAPPLE (41-T-022) is **CLOSED**.
- 3.27 Place GRAPPLE HOIST (41-H-022) MAN-OFF-AUTO switch from **MAN** to **AUTO**.
- 3.28 At control panel 411-CP-264-04, verify the following:
  - ROBOTS HOME light is **ON**.
  - GRAPPLE HOIST (41-H-022) MAN-OFF-AUTO switch is in **AUTO**.
  - CANISTER TRANSFER SYSTEM MODE SWITCH is in **XFER**.
  - CANISTER SHUTTLE CAR AUTO-MAN switch is in **AUTO**.

- 3.29 Push HOIST POS C button to raise grapple hoist and canister to position C.
- 3.30 When hoist reaches position C, verify HOIST POS C indicating lamp is **ON**.
- 3.31 Turn FC CLOSURE VALVE BOTTOM switch to **CLOSE**.
- 3.32 Release switch after shield valve starts to move.

**WARNING**

Failure to verify FC bottom valve and lock pins are closed may result in damage to canister and a possible release of radioactive contamination.

- 3.33 Verify FC CLOSURE VALVE BOTTOM is **CLOSED**.

**NOTE**

If necessary, mechanical means may be used to assist the FC Shield Valve Lock Pins to the closed position.

- 3.34 Verify BOTTOM VALVE LOCKPINS STATUS is **CLOSED**.
- 3.35 Place CANISTER TRANSFER SYSTEM MODE SWITCH in **ASSY**.
- 3.36 Press SHIELD VALVE (41-N-003) CLOSE button to initiate closing of transfer cell shield valve.
- 3.37 Verify SHIELD VALVE (41-N-003) CLOSE lamp is **ON**.
- 3.38 Place GRAPPLE HOIST (41-H-022) MAN-OFF-AUTO switch to **MAN**.
- 3.39 Press JOG LOWER button until PINTLE GRAPPLE CONTACT indicating lamp is **ON**.
- 3.40 **IF** pintle contact indication is not received,  
**THEN** press JOG LIFT and/or JOG LOWER button to properly set grapple on pintle until pintle contact indication is received.
- 3.41 Place FACILITY GRAPPLE (41-T-022) switch to **OPEN** position.
- 3.42 Verify FACILITY GRAPPLE (41-T-022) is **OPEN**.
- 3.43 **IF** interlock key is in override,  
**THEN** place in normal.

- 3.44 Push HOIST POS B button to raise grapple hoist to position B.
- 3.45 Place GRAPPLE HOIST (41-H-022) MAN-OFF-AUTO switch to **AUTO**.
- 3.46 When hoist reaches position B, verify HOIST POS B indicating lamp is **ON**.
- 3.47 Turn FC CLOSURE VALVE TOP switch to **CLOSE**.
- 3.48 Release switch when shield valve starts moving.
- 3.49 Verify FC CLOSURE VALVE TOP is **CLOSED**.

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**NOTE**

If necessary, mechanical means may be used to assist the FC Shield Valve Lock Pins to the closed position.

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- 3.50 Verify TOP VALVE LOCKPINS STATUS are **CLOSED**.
- 3.51 Push HOIST POS A button to raise grapple hoist to position A.
- 3.52 Push TEL PORT SHIELD (41-N-013) DOWN button.
- 3.53 When hoist reaches position A, verify HOIST POS A indicating lamp is **ON**.
- 3.54 Verify TEL PORT SHIELD (41-N-013) is **DOWN**.

**WARNING**

PPE, including a long-sleeve 100% cotton shirt and safety glasses, must be worn when operating power supply breaker or disconnect to avoid electric shock.

- 3.55 Place breakers CB-8 and CB-13 on 41P-MCC04/1 in the **OFF** position.
- 3.56 Disconnect electrical and air lines from FC.

#### 4.0 FC ROTATION TO HORIZONTAL POSITION

4.1 WH, at control panel 411-CP-264-04, verify the following:

- Grapple hoist is at upper limit (position A).
- TEL SHIELD (41-N-013) **DOWN** lamp is **ON**.
- Interlock switch is in **NORMAL**.

4.2 Verify the CAR PRESENT indicating lamp is **ON**.

4.3 Pull down FCRD RAISE/LOWER joystick to initiate lowering of FC.

4.4 Verify the following:

- CAR UNLOCKED indicating lamp is **ON**.
- CASK UNLATCHED indicating lamp is **ON**.
- CASK HORIZONTAL indicating lamp is **ON**.

4.5 **WHEN** FC rotation is complete,  
**THEN** release FCRD RAISE/LOWER joystick.

4.6 RCT, perform dose rate survey of FC.

4.7 WH, position FCTC and FC on the turntable, if necessary.

4.8 **IF** FC needs to be rotated for proper configuration in the U/G,  
**THEN** use turntable to rotate.

Attachment 1 - CNS 10-160B RH Waste Processing Data Sheet

STEP	DESCRIPTION	INITIAL
PREREQUISITE ACTIONS		
2.0	CNS 10-160B Cask Number _____	WH _____
3.0	Shipment Number _____	WH _____
7.0	Adequate WHO staff available	WH _____
8.0	WHB is configured for WH mode	WH _____
9.0	CMRO announces RH WH Mode	WH or N/A _____
PERFORMANCE		
1.1	Cask Visual Inspection Satisfactory	WH _____
1.3	Anti-tamper seals on primary and secondary lid are in place	WH _____
1.5.2	Survey Number _____	RCT _____
1.5.26	Activity on Smears and RAF is Below Acceptable Limits.	RCT _____
2.2.7[ E ]	Activity on Smears is Below Acceptable Limits.	RCT _____
2.3.20	Activity on Smears is Below Acceptable Limits.	RCT _____
2.3.30	Verified waste container <b>DOES</b> contain PCBs (warning label applied), <b>OR container DOES NOT</b> contain PCBs (N/A).	WH or N/A _____
2.3.37	Activity on Smears is Below Acceptable Limits.	RCT _____
2.3.38	Drum Identification Number(s) match the WWIS/WDS Shipment Summary Report.	WH _____
2.4.3	Verify Drum Carriage Survey Results Are Satisfactory	RCT or N/A _____

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

Remarks: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Review/Validation: \_\_\_\_\_

WHE (Print Name)                      Signature                      Date

Attachment 2 - CNS 10-160B RH Canisterization Data Sheet

STEP	DESCRIPTION	INITIAL
2.7.7	Drum Identification Numbers	
	DRUM # 1 _____	WH _____
	DRUM # 2 _____	WH _____
	DRUM # 3 _____	WH _____
2.7.13	Activity on smears is below acceptable limits	
	DRUM # 1 _____	RCT _____
	DRUM # 2 _____	RCT _____
	DRUM # 3 _____	RCT _____
2.8.18	Canister and drum data entered into WWIS/WDS	WHE _____
2.9.5[ A ]	Canister Identification Number	WH _____

Print Name	Signature	Date	Initials
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Print Name	Signature	Date	Initials
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Print Name	Signature	Date	Initials
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Remarks: \_\_\_\_\_

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Review/Validation: \_\_\_\_\_

WHE (Print Name)	Signature	Date	
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