Changes “Other Than Inconsequential” Require These Additional Reviews:

- Engineering Checker (EC)
- Criticality Safety

USQ #TF-17-1795-S, Rev.2

<table>
<thead>
<tr>
<th>CHANGE HISTORY (≤ LAST 5 REV-MODS)</th>
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<td>F-3</td>
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<td>F-0</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for receiving waste from 219-S WT-TK-102 into Tank 241-SY-101 through transfer line SNL-5350.

1.2 Scope

This procedure applies to all tanks, waste transfer lines, instrumentation and equipment that are associated with the waste transfer from tank 219-S WT-TK-102 to 241-SY-101.

This procedure is used in conjunction with 222-S Laboratory procedure ATS-LO-100-177 to transfer waste from 219-S WT-TK-102 to Tank 241-SY-101. This procedure applies to Tank Farm (non-219-S) tanks.

2.0 INFORMATION

2.1 Terms and Definitions

2.1.1 Batch documentation:
This is when a checklist or table with multiple tasks is followed but not filled out “AS-YOU-GO” to perform a task. This is not allowed. Each item on a checklist or table shall be signed off as it is completed by the performer.

2.1.2 Flow Transient:
A sudden change in flow velocity and pressure.

2.1.3 MBD:
Material Balance Discrepancy

2.1.4 Operable:
- Preventative Maintenance checks have been performed within required periodicity (PMID current) with a “satisfactory” result
- TFMCS indications associated with this procedure are not in alarm
- Instrument/component being inspected appears to be functioning as designed (i.e., charts are inking, annunciator lights work; any associated meters are active, etc.)
- Devices and alarms associated with this transfer are enabled and not inhibited
- Local strobes are not required for leak detection.
2.1 Terms and Definitions (Cont.)

2.1.5 Place transfer in a safe configuration is defined as follows:
- Shutdown transfer pump
- Install administrative lock condition
- Respond to the condition and/or event that necessitated placing the transfer in a safe configuration.

2.1.6 PMID Current:
Preventative Maintenance checks have been performed within required periodicity with a “satisfactory” result.

2.1.7 WCA:
Waste Compatibility Assessment

2.2 General Information

2.2.1 In an emergency, the transfer may be shut down by positioning the “Transfer Permit/Deny handswitch” S219-TRANS-OUTPUT to DENY from HMI station (See Section 5.4 - Perform Transfer-In-Progress Operations.)

2.2.2 Independent Verification is performed in accordance with TFC-OPS-OPER-C-34, Independent Verification.

2.2.3 Signature Sheet 1 – Transfer Signature and Initials Identification Sheet is provided for personnel who will be initialing and/or signing this procedure.

2.2.4 Data Sheet 5 – Transfer Information Record Sheet is provided to document miscellaneous notes, comments, or other transfer related remarks.

2.2.5 This procedure works in coordination with 222-S Laboratory procedure ATS-LO-100-177.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 An approved IH Sampling Plan must be in effect prior to starting transfer.

3.2 Equipment Safety

N/A

3.3 Radiation and Contamination Control

3.3.1 When this procedure is worked in radiological areas, an approved radiological work permit (RWP) is required. If radiological conditions or work performed falls outside the scope of the RWP all work activities must be discontinued until a new or revised RWP has been issued in accordance with TFC-ESHQ-RP_RWP-C-03, ALARA Work Planning.

3.3.2 Radiological monitoring requirements including Window-Open and Window-Closed dose rate and associated monitoring frequencies for this transfer are contained in the corresponding Radiological Monitoring Plan of this procedure. Waste transfers according to this procedure can only be performed when coordinated with Radiological Control.
3.4 Environmental Compliance

3.4.1 Tanks and ancillary equipment including piping and pits/structures must be designated as RCRA compliant based on review of the current Routing Board. RCRA compliant includes the following as shown on the current Routing Board (H-14-107346):
- “Green” primary Transfer Routes and pits/structures
- “Blue Dashed” drain line - secondary containment system, non-pressurized lines from the RCRA compliant pits/structures.

3.4.2 Pit Leak detection on active transfer routes must be functionally tested prior to any liquid being moved/transfered through a pit/structure within 365 days of the last satisfactory functional test.

3.4.3 Monitoring of leak detectors required during the following activity:
- Active transfer
- Prior to admin lock removal.

3.4.4 Shift Office(s) and Environmental On-Call must be notified per the Environmental On-Call List if any of the following occur:
- Waste is inadvertently transferred into an out-of-service or non-compliant DST system component
- Misrouting of waste
- Spills or leaks to the environment
- Release of waste into secondary containment
- Alarming leak detectors on the active transfer route
- Unplanned exhauster outages.

3.4.5 Active ventilation on the receiving tank must be maintained during the waste transfer. During periods of loss of active ventilation (i.e., exhauster shutdown) or record sampler outage, the waste transfer must be shut down.

3.4.6 Temporary or permanent covers are to be installed on all pits/structures located along the transfer route before starting waste transfer operations.

