Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

Tank Farm Plant Operating Procedure

USQ # EV-18-1211-D, Rev. 0

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 Radiation and Contamination Control................................................................................................. 4
   3.3 Environmental Protection...................................................................................................................... 4
   3.4 Limits ................................................................................................................................................... 4

4.0 PREREQUISITES ....................................................................................................................................... 5
   4.1 Performance Documents......................................................................................................................... 5
   4.2 Field Preparation.................................................................................................................................. 5

5.0 PROCEDURE.............................................................................................................................................. 6
   5.1 Prepare Evaporator for Deep Flush....................................................................................................... 6

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>N-12</td>
<td>07/31/2018</td>
<td>Operations Request - Reverted all changes in Revisions N10 &amp; N11 back to what was in Rev N9</td>
<td>Modified Special Instructions in 5.0, Step 5.2.5 struck out “IF directed by Shift Manager”, 5.7.1 modified to “directed sections of procedure” Added Step 5.7.3 “ADJUST vacuum to 60 torr to prepare for transition to TO-600-060” “Added “hot” before Water throughout procedure.</td>
</tr>
<tr>
<td>N-11</td>
<td>06/27/2018</td>
<td>Operations Request</td>
<td>Struck out step 5.7.3 “ADJUST vacuum to 60 torr to prepare for transition to TO-600-060”</td>
</tr>
<tr>
<td>N-10</td>
<td>06/27/2018</td>
<td>Operations Request</td>
<td>Modified special instructions/note in 5.0 Step 5.2.5 added “IF directed by Shift Manager,” globally removed the word “hot” throughout procedure.</td>
</tr>
<tr>
<td>N-9</td>
<td>05/24/2018</td>
<td>Operations Request</td>
<td>Adding a new sub-Step (5.2.4.5) to Sec. 5.2. “5.2.4.5 CLOSE valve 5-71 and 5-76.”</td>
</tr>
<tr>
<td>N-8</td>
<td>01/02/2018</td>
<td>Operations Request</td>
<td>Corrected the RECORDS section. Deleted need for initials in Checklist 1. Added comment field and signatures at end. Deleted need for initials on Data Sheet 1. Added signatures at end.</td>
</tr>
</tbody>
</table>
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

5.2 C-A-1 Vessel Deep Flush ............................................................................................................. 7
5.3 Deep Flush Monitoring .................................................................................................................. 10
5.4 Feed Line Flush ............................................................................................................................ 11
5.5 Flush Slurry Line with Hot Water ................................................................................................. 14
5.6 S2 Purge Line Flush ....................................................................................................................... 16
5.7 Cool Down C-A-1 and Dump ........................................................................................................ 17
5.8 Records ........................................................................................................................................ 18

Checklist 1 – Valve Alignment for Flushing De-Entrainer Pads ............................................................ 19

Data Sheet 1 - Evaporator Vessel and Loop Flush ............................................................................. 22
1.0 PURPOSE AND SCOPE

1.1 Purpose

To provide instructions for flushing the 242-A Evaporator C-A-1 Vessel, Recirculation Loop, Feed Line, and Slurry Line and De-Entrainer Pads.

1.2 Scope

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

This procedure interfaces with other nuclear facilities, i.e., the interface between Tank Farms and the 242-A Evaporator.

2.0 INFORMATION

2.1 Terms and Definitions

- In. Hg – Inches of Mercury
- ETF - Effluent Treatment Facility
- SpG – Specific Gravity
- WFI – Weight Factor Instrumentation.

2.2 General Information

2.2.1 During a loss of vacuum or sudden change, it is not uncommon for the WFI or SpG instruments to go out of range. When vacuum is restored, readings are typically regained. This is likely caused by vapor lock in the transmitters; blowing down the dip tubes will not correct the problem as this is likely a legacy design issue.

2.2.2 PIC-CA1-7 cannot read vacuum greater than 200 torr; therefore, PI-CA1-11 is used for measuring vacuum in inches Hg.

2.2.3 When recirculating through the Evaporator Loop, FI-CA1-3 will normally read between 40 gpm and 270 gpm.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 The hazards associated with the performance of this procedure have been determined to be addressed by the GHA.

3.2 Radiation and Contamination Control

When work is performed in or when work will result in a high contamination, high radiation, or an airborne radioactivity area, then an approved work package must be developed which is review by Radiological Control per the ALARA procedure TFC-ESHQ-RP_RWP-C-03.

3.3 Environmental Protection

3.3.1 Immediately report any information concerning spills or releases to appropriate Shift Office and Environmental per TF-REC-001. This includes spills or releases to secondary containment.

