Changes “Other Than Inconsequential” Require These Additional Reviews:

Waste Services

USQ Not Required – EFT is a < Hazard Category 3 Radiological Facility

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<tbody>
<tr>
<td>A-10</td>
<td>01/14/2018</td>
<td>DOE-0359 Implementation</td>
<td>Updated procedure to comply with recent change to DOE-0359.</td>
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<tr>
<td>A-9</td>
<td>11/07/2018</td>
<td>eDARF Incorporation</td>
<td>Update Rad Con section to include RWP LE-003 and updating RWP LE-001.</td>
</tr>
<tr>
<td>A-8</td>
<td>11/05/2018</td>
<td>eDARF Incorporation</td>
<td>Adding additional flexibility in manipulating drums on conveyor prior to removal from TFD Room.</td>
</tr>
<tr>
<td>A-7</td>
<td>11/01/2018</td>
<td>Operations Request</td>
<td>Corrected RadCon data collection distances in Data Sheet 3.</td>
</tr>
<tr>
<td>A-6</td>
<td>04/19/2018</td>
<td>Operations request</td>
<td>Records comment to move TFC-OPS-OPER-C-17 reference to Performance Documents from RECORDS section. Modified Note above Step 5.6.32 and Special Instructions above Step 5.6.37. Deleted &quot;F-Listed sticker&quot; from Step 5.6.40. Added clarification to Step 5.6.41. Upgraded Records Section to address latest requirements. Added Date column to Data Sheet 1 and replaced the Special Instructions. Mode Data Sheet 3 and updated signature lines to match requirements from Writer's Standard. 5.3.2. Deleted word defective and replaced with &quot;Do Not Use&quot;, which is consistent with Package Waste procedure.</td>
</tr>
</tbody>
</table>

Table of Contents

1.0 PURPOSE AND SCOPE.......................................................................................................... 3
  1.1 Purpose............................................................................................................................ 3
  1.2 Scope............................................................................................................................... 3

2.0 INFORMATION................................................................................................................... 3
  2.1 Terms and Definitions...................................................................................................... 3
  2.2 General Information........................................................................................................ 3

3.0 PRECAUTIONS AND LIMITATIONS............................................................................... 4
  3.1 Personnel Safety................................................................................................................ 4
  3.2 Equipment Safety............................................................................................................. 6
  3.3 Radiation and Contamination Control.......................................................................... 6
  3.4 Environmental Compliance ............................................................................................ 6

4.0 PREREQUISITES .............................................................................................................. 7
  4.1 Special Tools, Equipment, and Supplies........................................................................ 7
Drum Handling System Operation

4.2 Performance Documents........................................................................................................... 7
4.3 Field Preparations ....................................................................................................................... 7

5.0 PROCEDURE............................................................................................................................ 8
5.1 Valve Lineup Determination........................................................................................................ 8
5.2 Prestart Checklist ....................................................................................................................... 9
5.3 Empty Drum Conveyor Drum Load........................................................................................... 12
5.4 Drum Operations – Dock Drum................................................................................................. 14
5.5 Drum Operations – Undock Filled Drum ................................................................................. 17
5.6 Drum Closure Operations .......................................................................................................... 19
5.7 Drum Removal ........................................................................................................................... 20
5.8 Records .................................................................................................................................... 25

Data Sheet 1 - Drum Handling Valve Lineup ..................................................................................... 26
Data Sheet 2 - Drum Sheet .................................................................................................................. 27
Data Sheet 3 - Container Inventory and Acceptance ........................................................................ 29
Figure 1 - Example Powder Waste Drum ........................................................................................ 30
Attachment 1 - Skolnik Closure Instructions .................................................................................. 31
Attachment 2 – Myers Closure Instructions ................................................................................... 32
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for operating the drum handling system.

1.2 Scope

This procedure involves the movement, docking, closure, labeling, and storage of steel 55-gallon drums filled with Dryer powdered, mixed waste utilizing the drum handling system.

2.0 INFORMATION

2.1 Terms and Definitions

- CCTV – Closed-Circuit Television
- Dryer – Thin Film Dryer.

2.2 General Information

2.2.1 Most of the valves and pressure gauges are located in the Dryer room. Some valves located in the Dryer room are sealed in position per ETF component status seals/administrative lock processes.

2.2.2 The drum load-out should be performed before exceeding six full drums in the Dryer room.

2.2.3 A minimum 36-inch separation is required between aisles of containers holding dangerous waste. Drum rows may be a maximum of two drums wide. Filled and banded pallets may be stacked three high.

2.2.4 During manual operation, increased spacing between filled drums on conveyor CR 07 and CR 08 may be required for decon of drums, and in general, prior to airlock entry.

2.2.5 If an emergency situation occurs, press emergency stop button (right side of drum handling system mimic board, Panel LCP 80C 001) to immediately halt all operations.
2.2 General Information (Cont.)

2.2.6 Plywood or diamond plate aluminum sheet material is available inside the Dryer room, and may be used to cover rollers to provide a firm working surface.

2.2.7 When entries are made into the Dryer room, a second person will provide support at the mimic board outside the Dryer room, and coordinate the movement of conveyer systems. When mechanical systems are to be moved, the outside person must communicate with personnel inside the Dryer room to stand clear of rollers and drums.

2.2.8 A portable two-way radio or other accepted means of summoning emergency assistance is required to be readily accessible at all times while inside the Storage Area/Dryer room.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

WARNING - Exposure to noise produced by power tools can cause irrecoverable hearing loss.

WARNING - Working under a suspended load could result in personnel injury.