3.4.7 Pre and post-job radiological surveys are required.

3.4.8 The DST liquid leak detection system requires the following:
- Three continuously operating annulus leak detectors (e.g., Enraf gauges)
- At least one continuously operating in-tank surface level monitor (e.g., Enraf, Manual Tape, or equivalent) installed within the primary DST.
3.5 Limits

TECHNICAL SAFETY REQUIREMENTS

HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements

LCO 3.4 DST Induced Gas Release Event Flammable Gas Control
AC 5.7 Waste Leak Evaluation Program
AC 5.8.1 DST Induced Gas Release Event Evaluation
AC 5.8.2 Flammable Gas Controls
AC 5.8.5 Waste Transfer System Overpressure and Flow Transient Protection
AC 5.8.8 Waste Transfer System Freeze Protection
AC 5.9.1 DST and SST Time to Lower Flammability Limit
AC 5.9.2 Ignition Controls
AC 5.9.3 Waste Transfer-Associated Structure Cover Installation and Door Closure
AC 5.9.4 Waste Characteristics Control
AC 5.9.5 Nuclear Criticality Safety
DF 6.1 Waste Transfer Primary Piping Systems
DF 6.1.4 Inspections for Waste Leaks
DF 6.9 Waste Transfer Freeze Protection Temperature Monitoring Systems

HNF-IP-1266, Tank Farms Operations Administrative Controls

OPERATING SPECIFICATION DOCUMENTS

OSD-T-151-00007 Operating Specifications for the Double-Shell Tanks

ENVIRONMENTAL, SAFETY, HEALTH AND QUALITY DOCUMENTS

RPP-16922 ENVIRONMENTAL SPECIFICATION REQUIREMENTS
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Calculator
- Communication devices
- Key for administrative lock(s)

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- ATS-LO-100-177, 222-S Laboratory Transfer 219-S Tank 102 Liquid Waste to Tank Farms, Pipeline
- TO-025-002, Operate Tank Farms Monitor and Control System HMIs
- TO-040-660, Obtain/Record Double-Shell Tank Temperature Data
- TFC-OPS-OPER-C-22, Control and Use of Administrative Locks
- TFC-OPS-OPER-C-34, Independent Verification
- TFC-ESHQ-RP_MON-C-11 High Radiation Area Controls
- An approved Radiological Monitoring Plan
- An approved IH Sampling Plan.
5.0 PROCEDURE

5.1 Place 241-SY Facility in Transfer Configuration

NOTE - Steps in this section may be performed concurrently or in any logical order.

5.1.1 CONFIRM Transfer OE has completed a transfer limitations review for the following conditions:

- No Temporary Modification and Bypass Log bypasses that would prevent this transfer are installed
- No Standing Orders that would prevent this transfer have been issued
- No Red Arrow entries that would prevent this transfer have been logged
- No open Action Tracking Binder (ATB) items that would prevent this transfer.
- Administrative locks are hung on all physically connected transfer pumps.

5.1.2 IF lighting is not adequate. ENSURE lighting is staged and operable at the location identified in the waste leak path evaluation.

5.1.3 Transfer OE CONFIRM with Shift Manager that the 241-SY-tank farm in-service primary ventilation system is operating.

5.1.4 AFTER 222-S Laboratory personnel have provided an estimated transfer Start time, PERFORM the following:

5.1.4.1 NOTIFY Shift Manager(s) of the estimated date/time the transfer will start.

5.1.4.2 NOTIFY IHT of estimated date/time transfer will start AND RECORD approved transfer IH Sampling Plan number.

IH Sampling Plan # ________________________________

5.1.4.3 NOTIFY RadCon of estimated date/time transfer will start AND CONFIRM Radiological Monitoring Plan is released.

Radiological Monitoring Plan # ____________________________

5.1.5 PERFORM required equipment checks per Checklist 3 – Safety Basis and Environmental Equipment Checks. (AC 5.9.3)
5.1 Place 241-SY Facility in Transfer Configuration (Cont.)

5.1.6 ENSURE leak detector(s) and power supplies that are identified on Checklist 3 – Safety Basis and Environmental Equipment Checks are RESERVED per TO-025-002.

5.1.7 ENSURE Engineering has performed the following:

- Completed and signed Checklist 1 – Engineering Transfer Controls. (LCO 3.4, AC 5.7, AC 5.8.1, AC 5.8.2, AC 5.8.5, AC 5.8.8, AC 5.9.1, AC 5.9.2, AC 5.9.4, AC 5.9.5, OSD-T-151-00007)

- Entered data into Data Sheet 2 – 241-SY Intermediate Material Balance.

- Entered data into Data Sheet 3 – 241-SY-101 Temperature Monitoring.

5.1.8 OBTAIN AND RECORD initial temperature readings in START column on Data Sheet 3 – 241-SY-101 Temperature Monitoring. (OSD-T-151-00007)

5.1.8.1 IF any thermocouple readings cannot be obtained, REQUEST Waste Transfer Engineer to evaluate condition AND

PROCEED per Transfer OE based upon engineering recommendations.
5.1 Place 241-SY Facility in Transfer Configuration (Cont.)

