

# WP 05-WH1749

Revision 6

## Hot Cell Transfer Drawer Operation 41-H-106

Technical Procedure

EFFECTIVE DATE: 06/24/09

Randy Britain  
APPROVED FOR USE

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## INTRODUCTION

This procedure provides instructions for operating the Hot Cell Transfer Drawer, 41-H-106, at the Waste Isolation Pilot Plant (WIPP).

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

- Equipment Logbook

## REFERENCES

### BASELINE DOCUMENTS

- 40 CFR §264.15, "General Inspection Requirements"
- DOE/WIPP-07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*
- DOE/WIPP-07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*
- 41-H-106, *Maintenance Manual for Hot Cell Transfer Drawer Assembly - Westmont Industries, Model Number 8950-47*
- *Banner Micro-Screen™ Instruction Manual*

### REFERENCED DOCUMENT

- WP 05-WH1750, Master-Slave Manipulator (41-T-103 A, B, C, & D)

## PRECAUTIONS AND LIMITATIONS

- A radiation streaming path exists if both Transfer Drawer shield plugs are open at the same time. Prior to opening either shield plug, the opposite shield plug must be fully closed.
- Preoperational checks are to be completed prior to first Transfer Drawer operation each shift.
- To prevent damage to the Transfer Drawer and materials in the drawer, no part of material being transferred on the rolling tray should extend beyond the sides of the tray, or be higher than the bottom of the shield plug seal.
- The operator's hands could be injured if caught in the Transfer Drawer during opening or closing of the shield plug. Hands must be kept clear of the Transfer Drawer during operation of the shield plug.
- Materials transferred out of the Hot Cell through the Transfer Drawer, while in waste handling mode, must be treated as contaminated until proven otherwise.

- Safety glasses and a long-sleeve 100% cotton shirt must be worn when opening and closing breakers.
- Lab coat and gloves are required when using the Hot Cell Transfer Drawer to remove any material while in waste handling mode.
- If procedure cannot be performed as written, Waste Handling Engineer (WHE) must be notified.
- Hot Cell ventilation must be operating when transferring material into and out of the Hot Cell.

### PREREQUISITE ACTIONS

- 1.0 Review Equipment Logbook for outstanding deficiencies and Action Requests (ARs).
- 2.0 **IF** any concerns of the safe condition of the Hot Cell Transfer Drawer exist, **THEN** notify the WHE immediately.
- 3.0 Record Equipment Number, and N/A run hours, in the Equipment Logbook.

### PERFORMANCE <sup>1, 2, 3</sup>

#### 1.0 PREOPERATIONAL CHECKS

- 1.1 Contact Central Monitoring Room (CMR) to ensure that Hot Cell ventilation is **ON**.
- 1.2 Verify all preoperational checks have been completed on the Master-Slave Manipulators (41-T-103A and 41-T-103D) per WP 05-WH1750.
- 1.3 Remove protective covers from glove ports.
- 1.4 Insert key in Banner Micro-Screen Control Box.

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#### NOTE

The key for the Banner Micro-Screen Control Box must be in the RUN position at power up. If the Auto Power-Up feature is **ON** when power is applied to the system, the controller performs a system checkout and resets itself, without the need for a key RESET. If the Auto Power-Up feature is **OFF** when power is applied to the Micro-Screen system, it is normal for it to power up into a lockout condition.

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- 1.5 Ensure key is in RUN position.
- 1.6 Ensure motor breakers 41-HM-106 (Transfer Drawer Gallery Side) and 41-HM-106A (Transfer Drawer Hot Cell Side) on 41P-MCC04/2 are **ON**.
- 1.7 Ensure CB #10 in 41P-DP03/2 is **ON** (fluorescent light in the Transfer Drawer and Banner Micro-Screen Control Box).

- 1.8 If required, turn key clockwise to the RESET position.
- 1.9 If required, turn key counterclockwise to the RUN position.
- 1.10 Ensure at 411-UIC-004-001 (Banner Micro-Screen Control Box) that the Micro-Screen system is in the RUN mode (green and yellow Status Indicators **ON**).
- 1.11 Perform the following with the Transfer Drawer at rest:
  - 1.11.1 Pass the test piece downward through each glove opening, and verify the red indicator comes **ON** and remains **ON** for as long as the test piece is in the defined area.
  - 1.11.2 **IF** the green status indicator comes **ON** while the test piece is in the defined area,  
**THEN STOP OPERATION, NOTIFY WHE, AND DISCONTINUE PERFORMANCE OF THE PROCEDURE UNTIL SITUATION IS CORRECTED.**
  - 1.11.3 Remove the test piece from the defined area.
  - 1.11.4 Verify the green status indicator is **ON**.
  - 1.11.5 Insert the test piece into the defined area.
  - 1.11.6 Ensure the Transfer Drawer Gallery Side shield plug will not move.

**WARNING**

Prior to opening either shield plug, the opposite shield plug must be fully closed to prevent a radiation streaming path (radiation exposure of operator).

**WARNING**

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 1.12 Open the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **OPEN** position.
- 1.13 Verify the Operating Gallery Shield Plug is open as indicated by the OPERATING GALLERY SHIELD PLUG green CLOSED light is **OFF**, **AND** the red **OPEN** light is on at 411-CP-309-23.