3.1.1 The Dryer room exit airlock is considered a permit required confined space, Confined Space Hazard Identification (CSHID) ETF-CS-024A, and failure to have IH evaluate the confined space per DOE-0360 prior to entry may result in personnel injury or death.

3.1.1.1 When performing section 5.7, health and safety has determined that the exit air lock will not to be considered a confined space. It was determined that when a 55 gallon drum is present, a person cannot bodily enter the space and perform work. In doing so, the space does not meet the definition of a confined space and a permit is not required for this activity. When the tasks in section 5.7 are completed, the space will be labelled as a permit required confined space.

3.1.2 Dryer room entry has the potential to expose workers to dust created by the Dryer room process.

3.1.3 All work will be performed in accordance with DOE-0359, Hanford Site Electrical Safety Program.

3.1.4 Operation of Circuit Breakers, Electrical disconnect Switches, and Similar Switching Equipment shall be performed by a qualified person.
3.1.5 Component operation requires completion of an Electrical Risk Assessment (ERA).

3.1.6 When the clean and inspects are current on the electrical equipment (breaker, switchgear, disconnects, motor starters, etc.), the ERA for normal operating condition is applicable, for those workers interacting with electrical equipment.

3.1.6.1 Use safety glasses and leather gloves when manipulating electrical components per the normal ERA.

3.1.7 When the clean and inspects are delinquent, the ERA for non-normal operating condition is applicable, for those workers interacting with electrical equipment.
3.2 Equipment Safety

**CAUTION** - There is limited clearance between top of the drum and shower heads. Raising the drum too far will jam drum into the showerheads and may cause drum rupture and damage to the airlock.

3.2.1 If an emergency situation occurs, press emergency stop button (right side of drum handling system mimic board, Panel LCP 80C 001) to immediately halt all operations.

3.3 Radiation and Contamination Control

3.3.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESHQ-RP_RWP-C-03.

3.3.2 RWP LE-001 will be utilized for entry into the Dryer room.

3.3.3 RWP LE-003 will be utilized for Drum Removal Operations.

3.4 Environmental Compliance

3.4.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.
4.0 **PREREQUISITES**

4.1 **Special Tools, Equipment, and Supplies**

The following supplies may be needed to perform this procedure:
- Hand-held, two-way radio
- Hearing protection
- Calibrated Torque Wrench (+/- 2 ft-lbs)
- Non-sparking mallet.

The following minimum PPE is required for entry into the dryer room:
- Coveralls
- Respirator
- Nitrile gloves
- Leather gloves.

4.2 **Performance Documents**

The following documents may be needed to perform this procedure:
- DOE-0360, Hanford Site Confined Space Procedure (HSCSP)
- TFC-OPS-OPER-C-17, Operating Logbooks

4.3 **Field Preparations**

4.3.1 **ENSURE** electrical power available per ETF-25B-001, Electrical Distribution System Startup and Operation.

4.3.2 **ENSURE** compressed service air system operating per ETF-01B-001, Compressed Air System Operations.

4.3.3 **ENSURE** RCA HVAC system in operation per ETF-45-002, RCA HVAC System Operation.

4.3.4 **ENSURE** vessel ventilation system operating per ETF-45D-001, Vessel Off-Gas System Operation.

4.3.5 **ENSURE** sump tank 1 operating per ETF-20B-001, Sump Tank/Pump System Operation.
5.0 PROCEDURE

Special Instructions

All operations will be performed locally on drum handling system mimic board (Panel LCP 80C 001), unless otherwise stated.

CCTV system may be available to monitor drum handling operations. Personnel entry into Dryer room for visual inspection is acceptable in place of CCTV system operation.

Sections 5.3 through 5.7 of this procedure may be performed in any logical order, individually, or out of sequence as directed by the SOM.

Verification of drum position or component position may be made visually in lieu of position indicators if desired.

This procedure can be entered and exited at any point with concurrence of SOM.

SOM determines component lineup requirements.

5.1 Valve Lineup Determination

5.1.1 (SOM) DETERMINE which valve lineup Checklists/Data sheets needs to be performed.

5.1.2 (SOM) IF valves are known to be in the required position and do not require verification, INITIAL/DATE AND DOCUMENT reason in the comments section of the Checklist/Data Sheet.

5.1.3 (SOM) IF valves are not in the required position because of an existing process (i.e., LOTO, Caution Tag, Work Package, Administrative Lock, Facility Tag or Status Seals), MARK N/A on the Checklist/Data Sheet AND INITIAL/DATE AND DOCUMENT reason in the comments section of the Checklist/Data Sheet.
5.2 Prestart Checklist

5.2.1 IF directed by SOM, DON PPE per appropriate ERA listed in Section 3.1. **AND ENSURE** valve alignment per Data Sheet 1 - Drum Handling Valve Lineup.

5.2.2 IF directed by SOM, **ENSURE** the following are ON:

<table>
<thead>
<tr>
<th>Panel</th>
<th>Breaker/Switch</th>
<th>Name</th>
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<tbody>
<tr>
<td>DP-3</td>
<td>CB 7</td>
<td>LCP-80C001</td>
</tr>
<tr>
<td>MDP-3</td>
<td>CKT 10</td>
<td>PP-80C002</td>
</tr>
<tr>
<td>PP-80C002</td>
<td>Disconnect</td>
<td>DRUM HANDLING PNL</td>
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<tr>
<td>DP-7</td>
<td>CKT 10</td>
<td>RECPT, RM 139</td>
</tr>
<tr>
<td>LCP-80C001</td>
<td>Switch</td>
<td>Switch for Recpts in Room 139</td>
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5.2.3 **ENSURE** HPT support is available for Dryer room entry.

