TSR Compliance

AY102 Recirculation Module Operation

Tank Farm Plant Operating Procedure

USQ # TF-14-2282-S, Rev. 3

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-1</td>
<td>08/10/2017</td>
<td>Change to TFC-PLN-167.</td>
<td>Updated White Label statement in Section 3.1 to match changes to TFC-PLN-167. Deleted reference to TO-060-358 because procedure was inactivated.</td>
</tr>
<tr>
<td>H-0</td>
<td>10/17/2016</td>
<td>Periodic review comment resolution</td>
<td>Replaced the Hazard Risk 0 statement in Section 3.1 and Table 1. Reference screen in first part of Step. (Step 5.2.3, 5.3.3, 5.4.2). Table 1 instructions from header modified first instruction.</td>
</tr>
<tr>
<td>G-2</td>
<td>07/11/2016</td>
<td>Meet requirements for both Records Management and White Label program</td>
<td>Section 3.1 added White Label program statement. Updated RECORDS Section 5.6.</td>
</tr>
<tr>
<td>G-1</td>
<td>02/17/2016</td>
<td>Operations request to address project removing AY-102 Cooling Tower</td>
<td>Changes support removal of AY-102 cooling tower. Modified Table in Step 5.2.1, 5.3.1. New step 5.4.1. Deleted Steps 5.2.3, 5.3.3, 5.4.1. Deleted reference to PDI-AY2K45-1 Recirc Fan. Deleted &quot;Fan&quot; from Step 5.6.1. Modified Table 1 and Table 2. Delete Recirculation Mode: throughout procedure: 1.1, 2.1, 4.2.3, 5.1.9, Section 5.2</td>
</tr>
<tr>
<td>G-0</td>
<td>12/17/2014</td>
<td>Periodic review comment resolution. WRPS-PER-2013-1864.6</td>
<td>Corrected title of TO-060-356. Identified critical steps and added signature line.</td>
</tr>
</tbody>
</table>

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for establishing or configuring 241-AY-102 Recirculation Module in one of the following modes: HIGH HEAT or BYPASS CONFIGURATION.

1.2 Scope

1.2.1 This procedure applies to equipment and instrumentation associated with waste tank AY-102, the AY/AZ tank ventilation system equipment located in the AY tank farm and the ventilation system Monitor and Control System.

1.2.2 This procedure has been developed with the assumption that the AY/AZ tank ventilation system will be operating with a maximum of one tank in the High Heat mode. Having more than one tank in the High Heat mode is beyond the scope of this procedure and will require additional procedural guidance.

2.0 INFORMATION

2.1 Terms and Definitions

BYPASS CONFIGURATION - This configuration establishes a flow path which bypasses the tank recirculation cooling equipment. Tank exhaust flows from the tank through a bypass valve and then to the primary exhaust system.

HIGH-HEAT CONFIGURATION - This configuration establishes a once-through cooling flow path, which utilizes both the individual tank recirculation condenser and the primary condenser to cool tank exhaust.

2.2 General Information

2.2.1 Two Operators are required for performance of some sections of this procedure.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Personnel trained in the operation of breakers and disconnects will wear the following PPE as a minimum:
- Non-melting (untreated natural fiber) long-sleeved shirt
- Safety glasses
- Leather or insulating gloves
- Hearing protection.

3.1.2 Non-electrical worker accessing electrical enclosures must ensure the following:
- The enclosure must have a white label indicating that it has been evaluated.
- The work activity within the enclosure does not involve:
  - Reaching around or moving electrical equipment
  - Contacting electrical connectors/connections
  - By-passing protective shielding/barriers.

3.1.2.1 Stop and notify management if these conditions cannot be met, or if discrepancies exist (e.g. conflicting or missing labels, missing or damaged protective barriers).

3.2 Radiation and Contamination Control

3.2.1 Work in Radiological Areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.
AY102 Recirculation Module Operation

3.3 Environmental Compliance

3.3.1 To ensure reporting requirements are met, all planned and unplanned outages of tank farm exhausters exhaust monitoring systems, and required abatement control equipment must be reported to the applicable shift office and Environmental per the Environmental On-Call List per TFC-ESHQ-ENV-FS-C-01.

3.3.2 Environmental must be notified of any spills associated with operation of this equipment, including fuel, coolant, or blow down mixtures.

