Add Water to 242-A Evaporator C-A-1 Vessel

Tank Farm Plant Operating Procedure 242-A Evaporator

USQ # EV-17-0857-S Rev. 5

**CHANGE HISTORY (≤ LAST 5 REV-MODS)**

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-13</td>
<td>08/27/2018</td>
<td>Operations Request</td>
<td>Page 5 Section 4.2 Field Preparation Step 4.2.1 Added line for Authorizing Document and Signature line Updated Records Section.</td>
</tr>
<tr>
<td>C-12</td>
<td>08/13/2018</td>
<td>Periodic Review</td>
<td>Updated Radcon statement at 3.2. Removed a requirement tag. These changes were the result of a periodic review.</td>
</tr>
<tr>
<td>C-11</td>
<td>07/11/2018</td>
<td>Operations Request</td>
<td>Page 6 Added Valve 5-60 &quot;OPEN&quot;, 5-49 &quot;OPEN&quot; and 5-52 &quot;OPEN&quot; to table in Step 5.1.1.7</td>
</tr>
<tr>
<td>C-10</td>
<td>05/15/2018</td>
<td>Operations Request</td>
<td>Added new step to Field prep. 4.2.2 &quot;REQUEST from Shift Manager to have an NCO monitor AW02D-WT-LD-197 for alarm at a TFMCS HMI for the duration of seal water addition to AW Farm&quot; Struck out &quot;IF vessel is empty or partially filled with raw water or feed/slurry&quot; in Step 5.1.5 Added new Step 5.1.6 &quot;IF filling C-A-1 vessel for recirculation loop testing AND AFTER LIC-CA1-3G reaches the number of inches specified by the Shift Manager, SET the HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to the BLOCK position. (OSD-T-151-00012) &quot;</td>
</tr>
<tr>
<td>C-9</td>
<td>07/27/2017</td>
<td>Inconsequential change</td>
<td>Records Section update</td>
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## Add Water to 242-A Evaporator C-A-1 Vessel

### 4.1 Performance Documents

### 4.2 Field Preparation

### 5.0 PROCEDURE

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<td>5.2</td>
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Data Sheet 1 - 242-A Evaporator System Startup
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for adding raw water to the 242-A Evaporator C-A-1 Vessel for filling, maintaining level, testing or Evaporator Deep Flush.

1.2 Scope

This procedure applies to the 242-A Evaporator, its systems, and components.

2.0 INFORMATION

2.1 General Information

2.1.1 When filling the C-A-1 vessel initially with raw water, LIC-CA1-3G will not register until approximately 1800 gallons of raw water has been added. Due to the shape and configuration of the piping and vessel, LIC-CA1-3G can be used to monitor the vessel filling but do not count on it being accurate until approximately 19,000 gallons has been added to the recirculation loop. LIC-CA1-1 and LIC-CA1-2 will not give an indication of level until approximately 19,500 gallons of raw water have been recorded on the raw water totalizer.

2.1.2 DI-CA1-1 (G10, F2) EVAP CA1-1 DENSITY or DI-CA1-2 (G10, F2) EVAP CA1-2 DENSITY can be used with either LIC-CA1-1 or LIC-CA1-2. For ease of maintenance, DI-CA1-1 and LIC-CA1-1 should always be used together and DI-CA1-2 and LIC-CA1-2 should always be used together. However, level or density indicators can be selected as required by plant conditions.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Equipment Safety

CAUTION - Seal water to PB-1 must be ON if level in C-A-1 vessel is greater than 2530 gallons or 96 inches per LI-CA1-3 or damage to seals may occur.

3.2 Radiation and Contamination Control

3.2.1 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.

3.3 Environmental Compliance

3.3.1 ENSURE vessel vent system is operating per procedure TO-620-040 prior to adding raw water to the C-A-1 vessel.

3.3.2 Report all planned and unplanned shutdowns of ventilation equipment to the appropriate shift office to be evaluated for reporting purposes per procedure TF-REC-001, "Response to Environmental Condition".

3.3.3 Report all spills and releases to the appropriate shift office to be evaluated for reporting purposes per procedure TF-REC-001, "Response to Environmental Condition".
3.4 Limits
OPERATING SPECIFICATION DOCUMENTS (OSDs)
OSD-T-151-00012 Operating Specifications for the 242-A Evaporator Crystallizer (242-A)

2.4.1 Vessel Liquid Level
Vessel Liquid Level – sufficient to maintain a liquid volume in vessel between 21,500 and 26,000 gallons during continuous operations.

2.5 P-B-1 Recirculation Pump Characteristics
Max. Current 260 Amperes
Min/Max Seal Water Pressure: 35/90 psig
Min/Max Seal Water Flowrate: 0.25/3.0 gpm

2.6 P-B-2 Slurry Pump Characteristics
Max. Current 224 Amperes
Min/Max Seal Water Pressure: 60/75 psig
Min Seal Water Flowrate: 0.94 gpm
Max Discharge Pressure 92 psig

4.0 PREREQUISITES

4.1 Performance Documents
The following procedures may be needed to perform this procedure:

- TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
- TO-620-040, Operate 242-A Vessel Vent System.

4.2 Field Preparation

4.2.1 ENSURE process engineering has authorized the potential addition of water to AW-102 via C-A-1.

Authorizing Document: __________________________

________________________ / __________________________ / _____________
Signature Print (First & Last) Date
Shift Manager /OE

4.2.2 REQUEST from Shift Manager to have an NCO monitor AW02D-WT-LD-197 for alarm at a TFMCS HMI for the duration of seal water addition to AW Farm.
5.0 **PROCEDURE**

5.1 **Add Raw Water to C-A-1 vessel**

NOTE - Valves 5-47 and 5-59 may have been opened during performance of TO-600-020.