5.1.9 ENSURE HPTs have performed the following in accordance with the Radiological Monitoring Plan:

- Baseline dose rate survey(s) within 7 days of removing administrative lock AND Recorded the RSR number on Data Sheet 6 – RSR Survey Log.

- Pre-transfer inspection within 20 hours of removing administrative lock AND Completion date and time was recorded on Data Sheet 5 – Transfer Information Record Sheet.
5.2 Prepare to Remove Administrative Lock Condition from Valve CA-V-6607

---

5.2.1 VERIFY Section 5.1 has been satisfactorily completed.

[Signature] / [Print (First & Last)] / [Date]
Transfer OE

---

5.2.2 OBTAIN AND RECORD initial sending and receiving tank data in START column on Data Sheet 1 – 241-SY Start/Final Material Balance.
AND

PERFORM calculations.

---

5.2.3 OBTAIN AND RECORD physically connected and/or interconnected tank liquid level data in START column on Data Sheet 4 – Physically/Interconnected Tank Liquid Level Monitoring.

---

5.2.4 CONFIRM the following:

- No open Action Tracking Binder (ATB) items that would prevent this transfer exist
- No Red Arrow entries that would prevent this transfer have been logged
- All alarms associated with Checklist 4 – Leak Detectors and Power Supplies for this transfer are CLEAR at monitoring stations unless alternate leak detection method is being used.
- All personnel monitoring this transfer are in direct communication with MBD Operator.

---

5.2.5 PERFORM visual inspection to determine if excavation activities are within 5 feet of direct or physically connected transfer lines.
5.2 Prepare to Remove Administrative Lock Condition from Valve CA-V-6607 (Cont.)

5.2.6 IF any excavations are within 5 feet of the direct or physically connected transfer lines, PERFORM the following:

5.2.6.1 ENSURE excavations are controlled and managed consistent with TFC-ESHQ-RP_MON-C-11.

5.2.6.2 REQUEST Engineering re-evaluate Checklist 1 – Engineering Transfer Controls with identified excavation AND RECORD results.

5.2.6.3 PROCEED per Transfer OE based upon engineering recommendations.
5.3 Remove Administrative Lock Condition from Valve CA-V-6607

_____ 5.3.1 WHEN requested by 222-S Laboratory personnel to remove administrative lock, Transfer OE CONTACT the Shift Manager to:

_____ 5.3.1.1 OBTAIN authorization to remove administrative lock condition for transfer pump.

_____ 5.3.1.2 REQUEST Shift Manager to ISSUE a Shift Office Event Notification (SOEN) message alerting personnel transfer from 219-S to 241-SY-101 is about to begin.

_____ 5.3.2 MONITOR leak detectors/power supplies for this transfer from TFMCS station per TO-025-002 or at the field location for leak detectors per Operator Actions in Checklist 4 – Leak Detectors and Power Supplies “Active Transfer.” (DF 6.1.4)

_____ 5.3.3 REMOVE administrative lock condition in accordance with TFC-OPS-OPER-C-22.

_____ 5.3.4 NOTIFY Shift Manager that the administrative lock for valve CA-V-6607 has been removed.

_____ 5.3.5 OBTAIN Transfer OE permission to start transfer.

________________________ / __________________________ / __________
Signature Print (First & Last) Date
Transfer OE

_____ 5.3.6 NOTIFY 222-S Laboratory personnel administrative lock has been removed from valve CA-V-6607 AND

Transfer OE has authorized transfer to START.
5.4 Perform Transfer-In-Progress Operations

NOTE - Steps within this section may be performed concurrently or in any logical order and may be repeated.

5.4.1 WHEN notified by 222-S Laboratory personnel, ENSURE “Transfer Permit/Deny handswitch” S219-TRANS-OUTPUT is POSITIONED to PERMIT from HMI station, in accordance with TO-025-002.

5.4.2 WHEN notified by 222-S Laboratory personnel transfer has started, USE radio to make an announcement (e.g., the transfer from 219-S to 241-SY-101 has started).

5.4.3 CONFIRM the following personnel received Transfer-Start announcement:

- Transfer IHT
- Transfer HPT
- TMACS Operator
- Shift Manager.

5.4.3.1 REQUEST Shift Manager to issue a Shift Office Event Notification (SOEN) message notifying personnel transfer has started.

5.4.4 RECORD actual time and date transfer was started on material balance Data Sheet 1 – 241-SY Start/Final Material Balance.

5.4.5 CONFIRM 241-SY-101 liquid level shows a rise after start of transfer pump within:

<table>
<thead>
<tr>
<th>Minutes</th>
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<tbody>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

5.4.6 NOTIFY 222-S Laboratory personnel of increase.
5.4 Perform Transfer-In-Progress Operations (Cont.)

5.4.7 REQUEST HPT to PERFORM radiological survey(s) in accordance with the Radiological Monitoring Plan AND RECORD RSR number on Data Sheet 6 – RSR Survey Log.