5.2.4 **DON** PPE listed in Section 4.1 or RWP.

5.2.5 **PRIOR** to entering Dryer room, **ENSURE** one of the following is true:
- a drum is docked at the dryer fill head
- AOV60J155 is CLOSED.

5.2.6 IN Dryer room, **PERFORM** pressure check on pressure regulator 80C-V-414 and 80C-V-201 per the following:

5.2.6.1 **ENSURE** bleed valve 80C-V-416 is OPEN (approximately \(\frac{1}{8}\) of a turn).

5.2.6.2 **CONFIRM** pressure indicated on pressure indicator 80C-PI-201 is 60 to 70 psig.

5.2.6.3 **CONFIRM** pressure indicated on pressure indicator 80C-PI-414 is 50 to 60 psig.

5.2.6.4 **IF** pressure regulator(s) is not within range, **REQUEST** Maintenance adjust regulator.

5.2.7 IN Dryer room, **PERFORM** pressure check on regulator 80C-V-202:

5.2.7.1 **WHEN** drum is in docking position, **CONFIRM** pressure indicated on pressure indicator 80C-PI-202 is 30 to 40 psig.

5.2.7.2 **IF** pressure regulator 80C-PI-202 is not within the range, **REQUEST** Maintenance adjust regulator.
5.2 Prestart Checklist (Cont.)

Special Instructions
Performance of step 5.2.8 can be completed during Dryer room entry or via CCTV using camera one and camera two.

5.2.8 **CHECK** conveyors and Dryer room for obstructions.

5.2.9 **PERFORM** light test as follows:

5.2.9.1 **PLACE** HAND/AUTO key switch, HS-80C918, in **HAND**.

5.2.9.2 **PRESS AND HOLD** lamp test, HS-80C919.

5.2.9.1 **CHECK** that all lamps are illuminated.

5.2.9.2 **IF** any lamp does not light, **NOTIFY** SOM AND **CONTINUE**.

5.2.10 **ENSURE** switch LS-60J020 BARREL LEVEL DETECTOR 120 VAC POWER is in **ON** position.

5.2.11 **CONFIRM** adequate numbers of drums are ready for use.
5.3 **Empty Drum Conveyor Drum Load**

**Special Instructions**

The drum load-out should be performed before exceeding six full drums in the Dryer room.

**NOTE**
- The number of drums loaded on empty drum conveyor can vary between one and twelve to meet operational requirements.
- The drum type to be used will be specified by process memo or by Technical Waste Services.

5.3.1 **INSPECT** drum for the following:
- Drum is empty
- Free of bulges, dents, and corrosion
- No burrs or sharp protrusions on drum lid or locking ring
- No gashes or scratches deep enough to penetrate paint or inner coating
- Lid and drum opening are round
- Lid gasket in good condition
- Locking ring, lugs and bolt in good condition (not bent)
- UN1A2 stamped on drum bottom
- Bar code number is present.

5.3.2 **IF** drum is defective, **LABEL** drum as “DO NOT USE” AND **REMOVE** labeled drum from service.

5.3.3 **PLACE** empty drum without lid on empty drum conveyor CR-01.

5.3.4 **PRESS AND HOLD** EMPTY DRUM CONV CR1 JOG HS-80C901 button until drum is in desired position on CR-01.

5.3.5 **PLACE AND POSITION** additional drums on CR-01.
5.3 Empty Drum Conveyor Drum Load (Cont.)

5.3.6 POSITION drums on empty drum conveyors CR-02 and CR-03:

5.3.6.1 PRESS AND HOLD pushbutton EMPTY DRUM CONV CR2 JOG HS-80C902 until drum is in desired position on CR-02.

5.3.6.2 PRESS AND HOLD pushbutton EMPTY DRUM CONV CR3 JOG HS-80C903 until drum is in desired position on CR-03.

5.3.7 REPEAT steps 5.3.5 and 5.3.6 until required number of drums are on the empty drum conveyors.
5.4 **Drum Operations – Dock Drum**

**Special Instructions**

The drum load-out should be performed before exceeding six full drums in the Dryer room.

Data Sheet 2 must be completed as drums are filled and removed.

NOTE - A green light indicates airlock outer door is open. A white light indicates the airlock outer door is closed.

5.4.1 **PROVIDE** new drum bar code number to the CRO.

5.4.2 **ENSURE** HAND/AUTO KEY SWITCH HS-80C918, is in HAND.

5.4.3 **PLACE** switch AIRLOCK DOOR CONTROL SWITCH HS-80C904 in OUTER DOOR.

5.4.4 **CHECK** airlock outer door is OPEN, visually or by green indicating light illuminated.

5.4.5 **SIMULTANEOUSLY PRESS AND HOLD** the following push buttons:
- EMPTY DRUM CONV CR3 JOG HS-80C903
- AIRLOCK #1 CONV CR4 JOG HS-80C905.

5.4.6 **WHEN** drum is in airlock, **RELEASE** both HS-80C903 and HS-80C905.

5.4.7 **PLACE** switch AIRLOCK DOOR CONTROL SWITCH HS-80C904, in CLOSE.

5.4.8 **CHECK** airlock outer door CLOSED, visually or by white indicating light illuminated.

5.4.9 **PLACE** switch AIRLOCK DOOR CONTROL SWITCH HS-80C904, in INNER DOOR position.

5.4.10 **CHECK** airlock inner door OPEN, visually or by green indicating light illuminated.