3.4 Limits

HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements
- LCO 3.1, DST Primary Tank Ventilation Systems
- LCO 3.4, DST Induced Gas Release Event Flammable Gas Control

4.0 PREREQUISITES

4.1 Performance Documents

The following procedures may be needed to perform this procedure:
- TO-060-350, Start, Stop and Operate AY/AZ Tank Ventilation Primary Exhaust System
- TO-060-356, Perform 702-AZ Exhauster Monitor and Control Operations
- ARP-T-251-00003 through -00030, alarm response procedures for the 241-AZ-702 Ventilation System.

4.2 Field Preparation

4.2.1 CONFIRM Shift Manager has approved operation or adjustment of 241-AY-102 Recirculation Module.

4.2.2 IF directed by Shift Manager, CONFIRM the following equipment is in service to support operation of the Recirculation Module.
- Monitor and Control System per TO-060-356
- Primary exhaust system per TO-060-350
5.0 PROCEDURE

NOTE - Sections and activities may be performed simultaneously or any logical order, as directed by Shift Manager/OE.
- Shift Manager may direct flows, pressures, and/or damper positions different than those stated in this section based upon field operating conditions.

5.1 Perform Valve, Electrical, and Hand Switch Lineup

NOTE - Section 5.1 is generally performed as a result of maintenance activities or start-up after a long term shutdown. Electrical line-up (Table 1) and recirculation system line-up (Table 2) are performed only if directed by the Shift Manager.

5.1.1 IF directed by Shift Manager/OE, **PERFORM** Section 5.1 OTHERWISE **GO TO** appropriate section of this procedure to perform recirculation, high heat, bypass, or isolate tank from primary vent system.

5.1.2 IF positioning electrical breakers is required, **ENSURE** personnel performing electrical line-ups have donned proper PPE. (Refer to Section 3.1)

5.1.3 IF directed per Shift Manager/OE, **ENSURE** electrical lineup per Table 1.

5.1.4 IF directed per Shift Manager/OE, **ENSURE** valving lineup per Table 2.

NOTE - SR 3.4.1 requires verification of tank exhaust airflow if inlet air-control station valves are repositioned.

5.1.5 **PRIOR** to operating any primary tank inlet station valves, **ENSURE** Shift Manager has evaluated applicability to LCO 3.4. (LCO 3.4)

5.1.6 **ENSURE** pressure control damper MK-AY102K1-1 is configured correctly per TO-060-350.

NOTE - SR 3.1.1 and SR 3.4.1 requires verification of tank exhaust airflow if the flow control valve is repositioned.

**Critical Step**

5.1.7 **PRIOR** to operating any primary tank flow control valves, **ENSURE** Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4. (LCO 3.1, LCO 3.4)

_____________ / ______________ / ______________
Signature
Procedure User
5.1 **Perform Valve, Electrical, and Hand Switch Lineup (Cont.)**

5.1.8 **ENSURE** flow control damper MK-AY102K1-2 is configured correctly per TO-060-350.

5.1.9 **IF** placing AY-102 Recirculation Module in High Heat Mode, **GO TO** Section 5.2,

**OR**

**IF** placing AY-102 Recirculation Module in Bypass Mode, **GO TO** Section 5.3,

**OR**

**IF** isolating Tank 241-AY-102 from the Primary Vent System, **GO TO** Section 5.4.
5.2 **Place AY-102 Recirculation Module in High Heat Mode**

5.2.1 **ENSURE** the following dampers at recirculation Module AY-402 are positioned as indicated:

<table>
<thead>
<tr>
<th>Damper</th>
<th>Damper Function</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK-AY102K4-1</td>
<td>Condenser Inlet</td>
<td>OPEN</td>
</tr>
<tr>
<td>MK-AY102K4-2</td>
<td>Moisture Separator Outlet</td>
<td>OPEN</td>
</tr>
<tr>
<td>MK-AY102K4-3</td>
<td>Recirculation Tank Return</td>
<td>CLOSED</td>
</tr>
<tr>
<td>MK-AY102K4-4</td>
<td>Recirculation Bypass line</td>
<td>CLOSED</td>
</tr>
</tbody>
</table>

5.2.2 **ON** MCS Graphic Screen 11, **CONFIRM** the following:
- Valve dampers indicate High Heat Mode lineup
- HI-HEAT indicator dot appears in GREEN.

5.2.3 **FROM** MCS graphic screens 11 and 15, **MONITOR** the following process variables to assure they are within range:
- PI-AY2K1-1 Tank Pressure (MCS graphic screen 15)
- FI-AY2K1-2 Exhaust Flow (MCS graphic screen 15)

5.2.4 **IF** tank vacuums and/or flows are outside of normal ranges, **ADJUST** tank vacuums and/or flows per TO-060-350.
5.3 Place AY-102 Recirculation Module in Bypass Mode

5.3.1 **ENSURE** the following dampers at recirculation module AY-402 are positioned as indicated.