5.1.1 **PERFORM** the following prerequisites in the order given:

### CAUTION

Seal water to PB-1 must be ON if level in C-A-1 vessel is greater than 2530 gallons or 96 inches per LI-CA1-3 or damage to seals may occur.

5.1.1.1 **IF** adding greater than 2530 gallons or 96 inches of water to CA-1 per LI-CA1-3, **ENSURE** seal water to PB-1 is ON.

5.1.1.2 **IF** PB-1 (G12/6, F5) RECIRC PUMP is not already running, **ENSURE** PB-1 (G12/8) BYPAS is in BYP ON.

5.1.1.3 **ENSURE** BOT-DUMP (G12/14) BOTTOMS DUMP VALVES are in BLOCK position.

5.1.1.4 **ENSURE** that HV-CA1-7 and HV-CA1-9 (G12) BOTTOMS DUMP VALVES status is CF-CLOSED.

5.1.1.5 **ENSURE** that HV-CA1-1 (G301/8, F0) EVAP FEED VALVE status is CLOSED.

5.1.1.6 **ENSURE** HV-CA1-2 (G15/11) SLURRY FLUSH VALVES status is MANUAL and BLOCK to prevent a flush of the slurry line.

5.1.1.7 **ENSURE** the following valves are positioned as indicated:

<table>
<thead>
<tr>
<th>Valve</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-40</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-47</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-49</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-52</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-59</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-60</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

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Signature / [Operator] / [Print (First & Last)] / [Date]
5.1 **Add Raw Water to C-A-1 vessel (Cont.)**

5.1.2 **MONITOR** FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZER as the Evaporator fills.

5.1.3 **WHILE** Evaporator vessel fills, **MONITOR** LI-CA1-3G (G10, F3) EVAP CA1-3 LEVEL.

5.1.4 **RECORD** the starting totalizer FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZR on Data Sheet 1.

5.1.5 **ADD** raw water to C-A-1 vessel by setting the HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to the EVAP-FL position.

5.1.5.1 **IF** after adding up to 1800 gallons of flush raw water and LI-CA1-3G (G10/F3) EVAP CA1-3 LEVEL does not show a level increase, **SHUTDOWN** flush raw water flow.

5.1.6 **IF** filling C-A-1 vessel for recirculation loop testing **AND**

**AFTER** LIC-CA1-3G reaches the number of inches specified by the Shift Manager, **SET** the HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to the BLOCK position. **(OSD-T-151-00012)**

5.1.6.1 **GO TO** Step 5.1.10.

5.1.7 **AFTER** LI-CA1-3G (G10/F3) EVAP CA1-3 LEVEL is greater than 20,000 gallons **CHECK** the following Evaporator level readings are increasing:

- LIC-CA1-1 (G10/9, F2) EVAP CA1-1 LEVEL CONTROLR
- LIC-CA1-2 (G10/10, F2) EVAP CA1-2 LEVEL CONTROLR.

5.1.7.1 **IF** level is not increasing in one or both instruments **NOTIFY** Shift Manager.

5.1.8 **IF** filling C-A-1 vessel for deep flush or testing **AND**

**AFTER** the lower of LIC-CA1-1 (G10/9, F2) EVAP CA1-1 LEVEL CONTROLR or LIC-CA1-2 (G10/10, F2) EVAP CA1-2 LEVEL CONTROLR reads approximately 25,750 (25,500 to 26,500) gallons, **SET** the HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to the BLOCK position. **(OSD-T-151-00012)**
5.1 Add Raw Water to C-A-1 vessel (Cont.)

5.1.9 IF in normal operation AND

AFTER the lower of LIC-CA1-1 (G10/9, F2) EVAP CA1-1 LEVEL CONTROLR or LIC-CA1-2 (G10/10, F2) EVAP CA1-2 LEVEL CONTROLR reads approximately 24,500 (24,250 to 24,750) gallons, SET the HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to the BLOCK position. (OSD-T-151-00012)

5.1.10 RECORD the ending totalizer FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZR on Data Sheet 1.
Add Water to 242-A Evaporator C-A-1 Vessel

5.2 Records

5.2.1 PERFORM the following for records identified within this procedure.

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

OR

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

5.2.1.2 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>4.2 Field Preparation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4.2.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5.1 Add Raw Water to C-A-1 vessel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.1.1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Sheets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 1 - 242-A Evaporator System Startup</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FWS/OE/Shift Manager SEND</strong></td>
<td>the completed records to the Central Shift Office for records retention.</td>
<td></td>
</tr>
</tbody>
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_________________________ / ______________________ / __________
Signature               Print (First & Last)          Date
Shift Manager /OE/FWS

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.
Add Water to 242-A Evaporator C-A-1 Vessel

Data Sheet 1 - 242-A Evaporator System Startup

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<thead>
<tr>
<th>Section 5.1</th>
<th>Add Raw Water to C-A-1 vessel</th>
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<tbody>
<tr>
<td>Starting Reading (Step 5.1.4)</td>
<td>FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZR (Gallons)</td>
</tr>
<tr>
<td>Ending Reading (Step 5.1.10)</td>
<td>FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZR (Gallons)</td>
</tr>
</tbody>
</table>

__________________________ / ________________________ / ________________
Signature               Print (First & Last)        Date
Operator

Shift Manager Review:

__________________________ / ________________________ / ________________
Signature               Print (First & Last)        Date