5.4.11 **SIMULTANEOUSLY PRESS AND HOLD** the following pushbuttons:
- AIRLOCK #1 CONV CR4 JOG, HS-80C905
- TRANSITION CONV CR5A JOG HS-80C906A.
5.4 Drum Operations – Dock Drum (Cont.)

5.4.12 WHEN drum is fully on conveyor CR-05A, RELEASE HS-80C905 and HS-80C906A.

5.4.13 PLACE switch AIRLOCK DOOR CONTROL SWITCH HS-80C904 in CLOSE.

5.4.14 CHECK airlock inner door CLOSED, visually or by white indicating light illuminated.

5.4.15 CHECK lift table is DOWN, visually or by lift table position light is illuminated.

NOTE - Steps 5.4.16, 5.4.17, and 5.4.18 are performed in any concurrent, logical order.

5.4.16 PRESS AND HOLD pushbutton TRANSITION CONV CR5A JOG HS-80C906A.

5.4.17 HOLD switch DRUM FILLING CONV CR5B FWD/REV HS-80C906 in FWD position AND SIMULTANEOUSLY HOLD DRUM CAPPING CONV FWD/REV JOG HS-80C908 in FWD position.

5.4.18 WHEN drum is positioned on capping station conveyor CR-05B, RELEASE the following pushbuttons:
- HS-80C906
- HS-80C906A
- HS-80C908.

5.4.19 PLACE switch FILL STATION STOP POST HS-80C907A in UP.

5.4.20 CHECK the fill station stop post indicator UP (upper left light on mimic board) is illuminated or visually that both posts are in the UP position.

5.4.21 HOLD switch DRUM FILLING CONV CR5B FWD/REV HS-80C906, in REV position AND SIMULTANEOUSLY HOLD switch DRUM CAPPING CONV FWD/REV JOG HS-80C908, in REV position.

5.4.22 WHEN drum is observed centered at FILL position, RELEASE HS-80C906 and HS-80C908.
5.4 Drum Operations – Dock Drum (Cont.)

5.4.23 **PLACE** switch JACK TABLE DOWN/UP SWITCH HS-80C907, in UP AND HOLD until drum is completely docked to dryer fill head.

5.4.24 **NOTIFY** CRO that drum is docked to dryer fill head.
5.5 Drum Operations – Undock Filled Drum

5.5.1 **WHEN** requested by CRO, **PLACE** JACK TABLE DOWN/UP SWITCH HS-80C907 in DOWN.

5.5.2 **CHECK** lift table position DOWN, visually on CCTV or by DOWN position light illuminated.

5.5.3 **PLACE** switch FILL STATION STOP POST HS-80C907A in DOWN.

5.5.4 **CHECK** fill station stop posts DOWN, visually on CCTV or by DOWN position lights illuminated.

5.5.5 **HOLD** switch DRUM FILLING CONV CR5B FWD/REV HS-80C906, in FWD position **AND**

**SIMULTANEOUSLY PLACE** switch DRUM CAPPING CONV FWD/REV JOG HS-80C908, in FWD position.

5.5.6 **WHEN** drum is fully on capping station conveyor CR-06, **RELEASE** HS-80C906 and HS-80C908.

5.5.7 **CHECK** on CCTV drum fill was/is adequate.

5.5.7.1 **IF** drum fill is not adequate, **GO TO** step 5.4.19.

5.5.7.2 **IF** drum fill is adequate, **PROCEED** to step 5.5.8.

5.5.8 **IF** TRANSFER CONV CR6A POSITION IND UP light illuminated, **PLACE** switch TRANSFER CONV #1 CR6A DOWN/UP HS-80C909 in DOWN to lower conveyor CR-06A.

5.5.9 **PLACE** switch DRUM CAPPING CONV FWD/REV JOG HS-80C908 in FWD position until drum is on transfer conveyor (CR-06A).

5.5.10 **IF** TRANSFER CONV CR7A POSITION IND up light illuminated, **PLACE** switch TRANSFER CONV #2 CR7A DOWN/UP HS-80C912 in DOWN.

5.5.11 **PLACE** switch TRANSFER CONV #1 CR6A DOWN/UP HS-80C909 in UP to raise conveyor CR-06A.

5.5.12 **PRESS AND SIMULTANEOUSLY HOLD** the following pushbuttons:
- TRANSFER CONV #1 CR6A JOG HS-80C910
- FILLED DRUM CONV #1 CR7 JOG HS-80C911.
5.5 **Drum Operations – Undock Filled Drum (Cont.))**

5.5.13 **WHEN** filled drum is in desired position, **RELEASE** HS-80C910 and HS-80C911.

5.5.14 **OPERATE** conveyor CR-07 to position drums.

**Special Instructions**

Maximum number of drums allowed to be filled and stored on conveyor CR-07 is four drums full of powder.

5.5.15 **REPEAT** steps 5.4.1 through 5.5.14 until four or less filled drums are on conveyor CR-07.

5.5.16 **WHEN** desired number of drums (maximum of four) are on conveyor CR-07 and transfer conveyor CR-07A, **PLACE** switch TRANSFER CONV #2 CR7A DOWN/UP HS-80C912 in UP.

**NOTE** - During manual operation, increased spacing between filled drums on conveyor CR 07 and CR 08 may be required for decon of drums, and in general, prior to airlock entry.

5.5.17 **SIMULTANEOUSLY PRESS AND HOLD** the following pushbuttons until drum is in required position on CR-08:

- TRANSFER CONV #2 CR7A JOG HS-80C913
- FILLED DRUM CONV #2 CR8 JOG HS-80C914.