<table>
<thead>
<tr>
<th>Bypass Mode Damper Lineup</th>
<th>Damper Function</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>MK-AY102K4-4</td>
<td>Recirculation Bypass Line</td>
<td>OPEN</td>
</tr>
<tr>
<td>MK-AY102K4-1</td>
<td>Condenser Inlet</td>
<td>CLOSED</td>
</tr>
<tr>
<td>MK-AY102K4-2</td>
<td>Moisture Separator Outlet</td>
<td>OPEN</td>
</tr>
<tr>
<td>MK-AY102K4-3</td>
<td>Recirculation Tank Return</td>
<td>CLOSED</td>
</tr>
</tbody>
</table>

5.3.2 **ON** MCS Graphic Screen 11, **CONFIRM** the following:
- Dampers indicate Bypass Mode lineup
- BYPASS indicator dot appears in GREEN.

5.3.3 **FROM** MCS graphic screen 15, **MONITOR** the following process variables to assure they are within ranges determined by the Shift Manager:
- PI-AY2K1-1 Tank Pressure
- FI-AY2K1-2 Exhaust Flow.

5.3.4 **IF** tank vacuums and/or flows are outside of normal ranges, **ADJUST** tank vacuums and/or flows per TO-060-350.
5.4 Isolate Tank AY-102 from the Primary Vent System

NOTE - During a loss of ventilation, or isolation from the primary ventilation system, AY-102 primary inlet stations functions as a passive breather to ventilate the tank when MK-AY102K1-1 is in the OPEN position.

5.4.1 NOTIFY Shift Manager/OE and TMACS Operator that Tank 241-AY-102 will be isolated from the primary ventilation system.

5.4.2 ON MCS graphic screen 11, PLACE 241-AY-102 Low Vacuum and Flow Alarm to DISABLED.

NOTE - SR 3.4.1 requires verification of tank exhaust airflow if inlet air-control station valves are repositioned.

5.4.3 PRIOR to operating any primary tank inlet station valves, ENSURE Shift Manager has evaluated applicability to LCO 3.4. (LCO 3.4)

5.4.4 ENSURE pressure control damper MK-AY102K1-1 is configured fully OPEN per TO-060-350.

NOTE - SR 3.1.1 and SR 3.4.1 require verification of tank exhaust airflow if the flow control valve is repositioned.

Critical Step

5.4.5 PRIOR to operating any primary tank flow control valves, ENSURE Shift Manager has evaluated applicability to LCO 3.1 and LCO 3.4. (LCO 3.1, LCO 3.4)

Signature / Print (First and Last) / Date

Procedure User

5.4.6 NOTIFY Shift Manager to initiate time monitoring per LCO 3.1.A. (LCO 3.1)

5.4.7 ENSURE flow control damper MK-AY102K1-2 is configured fully CLOSED per TO-060-350

5.4.8 CLOSE MK-AY102K1-2A1 flow control inlet isolation damper, located at the Recirculation Module.

5.4.9 CLOSE MK-AY102K1-2A2 flow control outlet isolation damper, located at the Recirculation Module.
5.4 Isolate Tank AY-102 from the Primary Vent System (Cont.)

5.4.10 **CLOSE** MK-AY102K1-2A3 flow control bypass damper, located at the Recirculation Module.

5.4.11 **IF** tank vacuums and/or flows are outside of normal ranges for the remaining tanks being actively ventilated, **ADJUST** tank vacuums and/or flows per TO-060-350.
5.5 Reset Object Errors and FAILED Conditions