5.4.7.1 IF any dose rate is above the anticipated range, but is below the limit specified in the Radiological Monitoring Plan, PERFORM additional (more frequent) radiological surveys at affected location(s) during the transfer AND RECORD increased frequency and RSR number(s) on Data Sheet 5 – Transfer Information Record Sheet.

5.4.8 IF transfer shutdown criteria are met as listed on Table 1 – Transfer Shutdown Criteria For Tank Farm Operations, REQUEST 222-S Laboratory personnel to SHUT DOWN transfer. OR IF in an emergency, POSITION “Transfer Permit/Deny handswitch” S219-TRANS-OUTPUT to DENY from HMI station, in accordance with TO-025-002 AND

5.4.8.1 CONFIRM 219-S transfer pump stops.

5.4.8.2 IF shutdown is due to siphon station(s) leak detector alarm, PERFORM radiological survey at affected station per Radiological Monitoring Plan AND RECORD RSR number(s) on Data Sheet 5 – Transfer Information Record Sheet.

5.4.9 OBTAIN AND RECORD intermediate transfer data on Data Sheet 2 – 241-SY Intermediate Material Balance 30 minutes (NTE 45 minutes) after start of transfer pump.

5.4.10 OBTAIN AND RECORD physically connected tank liquid level data on Data Sheet 4 – Physically/Interconnected Tank Liquid Level Monitoring 30 minutes (NTE 45 minutes) after start of transfer pump.
5.5 Perform Post-Shut Down Operations

5.5.1 WHEN notified by 222-S Laboratory of shutdown of transfer pump RECORD actual time and date transfer pump was stopped on material balance Data Sheet 1–241-SY Start/Final Material Balance.

5.5.2 WHEN notified by 222-S Laboratory of the final tank volume (in gallons) remaining in 219-S WT-TK-102, RECORD in FINAL column Data Sheet 1–241-SY Start/Final Material Balance.

5.5.3 WHEN requested by 222-S Laboratory, POSITION “Transfer Permit/Deny handswitch” S219-TRANS-OUTPUT to DENY from HMI station in accordance with TO-025-002.

5.5.3.1 NOTIFY 222-S Laboratory personnel positioning has been completed.

5.5.4 USE radio to make an announcement (e.g., the transfer from 219-S to 241-SY-101 has been shut down).

5.5.5 IF shutdown is due to pit/structure leak detector alarm, PERFORM the following:

5.5.5.1 REQUEST HPT to PERFORM radiological survey at affected pit/structure in accordance with the Radiological Monitoring Plan.

5.5.5.2 RECORD RSR number(s) on Data Sheet 5 – Transfer Information Record Sheet.

5.5.6 IF pump shutdown is due to abnormal circumstances, DOCUMENT out of specification condition(s) and actions taken on Data Sheet 5 – Transfer Information Record Sheet.
5.6 Install Administrative Lock Condition

____ 5.6.1  AFTER 222-S Laboratory personnel make notification that valve CA-V-6607 has been closed, OBTAIN Shift Manager’s authorization to install administrative lock AND INSTALL administrative lock condition on valve CA-V-6607 for 219-S transfer pump per TFC-OPS-OPER-C-22.

____ 5.6.1.1 NOTIFY applicable Shift Manager(s) of time administrative lock was installed.

____ 5.6.1.2 NOTIFY Facility Operations Manager of time administrative lock was installed.

____ 5.6.2  IF transfer is complete, REQUEST Shift Manager to issue a Shift Office Event Notification (SOEN) message notifying personnel transfer from 219-S to 241-SY-101 has been completed.

____ 5.6.3  MONITOR leak detectors/power supplies for this transfer from TFMCS station per TO-025-002 or at the field location for leak detectors per Operator Actions in Checklist 4 – Leak Detectors and Power Supplies “Active Transfer.” (DF 6.1.4)
5.7 Restoration

NOTE - Steps in this section may be performed in any logical order.

5.7.1 REQUEST HPT to PERFORM COMPLETION radiological survey in accordance with the Radiological Monitoring Plan AND RECORD RSR number(s) on Data Sheet 6 – RSR Survey Log.

5.7.2 ENSURE the final temperatures have been obtained and recorded on Data Sheet 3 – 241-SY-101 Temperature Monitoring.

5.7.2.1 IF thermocouples are not reporting, NOTIFY Tank Farm Waste Transfer Engineer AND DOCUMENT on Data Sheet 5 – Transfer Information Record Sheet.

5.7.3 OBTAIN AND RECORD physically connected and/or interconnected tank liquid level data in FINAL column on Data Sheet 4 – Physically/Interconnected Tank Liquid Level Monitoring.

5.7.4 AFTER pump has been shut down for 1 hour, DISCONTINUE monitoring of leak detectors/power supplies for this transfer (DF 6.1.4).

5.7.5 AFTER pump has been shut down for 1 hour, OBTAIN AND RECORD final data in FINAL column on Data Sheet 1 – 241-SY Start/Final Material Balance. AND PERFORM calculation.