5.5.18 **PLACE** switch TRANSFER CONV #2 CR7A DOWN/UP HS-80C912 in DOWN.

5.5.19 **REPEAT** steps 5.5.16 through 5.5.18 until filled drums are positioned on the following filled drum conveyors, to perform drum closure operations:

- CR-07
- CR-07A
- CR-08.
5.6 Drum Closure Operations

Special Instructions

A minimum of two operators must be present when handling filled drums.

NOTE - Plywood or diamond plate aluminum sheet material is available inside the Dryer room, and may be used to cover rollers to provide a firm working surface.

5.6.1 ENSURE HPT support is available for Dryer room entry.

**WARNING**

Exposure to noise produced by power tools can cause irrecoverable hearing loss.

5.6.2 DON hearing protection.

5.6.3 DON PPE listed in Section 4.1 or RWP.

5.6.4 IF Dryer is in RUN mode, ENSURE a drum is docked at the dryer fill head before entering Dryer room.

NOTE - ETF sources drums from two manufactures (SKOLNIK INDUSTRIES or MYERS CONTAINERS) each having slightly different closure instructions and torque values which are noted in their respective closure instructions. See Attachment 1 - Skolnik Closure Instructions for documentation of SKOLNIK and MYERS drum closure instructions.

- Torqueing to be completed when out of Thin Film Dryer Room.

5.6.5 ENSURE lid is secure prior to removing from Thin Film Dryer Room AND ENSURE drums have a minimum of 16-inch to 24-inch between drums prior to exiting the Thin Film Dryer Room.

5.6.6 IF closing a SKOLNIK drum, CLOSE per Attachment 1.

5.6.7 IF closing a MYERS drum, CLOSE per Attachment 2.
5.7 Drum Removal

**Special Instructions**

If using a propane-powered forklift for drum handling operations, do not allow unnecessary idling of forklift in the drum handling area.

The drum load-out should be performed before exceeding six full drums in the Dryer room.

A minimum of two operators must be present when handling filled drums.

5.7.1 **ENSURE** HPT support is available.

5.7.2 **CONFIRM** forklift with approved drum handling attachment is available.

5.7.3 **PERFORM** forklift pre-use inspection.

5.7.4 **CONFIRM** drum handling attachment has been secured to forklift with safety chain.

5.7.5 **ENSURE** switch HAND/AUTO KEY SWITCH HS-80C918 is in HAND.

5.7.6 **ON** CCTV, **CHECK** at least one drum is on CR-07 or CR-08.

5.7.7 **PRESS AND HOLD** pushbutton FILLED DRUM CONV #2 CR8 JOG, HS-80C914.

5.7.8 **WHEN** drum is at exit airlock inner door position, **RELEASE** HS-80C914.

5.7.9 **PLACE** switch AIRLOCK DOOR CONTROL SWITCH HS-80C917 in INNER DOOR position.

5.7.10 **CHECK** exit airlock inner door OPEN, visually or by green indicating light illuminated.

5.7.11 **VISUALLY CHECK** position of exit airlock turntable CR-09C to confirm it is in the LOAD position.

5.7.12 **IF** exit airlock turntable is not in the correct position, **PLACE AND HOLD** switch ROTATE DRUM JOG HS-80C932 in CCW (counter clockwise) until turntable is in the correct position.

5.7.13 **SIMULTANEOUSLY PRESS AND HOLD** the following pushbuttons:

- **AIRLOCK #2 FIXED CONV** CR9A JOG HS-80C915
- **AIRLOCK #2 TURNTABLE** CONV CR9B JOG HS-80C916.
5.7 Drum Removal (Cont.)

5.7.14 WHEN drum is in exit airlock, RELEASE HS-80C916 and HS-80C915.

5.7.15 PLACE switch AIRLOCK DOOR CONTROL SWITCH HS-80C917 in CLOSE.

5.7.16 CHECK exit airlock inner door CLOSED, visually or by white indicating light illuminated.

5.7.17 PLACE switch AIRLOCK DOOR CONTROL SWITCH HS-80C917 in OUTER DOOR position to open exit airlock outer door.

5.7.18 CHECK exit airlock outer door OPEN, visually or by green indication light illuminated.

NOTE - Exit airlock is not a confined space while drum removal activities are being conducted.

5.7.19 INSTALL cover over “Permit Required Confined Space” sign.

NOTE - Steps 5.7.20 through 5.7.28 may be performed in any logical order.

5.7.20 (HPT) PERFORM preliminary area survey for contamination/dose rate.

5.7.21 (HPT) PERFORM initial contamination/dose rate survey on drum.

5.7.22 IF the drum is contaminated, DECON drum.

5.7.23 PLACE AND HOLD switch ROTATE DRUM JOG HS-80C932 in CW (clockwise).

5.7.24 VISUALLY CONFIRM turntable CR-09C is in the unload position AND RELEASE HS-80C932.

CAUTION
There is limited clearance between top of the drum and shower heads. Raising the drum too far will jam drum into the showerheads and may cause drum rupture.

5.7.25 USING a spotter, REMOVE filled drum from airlock AND POSITION for final HPT contamination/dose rate survey of drum.
5.7 Drum Removal (Cont.)

5.7.26 **PLACE AND HOLD** switch ROTATE DRUM JOG HS-80C932 in CCW (counter clockwise) until turntable is the load position for next drum.

5.7.27 **PLACE** switch AIRLOCK DOOR CONTROL SWITCH HS-80C917, in CLOSE.

**WARNING**

Working under a suspended load could result in personnel injury.