3.3.2 To ensure reporting requirements are met, all planned and unplanned outages of the K-1 Building ventilation (296-A-21A) or the vessel vent ventilation (296-A-22) and exhaust monitoring systems, must be reported to appropriate Shift Office and Environmental per TF-REC-001.

3.3.3 Ensure vessel vent system (296-A-22) is operating during process activities. This includes all required stack monitoring instruments.

3.4 Limits

This procedure implements Defense in Depth (DID) controls for Tank Farms as described in RPP-13303, Tank Farms Documented Safety Analysis.
4.0 PREREQUISITES

4.1 Performance Documents
- TO-230-225, Evaporator Campaign Monitoring
- TO-600-020, Perform 242-A Evaporator System Status Check and Prestart Operations
- TO-600-030, Start Up 242-A Evaporator System
- TO-600-031, Add Water to 242-A Evaporator C-A-1 Vessel
- TO-600-060, Shut Down 242-A Evaporator
- TO-600-123, Startup and Shutdown E-C-1, E-C-2, and E-C-3 Condensers
- TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
- H-2-98988, P&ID EVAP Recirc. System
- Campaign-specific process memo.

4.2 Field Preparation

4.2.1 CONFIRM C-A-1 is empty or contains water only, not feed or slurry.
5.0 **PROCEDURE**

**Special Instruction**

Sections 5.1 through 5.3 must be completed in order and before Sections 5.4 and 5.5. Once 5.1 through 5.3 are complete Sections 5.4, 5.5 and 5.6 may be performed in any logical order. Section 5.7 will follow completion of Sections 5.4, 5.5 and 5.6.

The evaporator vessel and recirculation loop are flushed by filling the evaporator with 25,750 gallons of raw water or amount specified in process memo, heating the water to 130 °F to 140 °F and recirculating the loop with partial vacuum (165 torr). After recirculating for four hours, the Evaporator is drained back to TK-102-AW or as specified by process memo.

**5.1 Prepare Evaporator for Deep Flush**

5.1.1 **ENSURE** Tank Farms monitoring (leak detectors, tank temperatures, and ventilation) is being conducted per applicable transfer procedure.

5.1.2 **REQUEST** from Central Shift Manager that an NCO be stationed at a TFMCS HMI, with continuous communications link between the NCO and the 242-A At-the-Controls Operator to monitor for leak detection and potential tank pressurization.

5.1.3 **ENSURE** feed pump P-AW-102 Administrative Lock is installed per the Administrative Lock Procedure.

5.1.4 **PERFORM** Checklist 1.
5.2 C-A-1 Vessel Deep Flush

NOTE – De-entrainer spray operation may be omitted at the direction of the 242-A Shift Manager.

Start Upper Pad De-Entrainer Sprays

5.2.1 START Upper Pad de-entrainer sprays as follows:

5.2.1.1 ENSURE valve HV-CA1-10 (G12/15, F6) SEAL WATER VALVE is in Manual and CF-FRW.

5.2.1.2 ENSURE FIC-CA1-6 (G10/5, F3) UPPER DE-ENTRN SPRAY FLOW is in MANUAL and 100% output (closed).

5.2.1.3 SET HV-PDSPRY (G10/4, F3) DE-ENTRN PADSPRAY VALVES to CA1-10.

5.2.1.4 SLOWLY OPEN FIC-CA1-6 (G10/5, F3) UPPER DE-ENTRN SPRAY FLOW. (With each adjustment at a maximum volume of 5% less than the current output.)

5.2.1.5 AFTER FIC-CA1-6 (G10/5, F3) UPPER DE-ENTRN SPRAY FLOW has stabilized at the new output value, REPEAT Step 5.2.1.4 until FIC-CA1-6 indicates 1.9 gpm (±0.2 gpm).

5.2.1.6 SET FIC-CA1-6 (G10/5, F3) UPPER DE-ENTRN SPRAY FLOW to AUTO and setpoint 1.9.

Start Lower Pad De-Entrainer Sprays

5.2.1.7 ADJUST HIC-CA114 (G10/6, F3) LOWER DE-ENTRN TOP SPRAY output in slow increments of 10% to achieve 100% flow.

5.2.1.8 ADJUST HIC-CA115 (G10/7, F3) LOWER DE-ENTRN BOTTOM SPRAY output in slow increments of 10% to achieve 100% flow.

5.2.2 ENSURE seal water to PB-1 is ON per TO-600-210.

5.2.3 FILL Evaporator with raw water to a level of 25,750 gallons (25,500 to 26,000) or level specified in process memo per TO-600-031.
5.2 C-A-1 Vessel Deep Flush (Cont.)