5.7.6 IF temporary lighting is no longer needed, TURN off AND NOTIFY Shift Manager(s) that temporary lighting may be removed.

5.7.7 RELEASE leak detector/power supplies that are identified on Checklist 4 – Leak Detectors and Power Supplies per TO-025-002.
Transfer From 219-S TANK-102 to 241-SY-101

5.8 Perform Post Transfer Activities

NOTE - Steps in this section may be performed concurrently or in any logical order.

_____ 5.8.1 CONFIRM
Signature Sheet 1 – Transfer Signature and Initials Identification Sheet is completed by all personnel who initialed and/or signed this procedure.

_____ 5.8.2 Transfer OE SEND completed copies of the following to mailbox “^Process Engineering & Environmental”
Data Sheet 1 – 241-SY Start/Final Material Balance and
Data Sheet 5 – Transfer Information Record Sheet.
5.9 Records

The following records are generated during the performance of this procedure.

5.9.1 **SUBMIT** the completed records to the shift office for record retention.

- This procedure in its entirety.

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.
## Transfer From 219-S TANK-102 to 241-SY-101

### Checklist 1 – Engineering Transfer Controls

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<th>Sheet 1 of 2</th>
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<tr>
<td>Exp. Date</td>
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</table>

- **Line Hold-up Volume** = approximately 0.44 DST inches at approximately 1200 gallons
- **Estimated time of arrival** = 20 minutes at approximately 60 gpm
- **Estimated volume of transfer**

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<thead>
<tr>
<th></th>
<th>DST inches</th>
</tr>
</thead>
</table>

- **WCA complete and evaluation requirements satisfied** (AC 5.8.1, AC 5.9.1, AC 5.9.4, AC 5.9.5)

  - Yes

- **Waste specific gravity is less than 1.1 as specified in WCA (AC 5.8.5)**

  - Yes

- **Verify the following transfer system component is RCRA-compliant: SNL-5350 including the siphon station. (SNL-5351 is no longer RCRA compliant).**

  - Yes

- **Tank 241-SY-101 estimated final liquid level (inches)**

  - 

- **Tank 241-SY-101 Maximum operating limit per Waste Compatibility Assessment (inches)**

  - 

- **All required Safety-Significant SSCs are active in the Safety Equipment Compliance Database (SECD) for the proposed transfer. (SNL-5351 must be active in the SECD due to it being physically connected to the planned waste transfer route).**

  - Yes

- **A pressure test of the encasement of SNL-5350 has been completed.**

  - Yes

- **Preventative Maintenance check for ET-201339 has been completed**

  - Yes

- **Failure Limits of the physically connected safety-significant waste transfer primary piping systems, HIHTL primary hose assemblies, and isolation valves for double valve isolation are equal to or greater than overpressure and flow transient conditions and technical recommendations are incorporated into the transfer procedure and technical recommendations are incorporated into the transfer procedure (AC 5.8.5)**

  - Yes

- **Document Number:**

  - HNF-IP-1266 requirements are implemented in this procedure.

  - Yes

## COMMENTS:

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Checklist 1 Continued On Next Page
## Checklist 1 – Engineering Transfer Controls (Cont.)

<table>
<thead>
<tr>
<th>TRANSFER LOG NUMBER:</th>
<th>Sheet 2 of 2</th>
</tr>
</thead>
</table>

### Waste Leak Path Evaluation

- Evaluation complete per TFC-ENG-FACSUP-C-26 and technical recommendations are incorporated into transfer procedure (AC 5.7)
- **Document Number:**
- **Yes** ☐

### Winterization and SAC 5.8.8 Requirements

- Winterization and SAC 5.8.8 requirements have been addressed per technical evaluation identified below.
- **Document Number:** RPP-TE-56299
- **Current Rev.:**
- **Yes** ☐

- **(If performed outside the applicability of SAC 5.8.8, verify winterization requirements ONLY).**

### LCO 3.4 Applicability

- Is LCO 3.4 applicable to this transfer as indicated in WCA? (AC 5.8.1)
- **Yes** ☐
- **No** ☐

- If LCO 3.4 is applicable, are the appropriate monitoring, controls and actions included in this procedure? (LCO 3.4)
- **Yes** ☐
- **N/A** ☐

### Ignition Source Control Requirements

- Ignition Source Control Requirements Screening complete (form A-6003-774) (AC 5.8.2, 5.9.2)
- **Yes** ☐

### Comments:

- 
- 

---

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

Waste Transfer Engineer

---

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

Waste Transfer Engineer Checker
## Checklist 2 – Re-Baselining for Out-of Specification MBD