5.7.28 (HPT) **USING** a reach rod, **PERFORM** final contamination/dose rate survey on drum.

5.7.29 (HPT) **IF** drums are greater than 5 mr/hr, **PERFORM** six-point survey on drum **AND**

**COMPLETE** Six Point Survey - Waste Drums form (A-6003-377).

5.7.30 **WHEN** drum survey is completed by HPT, **USE** forklift **AND**

**REMOVE** the clean and filled drum to be weighed.

5.7.31 (HPT) **COMPLETE** radioactive label for the following:

- Survey
- Dose rate information
- Contents.

**NOTE** - Bar code number will be used for identification of powder waste containers placed on treatment, storage and disposal pad.

- Based on the LERF/ETF Addendum C of the Hanford Facility RCRA Permit WA7890008967, drums may be labeled upon removal from the thin film drier room.

5.7.32 **WEIGH** drum in kilograms **AND**

**RECORD** on weight on the following:

- Data Sheet 3
- Top of drum
- Side of drum (near EPA sticker).
5.7 Drum Removal (Cont.)

5.7.33 CONFIRM HPT surveys each container before storage per HNF-5183, Tank Farm Radiological Control Manual.

5.7.34 TRANSPORT filled drum to drum storage room (137).

5.7.35 BEFORE use, INSPECT each filled drum storage pallet for the following:
- Significant cracks
- Tears
- Breaks
- Gouges
- Deformities.

5.7.36 IF pallet is damaged, REMOVE pallet from service AND PROPERLY DISPOSE of pallet.

Special Instructions

During certain operating campaigns, high radiological dose rate drums will be banded on a pallet together with lower dose rate drums or possibly empty drums, and no more than two pallets high for ALARA and compliance with shipping requirements. The shipper is responsible for determining which drums will be stored and/or shipped together on a pallet. In all cases, exactly four drums (may include empty drums) shall be banded together, using metal banding, on a pallet for shipping purposes.

5.7.37 PLACE drum in appropriate storage.

5.7.38 REPEAT steps 5.7.6 through 5.7.30 until all prepared drums are removed.

5.7.39 REMOVE cover from “Permit Required Confined Space” sign.

NOTE - F Codes will be placed on EPA stickers at a later date.

5.7.40 APPLY the following labels/markings on filled drum (see Figure 1 for example):
- Radioactive Survey
- EPA hazardous waste label
- Toxic
- This End Up (if not imprinted on drum).
5.7 Drum Removal (Cont.)

5.7.41 ENSURE accumulation date for when waste was first added to container is marked on EPA hazardous waste label.

5.7.42 ENSURE entry has been completed on Data Sheet 2 for filled drum.

5.7.43 COMPLETE Data Sheet 3.

5.7.44 WHEN pallet has the required complement of four drums, BAND drums together and to pallet with four metal bands as follows:
- Each bundle of drums is banded over the top and secured to the pallet with steel bands vertically
- Each bundle of drums are banded together with steel bands on each pallet horizontally.

5.7.45 PLACE palletized drums in appropriate storage.

5.7.46 (HPT) CONFIRM dose rate and boundary postings are correct.

5.7.47 ENSURE barcodes for all drums removed are recorded in CRO log.

5.7.48 COMPLETE AND RETURN the following to the SOM:
- Data Sheet 3
- Six Point Survey - Waste Drums form (A-6003-377) (if used).

5.7.49 WHEN all lines on Data Sheet 2 are complete, RETURN data sheet to SOM.
5.8 Records

5.8.1 **PERFORM** the following for records identified within this procedure.

5.8.1.1 **RECORD** the number of times the record was generated in applicable column

**OR**

**PLACE** a check mark (√) in the N/A column.

5.8.1.2 **SUBMIT** the package for verification of completed records.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (√)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Sheets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 1 - Drum Handling Valve Lineup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 2 - Drum Sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 3 - Container Inventory and Acceptance</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Forms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-6003-377, Six Point Survey - Waste Drums form</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**FWS/OE/Shift Manager** **SEND** the completed records to the Central Shift Office for records retention.

____________________________________ / ___________________ / ____________

Signature                                      Print (First and Last)         Date

FWS/OE/Shift Manager

The record custodian identified in the Company Level Record Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
## Data Sheet 1 - Drum Handling Valve Lineup

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Valve Name and Location</th>
<th>Required Position</th>
<th>Initials</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>80C-100</td>
<td>Conveyor Roller - 3-Stop Post Air Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-300</td>
<td>Chain Transfer Conveyor Roller-06A Air Pillow Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-330</td>
<td>Capping and Fill Stations Stop Posts Air Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-400</td>
<td>Lift Table Air Pillow Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-402</td>
<td>Vibration Table Air Pillow Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-500</td>
<td>Drum Capper Air Supply</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-600</td>
<td>Chain Transfer Conveyor Roller-07A Air Pillow Supply</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-700</td>
<td>Airlock 2 Drain Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80CA502</td>
<td>Capper Air Cylinder Air Flow Control</td>
<td>1/4 TURN FROM SHUT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80CA412</td>
<td>Lift Table Air Flow Control</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-V-415</td>
<td>Pressure Regulator 80C-V-414 By Pass Valve</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-V-416</td>
<td>Bleed Valve</td>
<td>1/8 TURN FROM SHUT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**COMMENTS:**

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Signature / Print (First & Last) / Initials / Date

NCO

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Signature / Print (First & Last) / Initials / Date

NCO

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Signature / Print (First & Last) / Initials / Date