5.2.4 WHEN C-A-1 level is > 20,000 gallons and < 24,000 gallons, SECURE de-entrainer pad sprays as follows:

**Shut Down Upper Pad De-Entrainer Sprays**

5.2.4.1 SET HV-PDSPRY (G10/4, F3) DE-ENTRN PADSPRAY VALVES to OFF.

5.2.4.2 SET FIC-CA1-6 (G10/5, F3) UPPER DE-ENTRN SPRAY FLOW to MANUAL and 100% output.

**Shut Down Lower Pad De-Entrainer Sprays**

5.2.4.3 ADJUST HIC-CA114 (G10/6, F3) LOWER DE-ENTRN TOP SPRAY output in slow increments of 10% to achieve 0% flow.

5.2.4.4 ADJUST HIC-CA115 (G10/7, F3) LOWER DE-ENTRN BOTTOM SPRAY output in slow increments of 10% to achieve 0% flow.

5.2.4.5 CLOSE valve 5-71 and 5-76.

5.2.5 PERFORM the following sections per TO-600-030 THEN

RETURN to this procedure.

5.2.5.1 PERFORM Section to “Start PB-1 Recirculation Pump”.

5.2.5.2 PERFORM Section to “Line Up steam to the Steam Jets”.

5.2.5.3 PERFORM Section to “Start Evaporator Vacuum” AND ENSURE a vacuum of 165 torr has been obtained.

5.2.5.4 PERFORM Section to “Line Up Steam to the Reboiler”.

5.2.5.5 PERFORM Section to “Start Steam Flow to the Reboiler”.
5.2 C-A-1 Vessel Deep Flush (Cont.)

5.2.5.6 ENSURE TI-CA1-6 (G10, F4) EVAP VESSEL SLURRY TEMP reaches a range of 130 °F to 140 °F as follows:

NOTE - Steam to the reboiler should be secured when TI-CA1-6 reads 125 °F to avoid an over range temperature reading.

- At 165 torr, water will boil at 145 °F.

a. WHEN TI-CA1-6 (G10, F4) reaches an indication of 125 °F, QUICKLY CLOSE FIC-EA1-1 (G13, F12).

b. ENSURE FV-EA1-1 (G13, F12) changes to STM OFF status.

c. ENSURE HV-EA1-4 closes approximately 5 minutes after FV-EA1-1 (G13, F12) reboiler steam flow valve.

5.2.6 REVIEW completion of Section 5.2.

________________________ / ______________________ / ____________
Signature          Print (First and Last)         Date
Shift Manager
5.3 Deep Flush Monitoring

NOTE - This section may not be performed prior to completion of Section 5.1 and 5.2.

5.3.1 **AFTER** Section 5.2 has been completed, **RECORD** the following data once per hour on Data Sheet 1.

<table>
<thead>
<tr>
<th>EPN</th>
<th>Description</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-CA1-3G</td>
<td>EVAP CA1-3 LEVEL</td>
<td>(G10, F3)</td>
</tr>
<tr>
<td>TI-CA1-6</td>
<td>EVAP VESSEL SLURRY TEMP</td>
<td>(G10, F4)</td>
</tr>
<tr>
<td>PDI-EA1-1</td>
<td>REBOILER SLURRY IN-OUT DELTA P</td>
<td>(G13, F13)</td>
</tr>
</tbody>
</table>

5.3.2 **AFTER** 4 hours or an amount of time specified by process memo, **CONTINUE** with this procedure.
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

5.4 Feed Line Flush

NOTE - Approximately 500 gallons or as directed by process memo, of hot water will be used to flush the feed line. Roughly half the amount through the P-AW-102 Feed Pump, and half through the Diaphragm Operated Valve DOV-02E-1 (FCV-160).

5.4.1 PERFORM the following prerequisites:

5.4.1.1 DETERMINE amount of flush volume to use.

Volume: ________

5.4.1.2 ENSURE HV-CA1-1 (G301/8, F0) EVAP FEED VALVE status is set to CLOSED.

5.4.1.3 CONFIRM the following valve is positioned as indicated below:

<table>
<thead>
<tr>
<th>Valve #</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>AW02E-WT-V-107</td>
<td>OPEN from PUMP to 3” SN-269 TO BLDG 242-A AND 3” SN-272 TO PUMP PIT 02A (Fully Clockwise)</td>
</tr>
</tbody>
</table>

5.4.1.4 NOTIFY Central Shift Manager that a feed line water flush is to be performed.

5.4.1.5 SET FIC-CA1-1 (G301/6, F0) EVAP FEED FLOW to MANUAL and output to 100%.
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

5.4 Feed Line Flush (Cont.)

5.4.1.6 SELECT HV-CA1-1 INTERLOCKS (G50) to display all HV-CA1-1 interlocks AND

IF interlock(s) are activated, PERFORM the following:

a. DETERMINE cause of active interlock.

b. PERFORM necessary actions to clear active interlocks.