- 1.14 Close the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **CLOSED** position.
- 1.15 Verify the Operating Gallery Shield Plug is closed as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **ON, AND** the red **OPEN** light is **OFF** at 411-CP-309-23.
- 1.16 Open the Hot Cell Shield Plug by momentarily placing the HOT CELL SHIELD PLUG control switch in the **OPEN** position.
- 1.17 Verify the Hot Cell Shield Plug is **OPEN** as indicated by the OPERATING HOT CELL SHIELD PLUG green **CLOSED** light is **OFF, AND** the red **OPEN** light is **ON** at 411-CP-309-23.
- 1.18 Close the Hot Cell Shield Plug by placing the HOT CELL SHIELD PLUG control switch in the **CLOSE** position.
- 1.19 Verify the Hot Cell Shield Plug is **CLOSED** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light is **ON, AND** the red **OPEN** light is **OFF** at 411-CP-309-23.
- 1.20 Perform the following:
  - 1.20.1 Initiate ARs to address any deficiencies discovered during preoperational checks that **CANNOT** be corrected by Waste Handling Operations, and the status of each (e.g., deficiencies corrected and ARs generated).
  - 1.20.2 Notify WHE and report status of preoperational check.
- 1.21 Record the following information in the Equipment Logbook:
  - Deficiencies noted
  - Corrective Actions taken (outstanding/newly generated ARs, etc.)
- 1.22 Enter time, date, and signature in Equipment Logbook to document performance of preoperational checks.
- 1.23 Equipment Logbook must be reviewed by WHE on a weekly basis, generally the last day of the workweek.

## 2.0 OPERATION OF HOT CELL TRANSFER DRAWER

### NOTE

Subsections 2.1 and 2.2 may be performed in either order after completion of the preoperational checks.

### 2.1 Transferring Materials from Hot Cell to Operating Gallery

#### WARNING

Prior to opening either shield plug, the opposite shield plug must be fully **CLOSED** to prevent a radiation streaming path (radiation exposure of operator).

- 2.1.1 Verify the Operating Gallery Shield Plug is **CLOSED** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.
- 2.1.2 Open the Hot Cell Shield Plug by momentarily placing the HOT CELL SHIELD PLUG control switch in the **OPEN** position.
- 2.1.3 Verify the Hot Cell Shield Plug is **OPEN** as indicated by the OPERATING HOT CELL SHIELD PLUG green **CLOSED** light is **OFF**, **AND** the red OPEN light is **ON** at 411-CP-309-23.
- 2.1.4 Pull the tray into the Hot Cell side, using the Master-Slave Manipulators, if necessary.
- 2.1.5 Place the material to be transferred on the rolling tray.
- 2.1.6 Close the Hot Cell Shield Plug by momentarily placing the HOT CELL SHIELD PLUG switch in the **CLOSE** position.
- 2.1.7 Verify the Hot Cell Shield Plug is **CLOSED** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.

#### WARNING

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 2.1.8 Open the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **OPEN** position.

- 2.1.9 Verify the Operating Gallery Shield Plug is **OPEN** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **OFF**, **AND** the red **OPEN** light is **ON** at 411-CP-309-23.
- 2.1.10 Remove materials from rolling tray and monitor for gross levels of activity.
- 2.1.11 Remove material through the glove port.

**WARNING**

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 2.1.12 Close the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **CLOSED** position.
- 2.1.13 Verify the Operating Gallery Shield Plug is **CLOSED** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.

**2.2 Transferring Materials from the Operating Gallery to Hot Cell****WARNING**

Prior to opening either shield plug, the opposite shield plug must be fully closed to prevent a radiation streaming path (radiation exposure of operator).

- 2.2.1 Verify the Hot Cell Shield Plug is **CLOSED** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.

**WARNING**

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 2.2.2 Open the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **OPEN** position.
- 2.2.3 Verify the Operating Gallery Shield Plug is **OPEN** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **OFF**, **AND** the red **OPEN** light is **ON** at 411-CP-309-23.

- 2.2.4 Place items, through the glove port, on the rolling tray.

### WARNING

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 2.2.5 Close the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **CLOSE** position.
- 2.2.6 Verify the Operating Gallery Shield Plug is **CLOSED** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF**.
- 2.2.7 Open the Hot Cell Shield Plug by momentarily placing the HOT CELL SHIELD PLUG control switch in the **OPEN** position.
- 2.2.8 Verify the Hot Cell Shield Plug is **OPEN** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light is **OFF**, **AND** the red **OPEN** light is **ON** at 411-CP-309-23.
- 2.2.9 Pull the tray into the Hot Cell side using the Master/Slave Manipulator.
- 2.2.10 Remove material from the rolling tray using the Master/Slave Manipulators.
- 2.2.11 Close the Hot Cell Shield Plug by placing the HOT CELL SHIELD PLUG control switch in the **CLOSE** position.
- 2.2.12 Verify the Hot Cell Shield Plug is **CLOSED** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.

## 3.0 SHUTDOWN OF HOT CELL TRANSFER DRAWER

- 3.1 Verify the Hot Cell Transfer Drawer is empty by use of Closed-Circuit TV (CCTV) cameras, or visually viewing the Hot Cell or Transfer Drawer windows.
- 3.2 Close the Hot Cell Shield Plug by placing the HOT CELL SHIELD PLUG control switch in the **CLOSE** position.
- 3.3 Verify the Hot Cell Shield Plug is **CLOSED** as indicated by the HOT CELL SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF** at 411-CP-309-23.

**WARNING**

Hands must be kept clear of the Transfer Drawer while operating the shield plugs to avoid injury to hands of operator.

- 3.4 Close the Operating Gallery Shield Plug by momentarily placing the OPERATING GALLERY SHIELD PLUG control switch in the **CLOSE** position.
- 3.5 Verify the Operating Gallery Shield Plug is **CLOSED** as indicated by the OPERATING GALLERY SHIELD PLUG green **CLOSED** light is **ON**, **AND** the red **OPEN** light is **OFF**.
- 3.6 Replace protective covers over glove ports.
- 3.7 Remove key from Banner Micro-Screen Control Box and return to Waste Handling key lockbox.