SOM Completion Review
## Drum Handling System Operation

### Data Sheet 2- Drum Sheet

<table>
<thead>
<tr>
<th>Drum Barcode</th>
<th>Date Docked</th>
<th>Time Fill Started</th>
<th>Accumulation Date</th>
<th>Time Fill Completed</th>
<th>Concentrate Tank A or B</th>
<th>Batch Number#</th>
<th>Date removed from Dryer</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

(Continued on Next Sheet)
## Drum Handling System Operation

### Data Sheet 2- Drum Sheet (Cont.)

<table>
<thead>
<tr>
<th>Drum Barcode</th>
<th>Date Docked</th>
<th>Time Fill Started</th>
<th>Accumulation Date</th>
<th>Time Fill Completed</th>
<th>Concentrate Tank A or B</th>
<th>Batch Number#</th>
<th>Date removed from Dryer</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**COMMENTS:**

____________________________________ / ____________________________ / ___________ / ___________  
Signature       Print (First & Last)       Initials       Date
NCO

____________________________________ / ____________________________ / ___________ / ___________  
Signature       Print (First & Last)       Initials       Date
NCO

____________________________________ / ____________________________ / ___________ / ___________  
Signature       Print (First & Last)       Initials       Date
SOM Completion Review

Type **REFERENCE**          Document No. **ETF-80C-001**          Rev/Mod **A-10**          Release Date **01/14/2019**          Page **28 of 32**
# Data Sheet 3 - Container Inventory and Acceptance

Bar Code #: ___________  
Drum Type (Circle correct type): Skolnik/Myers  

## Container Inventory

<table>
<thead>
<tr>
<th>Waste Composition</th>
<th>Gross Weight (Kgs)</th>
<th>Accumulation Date (From Data Sheet 2)</th>
</tr>
</thead>
</table>

## Acceptance Checklist

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is bar code number on container?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the container inventory completed on this sheet?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there a Hazardous Waste (EPA) label on drum with accumulation date?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the major risk (Toxic) marked on drum?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is container in good condition?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there free liquids in container? (If Yes, add absorbent, double containment required)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is container elevated on pallet or other device?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is container stored in approved area (separate reactive or incompatible wastes)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has the drum ring and bungs been Torqued per appropriate attachment?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the Torque Wrench within the Calibration Date?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Torque Wrench Tool Number**  

____________________ / ____________________ / ____________  
Signature Print (First & Last) Date  
Operator  

## HPT Section

<table>
<thead>
<tr>
<th>Question</th>
<th>Signature / Print (First &amp; Last) / Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose Rate at: Contact 30cm One Meter Survey No.</td>
<td></td>
</tr>
<tr>
<td>Contamination:</td>
<td></td>
</tr>
<tr>
<td>Drum &gt; 5 mR/hr? (see step 5.7.29) Y N (circle one) IF YES, provide six point survey</td>
<td></td>
</tr>
</tbody>
</table>

**To Be Completed by ETF Waste Technical Services**  

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify Container added to SWITS?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem description:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrective action:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

____________________ / ____________________ / ____________  
Signature Print (First & Last) Date  
Technical Waste Services
The Ring Bolt needs to be off-center to prevent potential obscuring of bar code.
Attachment 1 - Skolnik Closure Instructions

In compliance with DOT 49 CFR §178.2 (c), persons shipping Skolnik drums must comply with the following closure instructions.

**BOLT RING CLOSURE FOR OPEN HEAD DRUMS**
1. CHECK GASKET – to ensure cover gasket is properly fitted into cover groove (see Fig. 1 or 2).
2. PLACE COVER ON DRUM – being careful to properly seat gasket all around curl (see Fig. 3).
3. POSITION & SEAT RING – with lips downward. Ensure the inner channel of the closure ring engages entire drum curl and cover (see Fig. 4). Apply downward pressure on cover. Use a non-sparking dead-blow mallet to further seat cover and drum curl into the inner channel of the ring.
4. INSERT BOLT – through the unthreaded lug of the ring. Assemble the locking hex nut onto the threaded end of the bolt and tighten into the threaded lug (see Fig. 5). Close the ring to an initial gap of about 1/2”.
5. TIGHTEN THE BOLT – with a calibrated torque wrench while using downward pressure on the cover and hammering the outside of the ring with a non-sparking dead-blow mallet to further seat the ring. Continue tightening and hammering the ring until the torque stabilizes at 55 – 60 ft-lbs and does not decrease when further hammering on the ring circumference is performed. Ring ends must not touch. (Effective 25 September, 2006 and in accordance with CFR 178.21c, we have revised this procedure to use torque as the most effective closure requirement.)
6. LOCK RING – by tightening the nut against the unthreaded lug (see Fig. 6).

**OPEN HEAD DRUM – LEVERLOCK CLOSURE**
1. CHECK GASKET – to ensure cover gasket is properly fitted into cover groove (see Fig. 1 or 2).
2. PLACE COVER ON DRUM – being careful to properly seat gasket around curl (see Fig. 3).
3. OPEN LEVERLOCK – and place expanded ring on to the drum cover with the vertical skirt engaging the cover/bottom portion. Downward pressure along with tapping the outside of the ring may assist in an even closure (see Fig. 7).
4. CLOSE LEVERLOCK – by slowly and carefully pulling the LEVERLOCK so that the outer edge engages the cover/bottom portion. Downward pressure along with tapping the outside of the ring may assist in a complete closure (see Fig. 8).
5. ENGAGE LOCK – to complete closure.

**DRUMS WITH FITTINGS**
1. CHECK GASKETS – and ensure gasket is properly seated on plug.
2. TIGHTEN – to specifications listed in the table, and do not cross thread.