<table>
<thead>
<tr>
<th>REVIEW (✓)</th>
<th>CONSIDERATIONS</th>
<th>Sheet __ of __</th>
</tr>
</thead>
<tbody>
<tr>
<td>DETERMINE</td>
<td>liquid level instruments for all tanks on direct and physically connected path are functioning properly</td>
<td></td>
</tr>
<tr>
<td>REVIEW</td>
<td>liquid levels for all tanks inter-connected to direct Transfer Route</td>
<td></td>
</tr>
<tr>
<td>REVIEW</td>
<td>status of Transfer Route leak detectors that are inter-connected to and part of direct Transfer Route.</td>
<td></td>
</tr>
<tr>
<td>DETERMINE</td>
<td>if any liquid could have been added to either sending or receiving tank from another source (drains, snow-melt, rain, water flush, line hold-up)</td>
<td></td>
</tr>
<tr>
<td>REVIEW</td>
<td>Radiological Monitoring Plan survey results</td>
<td></td>
</tr>
<tr>
<td>REQUEST</td>
<td>Engineering to review waste tank history, WCA, and/or past transfer data for any other potential MBD sources (e.g., gas retention, solids).</td>
<td></td>
</tr>
</tbody>
</table>

Signature / Print (First & Last) / Date

**Transfer OE (Prepared By)**

**EVALUATION AND JUSTIFICATION FOR RE-BASELINING MBD: (TFC-ENG-CHEM-D-44)**

Signature / Print (First & Last) / Date

**Waste Transfer Engineer/ Shift Technical Engineer**

Signature / Print (First & Last) / Date

**Waste Transfer Engineer Checker**
# Checklist 3 – Safety Basis and Environmental Equipment Checks

<table>
<thead>
<tr>
<th>Cover Location</th>
<th>Operator Initials</th>
<th>Date Inspection Performed</th>
<th>Time Inspection Performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siphon Station 5350 System Cover in place (East of 244-S DCRT outside of S Complex fence) (AC 5.9.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siphon Station 5351 System Cover in place (East of 244-S DCRT outside of S Complex fence) (AC 5.9.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature / Print (First & Last) / Date

Transfer OE

**COMMENTS:**

Checklist 3 Continued On Next Page
## Tank Pit/Structure Leak Detection

<table>
<thead>
<tr>
<th>INSTRUMENT IDENTIFICATION</th>
<th>PMID</th>
<th>PMID CURRENT TRANSFER OE INITIALS/DATE</th>
<th>TFMCS NOMENCLATURE</th>
<th>ALARM POINT OPERABLE AT TFMCS</th>
<th>OPERATOR INITIALS/DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SY101-WT-LDE-150A/B</td>
<td>WT-107840</td>
<td></td>
<td>SY101-LD-150</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>SY101-WT-LDE-152A/B</td>
<td>WT-107842</td>
<td></td>
<td>SY101-LD-152</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>SY103-WT-LDE-151A/B</td>
<td>WT-107841</td>
<td></td>
<td>SY103-LD-151</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>SY103-WT-LDE-153A/B</td>
<td>WT-107843</td>
<td></td>
<td>SY103-LD-153</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-WT-LDE-154A/B</td>
<td>WT-107844</td>
<td></td>
<td>S219-LD-154</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-WT-LDE-155A/B</td>
<td>WT-107845</td>
<td></td>
<td>S219-LD-155</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-WT-LDE-156A/B</td>
<td>WT-107846</td>
<td></td>
<td>S219-LD-156</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-WT-LDE-157A/B</td>
<td>WT-107847</td>
<td></td>
<td>S219-LD-157</td>
<td>Y / N</td>
<td></td>
</tr>
</tbody>
</table>

Signature / Print (First & Last) / Date

Transfer OE

COMMENTS:

Checklist 3 Continued On Next Page
## Tank Pit/Structure Power Supply

<table>
<thead>
<tr>
<th>TFMCS NOMENCLATURE</th>
<th>PMID</th>
<th>ALARM POINT OPERABLE AT TFMCS</th>
<th>OPERATOR INITIALS/DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SY241-JAX-107</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>SY241-JAX-207</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S252-JAX-108</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S252-JAX-208</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-JAX-107</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
<tr>
<td>S219-JAX-207</td>
<td>N/A</td>
<td>Y / N</td>
<td></td>
</tr>
</tbody>
</table>

Signature / Date

Transfer OE

Print (First & Last) / Date

COMMENTS:

Checklist 3 Continued On Next Page
### Primary Level Indication and Annulus Leak Detection

<table>
<thead>
<tr>
<th>INSTRUMENT IDENTIFICATION</th>
<th>PMID</th>
<th>Must Be Done By</th>
</tr>
</thead>
<tbody>
<tr>
<td>SY101-WST-LIT-102</td>
<td>WT-003665</td>
<td></td>
</tr>
<tr>
<td>SY101-WSTA-LDT-151</td>
<td>WT-006522</td>
<td></td>
</tr>
<tr>
<td>SY101-WSTA-LDT-152</td>
<td>WT-006523</td>
<td></td>
</tr>
<tr>
<td>SY101-WSTA-LDT-153</td>
<td>WT-006524</td>
<td></td>
</tr>
</tbody>
</table>

**RECEIVING TANK**

**COMMENTS:**

---

**Type:** CONTINUOUS  
**Document No.:** TO-430-080  
**Rev/Mod:** F-3  
**Release Date:** 05/02/2018  
**Page:** 29 of 39
Checklist 4 – Leak Detectors and Power Supplies

Operator Actions:
1. Active Transfer:
   a. CONTINUOUS monitoring is required prior to removing administrative lock until after the administrative lock condition has been reestablished for all leak detectors listed in the Active Transfer rows and for all power supplies listed below.