5.5.1 CLICK on “object” (valve).

5.5.2 CLICK on three-dot icon.

5.5.3 CLICK on Alarm/Event tab.

5.5.4 CLICK on Alarm icon to acknowledge the alarm AND VERIFY “Reset button” can be reset.

5.5.5 CLICK on “Reset button.”

5.5.6 CLICK on “Apply button” icon AND CONFIRM the “OE” (object error) next to object resets and disappears.

5.5.7 CLOSE faceplate.
5.6 Records

5.6.1 PERFORM the following for records identified within this procedure.

5.6.1.1 RECORD the number of times the record was generated in applicable column

OR

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

5.6.1.2 SUBMIT the package to FWS/OE/Shift Manager.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5.1 Perform Valve, Electrical, and Hand Switch Lineup</strong></td>
<td></td>
<td></td>
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<tr>
<td>Step 5.1.7</td>
<td></td>
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<tr>
<td><strong>5.4 Isolate Tank AY-102 from the Primary Vent System</strong></td>
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<td></td>
</tr>
<tr>
<td>Step 5.4.5</td>
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<td></td>
</tr>
<tr>
<td><strong>Tables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table 1 - AY-102 Electrical Lineup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Table 2 - AY-102 Recirculation System Initial Valve Lineup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FWS/OE/Shift Manager SEND the completed records to the Central Shift Office for records retention.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Signature / Print (First and Last) / Date

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
## AY102 Recirculation Module Operation

### Table 1 - AY-102 Electrical Lineup

<table>
<thead>
<tr>
<th>Location</th>
<th>Component/Breaker#</th>
<th>DOE-0359 Requirement⁽¹⁾</th>
<th>Description</th>
<th>Position</th>
<th>Initial</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ELECRICAL DISTRIBUTION BUILDING 105</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANEL PP-1</td>
<td>BREAKER # 2B</td>
<td>✓</td>
<td>MAIN DISCONNECT 102-AY TANK RECIRC 241-AY-402</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>241-AY-401 RECIRCULATION MODULE BUILDING (Outside Building)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>241-AY-401 MAIN DISTRIBUT. PANEL</td>
<td>BREAKER # 4</td>
<td>✓</td>
<td>FILTER HEATER AY102-K1-2-1</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREAKER # 6</td>
<td>✓</td>
<td>PANEL PP-10</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANEL PP-10</td>
<td>BREAKER #1</td>
<td></td>
<td>BLDG LTG</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREAKER #2</td>
<td></td>
<td>SPARE</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREAKER #3</td>
<td></td>
<td>BLDG LTG &amp; OUTDOOR RCPT</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREAKER #4</td>
<td></td>
<td>LDY-AY402-1</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BREAKER #5</td>
<td></td>
<td>ENCL AY102</td>
<td>ON</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AY-102 AIR INLET STATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TANK AY-102 AIR INLET STATION</td>
<td>DISCONNECT</td>
<td>✓</td>
<td>TANK INLET AIR HEPA FILTER HEATER AY102-K1-2-1⁽⁴⁾</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SWITCH</td>
<td></td>
<td>HEATER ENABLED⁽⁴⁾</td>
<td>OFF</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁽¹⁾ - If Checked (✓), this is a 480 volt breaker/disconnect that requires personnel trained in the operation of breakers and disconnects to operate (refer to Section 3.1).

⁽³⁾ - Circle position used – Position will be determined by operating configuration and/or Shift Manager direction

⁽⁴⁾ - Heater power disconnected

**COMMENTS:**

See drawing H-14-030007, Sht 3 (PP-1)
### Table 2 - AY-102 Recirculation System Initial Valve Lineup

<table>
<thead>
<tr>
<th>Valve</th>
<th>Valve Function</th>
<th>Position</th>
<th>Initials</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AIR INLET STATION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K104-1A1</td>
<td>DP Gauge Leg Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K104-1A2</td>
<td>DP Gauge Leg Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K104-1A3</td>
<td>DP Gauge Leg Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENCL-AY102</strong> (Cabinet next to old seal loop cabinet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K1-1</td>
<td>Pressure Tap off Waste Tank</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K1-2</td>
<td>Pressure Tap off Waste Tank</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>241-AY-402 RECIRCULATION MODULE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-1</td>
<td>Condenser Inlet</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-2</td>
<td>Moisture Separator Outlet</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-3</td>
<td>Recirculation Tank Return</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-4</td>
<td>Recirculation Bypass Line</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-5</td>
<td>Portable Supply Conn</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K4-6</td>
<td>Portable Exhaust Conn</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K1-2A1</td>
<td>Isolate Flow To Primary Vent</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K1-2A2</td>
<td>Isolate Flow To Primary Vent</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MK-AY102K1-2A3</td>
<td>Bypass Flow To Primary Vent</td>
<td>CLOSED</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>241-AY-402 RECIRCULATION MODULE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K408-1A1</td>
<td>Condenser DP Leg Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K408-1A2</td>
<td>Condenser DP Leg Isolation</td>
<td>OPEN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HV-AY102K4-1</td>
<td>Condenser Condensate Return Line Sample Valve, 3-way</td>
<td>OPERATE/ DRAIN</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>