**Table: Plug Types**

<table>
<thead>
<tr>
<th>Plug Type</th>
<th>Tru-Sure Style</th>
<th>Releke Style (Plastic)</th>
<th>Releke Style (Steel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket Types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buna</td>
<td>Poly or Talon</td>
<td>PE / FPP (Composite Drums)</td>
<td>Poly</td>
</tr>
<tr>
<td>1” Plug</td>
<td>12 ft-lbs</td>
<td>20 ft-lbs</td>
<td>9 ft-lbs</td>
</tr>
<tr>
<td>2” Plug</td>
<td>20 ft-lbs</td>
<td>30 ft-lbs</td>
<td>10 ft-lbs</td>
</tr>
</tbody>
</table>

**Importance Notes:**
1. Closure instructions Rev. D are valid to close all product tested with and/or manufactured under Closure Instructions Rev. C & Rev. B. Revisions are clerical and do not affect the actual closing of product.
2. A drum is properly closed only when all steps are completed in the matter and sequence indicated. If difficulties are encountered, do not ship the drum call Skolnik for further instruction.
3. Under the applicable DOT regulations, any changes made to the method of closure or closure components constitute a change in the design type of this packaging, and invalidates the certification.
4. After filling and prior to transport, the shipper should verify the torque of all closures to determine if the effects of heating and cooling or gasket relaxation have resulted in the need to re-tighten the closure.
5. Drums (other than the composite) are tested at room temperature.

Skolnik Industries, Inc.
4905 S. Roberts Avenue
Chicago, IL 60632-4260 USA
773.723.2000 / 800.441.2709
www.skolnik.com

Page 1 of 1
Drum Handling System Operation

Attachment 2 – Myers Closure Instructions

CLOSURE SYSTEM COMPONENTS

To ensure compliance to the UN marking, the filler must inspect and re-tighten as necessary all applicable closures prior to shipping. Damaged gaskets must be replaced prior to shipment. Damage includes, but is not limited to, tearing, twisting, and deterioration.

This Procedure is for new steel drums manufactured by Myers Container and drums reconditioned /renumbered by CMS, LLC only!

DO NOT USE IF RING TOUCHES Torque is 60 ft-lbs

1A2 OPENHEAD DRUM CLOSURE PROCEDURE

1. Inspect gasket for proper seating and remove any residue from cup prior to cover installation.
2. Place the ring on the drum, making sure the cover gasket is seated against the lip of the drum opening (the cup) and the gasket recess on the cover. The gasket should not protrude beyond the cover or the drum cup.
3. Place the bolt ring onto the drum. Make sure that the bolt ring is oriented so that the lugs are positioned below the top surface of the drum. You will be required to position the ring with a rubber or other non-scratching material; then use hand pressure to compress gasket. Make sure it is centered on the drum cup. Check to see that the cover and drum cup are pinched together and within the recess of the ring.
4. Thread ring onto bolt and then into threaded hub, and tighten bolt to 60 ft-lbs of torque. Inspect around the circumference of the ring, while torque is applied, to further seat the head onto the drum. Continue hammering on the ring circumference and torque the bolt until the torque is stabilized at 60 ft-lbs; and does not loosen when further hammering on the ring circumference is performed. Tighten the nut against the unthreaded lug. The ring ends must not touch when 60 ft-lbs of torque is applied.

It is the filler's responsibility to verify that the container has been properly closed prior to shipping filled drums.

Closing Instructions: This document must be passed along with the container within your facility, or to whom the packaging is transferred, and ultimately to the personnel responsible for shipping and closure. It must be used as a training document to complete closure of your container.

- For 1A2 Type A tested packages – please refer to the test document for additional requirements
- In order for your Myers Container or Myers Container Management Services LLC drum to satisfy the 21st century requirements, these assembly instructions must be strictly adhered to. Any other method of assembly will immediately invalidate the UN and DOT performance ratings of the drum.
- The stopper must verify the appropriate use of a liner. A liner which extends between the gasket and the cup may only be used if UN Performance Tests indicate a liner was used in testing.

RIVET CLOSING PROCEDURES

1. Inspect all bungs to ensure gaskets are in place and not twisted or damaged
2. Insert all bungs and hand thread in a clockwise direction until hand tight. Do not cross thread
3. Utilizing a CALIBRATED TORQUE WRENCH confirm and/or torque all bungs to required minimum specification.
4. Do not over tighten
5. Wipe clean any spillage or debris.
6. If required, apply applicable cap seal.

As tested torque settings are listed. Acceptable tolerance ±2 ft-lbs

<table>
<thead>
<tr>
<th>Plug Type</th>
<th>Type I Octagon Base With Round Threaded Bung</th>
<th>Type II Serrated Base, Hexagon Bung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plug Material</td>
<td>Steel</td>
<td>Steel</td>
</tr>
<tr>
<td>Gasket Type</td>
<td>Rubber</td>
<td>Poly</td>
</tr>
<tr>
<td>2&quot; Plug</td>
<td>20 ft-lb</td>
<td>20 ft-lb</td>
</tr>
<tr>
<td>8&quot; Plug</td>
<td>16 ft-lb</td>
<td>9 ft-lb</td>
</tr>
</tbody>
</table>

For more information, contact your Account Manager or, call (800) 406-9377 www.myerscontainer.com

1/26/2013 Rev. 2 T. Ross Page 1 of 1

Type Document No. REV/ Mod Release Date Page
REFERENCE ETF-80C-001 A-10 01/14/2019 32 of 32