<table>
<thead>
<tr>
<th>TANK/PIT/STRUCTURE LEAK DETECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFMCS NOMENCLATURE</td>
</tr>
<tr>
<td>Active Transfer</td>
</tr>
<tr>
<td>SY101-LD-150</td>
</tr>
<tr>
<td>SY101-LD-152</td>
</tr>
<tr>
<td>SY103-LD-151</td>
</tr>
<tr>
<td>SY103-LD-153</td>
</tr>
<tr>
<td>S219-LD-154</td>
</tr>
<tr>
<td>S219-LD-155</td>
</tr>
<tr>
<td>S219-LD-156</td>
</tr>
<tr>
<td>S219-LD-157</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TANK/PIT/STRUCTURE POWER SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFMCS NOMENCLATURE</td>
</tr>
<tr>
<td>SY Tank Farm</td>
</tr>
<tr>
<td>SY241-JAX-107</td>
</tr>
<tr>
<td>SY241-JAX-207</td>
</tr>
<tr>
<td>Miscellaneous</td>
</tr>
<tr>
<td>S252-JAX-108</td>
</tr>
<tr>
<td>S252-JAX-208</td>
</tr>
<tr>
<td>S219-JAX-107</td>
</tr>
<tr>
<td>S219-JAX-207</td>
</tr>
</tbody>
</table>
## Data Sheet 1 – 241-SY Start/Final Material Balance

<table>
<thead>
<tr>
<th>Initial Pump START Time and Date</th>
<th>Final Pump STOP Time/Date:</th>
<th>Sheet of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>START</td>
<td>FINAL</td>
</tr>
<tr>
<td></td>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time:</td>
<td></td>
</tr>
</tbody>
</table>

219-S WT-TK-102 Volume (gallons)³

219-S WT-TK-102 Volume (DST inches = gallons ÷ 2750)  
A = A =

241-SY-101 Liquid Level (inches)  
D = D =

Material Balance (inches) (MB) = A + D =  
E = G =

Final Material Balance (inches) (FMBD) = G – E  
N/A FMBD =

Allowable Final MBD = ± 0.5 inches

<table>
<thead>
<tr>
<th>Operator Initials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer OE Review Initials</td>
</tr>
</tbody>
</table>

________________________ / ______________________ / ____________

Signature Print (First & Last) Date

Transfer OE Final Review

________________________ / ______________________ / ____________

Signature Print (First & Last) Date

Waste Transfer Engineer MBD Review

¹ Readings obtained from 222-S Operations.
# Transfer From 219-S TANK-102 to 241-SY-101

## Data Sheet 2 – 241-SY Intermediate Material Balance

<table>
<thead>
<tr>
<th>ACTUAL START TIME &amp; DATE (From Data Sheet 1)</th>
<th>+ ___ Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE:</td>
<td></td>
</tr>
<tr>
<td>TIME:</td>
<td></td>
</tr>
</tbody>
</table>

### 219-S WT-TK-102 Volume (gallons)

\[
A = \frac{219\text{-WT-TK-102 Volume (DST inches = gallons + 2750)}}{} 
\]

### 241-SY-101 Liquid Level (inches)

\[
D = \frac{241\text{-SY-101 Liquid Level (inches)}}{} 
\]

### Material Balance (inches)

\[
F = A + D \]

### MBD inches = F – E

\[
MBD = \frac{\text{Allowable MBD during Transfer} = \pm 1.0 \text{ inches (From Data Sheet 1)}}{} 
\]

\[
E = \frac{\text{Flow (GPM) = (A current - A previous) (2750) Pump Run Time [minutes]}}{} 
\]

### Operator Initials:

Operator Initials:

### Transfer OE Review Initials:

Transfer OE Review Initials:

---

1. Readings obtained from 222-S Operations.
## Data Sheet 3 – 241-SY-101 Temperature Monitoring

**SELECTOR SWITCH FIELD IDENTIFICATION NUMBER:**
SY-101-WST-SS-102 (Riser 17C).

Obtain the following manual readings once prior to and at the end of the transfer. Obtain manual field readings per TO-040-660.

### TANK: 241-SY-101

<table>
<thead>
<tr>
<th>SW POS</th>
<th>NOTE 1,2,3</th>
<th>TANK ELEVATION (INCHES)</th>
<th>MAXIMUM WASTE TEMPERATURE LIMIT PER WCA: °F</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>148</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>208</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>316</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>392</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>427</td>
<td></td>
</tr>
</tbody>
</table>

**M&TE Instrument ID:** *

**M&TE Calibration Due Date:** *

**Operator Initials:**
- Date:
- Time:

**Transfer OE Initials:**

---

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

**Transfer OE**

### Transfer Engineer Initial/Date (Maximum Temperature and Note Column)

- **Note 1**: Thermocouples taking sludge temperatures.
- **Note 2**: Thermocouple taking liquid temperature (dependent upon waste level as tank is filled).
- **Note 3**: Thermocouple taking vapor space temperature (will not be submerged during transfer operations).

**IF** a temperature exceeds the Maximum Waste Temperature Limit, **NOTIFY** Transfer OE that a Shut Down criteria has been met.

**IF** any liquid temperature readings are > 10 °F, from previous reading **CONTACT** Transfer OE to notify process engineering to determine if average bulk temperature has approached 10 °F/hr OSD Limit.

**IF** temperature difference between any successive thermocouples is > 55 °F, **NOTIFY** Transfer OE that a Shut Down criteria has been met.

* M&TE required for field readings only.

**COMMENTS:**

---
Transfer From 219-S TANK-102 to 241-SY-101
## Data Sheet 4 – Physically/Interconnected Tank Liquid Level Monitoring

<table>
<thead>
<tr>
<th>Liquid Levels of Tanks Physically Connected to Transfer Route</th>
<th>Sheet</th>
<th>of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual Start Time/Date (From Data Sheet 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tank ID#</td>
<td>Start</td>
<td>+ ___ Hours</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FINAL</td>
</tr>
<tr>
<td>241-SY-103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operators Initials:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer OE Review (Initials):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Signature / Print (First & Last) / Date

**Limits:** IF an ENRAF is used, an unexpected increase in liquid level of > 0.3 inches in DSTs physically/interconnected to the transfer route requires shutdown of transfer (Does not include Sending and Receiving Tanks).
## Data Sheet 5 – Transfer Information Record Sheet

<table>
<thead>
<tr>
<th>DATE/TIME</th>
<th>RECORD TRANSFER INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature / Print (First & Last) / Date

Transfer OE
**Transfer From 219-S TANK-102 to 241-SY-101**

**Data Sheet 6 – RSR Survey Log**

<table>
<thead>
<tr>
<th>INITIAL START TIME/DATE (from Data Sheet 1)</th>
<th>FINAL STOP TIME/DATE (from Data Sheet 1)</th>
<th>FREQUENCY¹</th>
<th>RSR NUMBER</th>
<th>HPT NAME</th>
<th>DATE/TIME COMPLETE</th>
<th>NEXT SURVEY DUE DATE/TIME</th>
<th>ALL READINGS WITHIN LIMITS</th>
<th>REVIEW RSR. VERIFY READINGS ARE WITHIN LIMITS OE INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>Y/N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFTER START UP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>Y/N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMPLETION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td>Y/N</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Frequencies listed are for normal operations where dose rates are within the anticipated range. IF any dose rate is above the anticipated range, but is below the limit specified in the Radiological Monitoring Plan, **PERFORM** additional (more frequent) radiological surveys at affected location(s) during the transfer evolution or have the Radiological Monitoring Plan revised. Record increased frequency on Data Sheet 5.
# Table 1 – Transfer Shutdown Criteria For Tank Farm Operations

<table>
<thead>
<tr>
<th>GENERAL ALARMS/CONDITIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Any surveillance time requirements are exceeded</td>
<td></td>
</tr>
<tr>
<td>Loss of Primary Ventilation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SENDING AND RECEIVING TANK VENTILATION SYSTEMS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of Primary Ventilation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LIQUID LEVELS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>An unexpected increase in liquid level of greater than 0.3 inches in 241-SY-103</td>
<td></td>
</tr>
<tr>
<td>241-SY-101 liquid level reaches a max liquid level per Data Sheet 2 – 241-SY Intermediate Material Balance</td>
<td></td>
</tr>
<tr>
<td>241-SY-101 liquid level does not show an increase within 20 minutes after starting transfer pump</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEAK DETECTION (DF 6.1.4)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activation and lock-in of any alarms associated with instruments listed on Checklist 4 – Leak Detectors and Power Supplies</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MBD</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MBD for this transfer exceeds the allowable MBD as specified on Data Sheet 2 – 241-SY Intermediate Material Balance</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COVER BLOCKS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Siphon station 5350/5351 cover is found inoperative or is discovered removed once administrative lock is removed.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRANSFER ROUTE EXCAVATION COVERS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>An excavation within 5 feet of any direct or physically connected transfer line that is not controlled and managed consistent with TFC-ESHQ-RP_MON-C-11.</td>
<td></td>
</tr>
<tr>
<td>An excavation within 5 feet of any direct or physically connected Transfer Route that has not been evaluated for freeze protection.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RADIATION READINGS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiological survey limits in accordance with the Radiological Monitoring Plan are exceeded.</td>
<td></td>
</tr>
</tbody>
</table>
### Signature Sheet 1 – Transfer Signature and Initials Identification Sheet

<table>
<thead>
<tr>
<th>SIGNATURE</th>
<th>NAME (Printed, First and Last)</th>
<th>INITIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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