5.4.2 IF Management directs HV-CA1-1 Interlocks to be bypassed and only Software Interlocks are active, BYPASS the HV-CA1-1 Active Software Interlocks by performing the following:

5.4.2.1 SELECT valve HV-CA1-1 (G301/8).

5.4.2.2 SELECT interlock diamond in lower left corner.

5.4.2.3 BYPASS any active interlocks.

5.4.3 AFTER HV-CA1-1 (G301/8, F0) EVAP FEED VALVE status is not INTERLOK, SET HV-CA1-1 to OPEN.

5.4.4 AFTER LIC-CA1-1 (G10/9, F2) EVAP CA1-1 LEVEL CONTROLR or LIC-CA1-2 (G10/10, F2) EVAP CA1-2 LEVEL CONTROLR shows a decrease of \( \frac{3}{4} \) of the flush volume determined in Step 5.4.1.1, PERFORM the following:

5.4.4.1 SET HV-CA1-1 (G301/8) to CLOSED.

5.4.4.2 REQUEST Tank Farms position the following valve as indicated below:

<table>
<thead>
<tr>
<th>Valve #</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>AW02E-WT-V-107</td>
<td>Block PUMP (Fully Counter Clockwise)</td>
</tr>
</tbody>
</table>

5.4.4.3 SET FIC-CA1-1 (G301/6, F0) EVAP FEED FLOW to MANUAL and 0% output.

5.4.4.4 SET HV-CA1-1 (G301/8) to OPEN.
5.4 Feed Line Flush (Cont.)

5.4.5 AFTER LI-CA1-3G (G10, F3) EVAP CA1-3 LEVEL shows a decrease of the remainder of the flush volume determined in Step 5.4.1.1 SET HV-CA1-1 (G301/8, F0) EVAP FEED VALVE to CLOSED.

5.4.6 REMOVE the HV-CA1-1 Active Software Interlock Bypasses by performing the following:

5.4.6.1 SELECT valve HV-CA1-1 (G301/8).

5.4.6.2 SELECT interlock diamond in lower left corner.

5.4.6.3 REMOVE BYPASS of interlocks.
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

5.5 Flush Slurry Line with Hot Water

NOTE - Approximately 500 gallons or as directed by process memo of hot water will be used to flush the slurry line.

5.5.1 PERFORM the following prerequisites:

5.5.1.1 ENSURE PB-2 seal water is in service per TO-600-210.

5.5.1.2 NOTIFY Central Shift Manager that a slurry line hot water flush is to be performed.

5.5.1.3 RECORD FQI-CA1-4 (G15, F10) SLURRY TO FARMS TOTALIZER (X10) reading on Data Sheet 1.

5.5.1.4 DETERMINE amount of flush volume to use.

Volume: 

5.5.2 IF Gravity Slurry Flow is designated by Engineering or Shift Manager, FLUSH slurry line with amount determined in Step 5.5.1.4 as follows:

5.5.2.1 SET HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to MANUAL and SL OUT status.

5.5.2.2 WHEN line has been flushed with amount determined in Step 5.5.1.4 as indicated by FQI-CA1-4, SET HV-CA1-2 (G15/11, F9) to BLOCK.

5.5.2.3 GO TO Step 5.5.4.
5.5 **Flush Slurry Line with Hot Water (Cont.)**

5.5.3 **IF** directed by Shift Manager or process memo to slurry out using PB-2 Slurry Pump, **PERFORM** the following Steps 5.5.3 through 5.5.3.10:

5.5.3.1 **SET** SIC-PB2-1 (G15/15, F10) SLURRY PUMP SPEED CONTROLLER to MANUAL and 0 output.

**NOTE** - SIC-PB2-1 SLURRY PUMP SPEED CONTROLLER will require several seconds for the change from MANUAL to AUTO modes to take effect.

5.5.3.2 **SET** SIC-PB2-1 (G15/15, F10) to AUTO.

5.5.3.3 **IF** SIC-PB2-1 shows an OPEN Cascade (a white "O"), **PRESS** “CASC” twice to close the Cascade.

5.5.3.4 **CHECK** that SIC-PB2-1 shows a closed Cascade (a green "C").

5.5.3.5 **SET** FIC-CA1-4 (G15/14, F10) EVAP SLURRY FLOW to AUTO mode.

5.5.3.6 **SET** HV-CA1-2 (G15/11, F9) SLURRY FLUSH VALVES to MANUAL and SL OUT status.

5.5.3.7 **SET** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP to ON status.

5.5.3.8 **SET** FIC-CA1-4 (G15/14, F10) to SET POINT 50.

5.5.3.9 **WHEN** line has been flushed with amount determined in Step 5.5.1.4, **SET** PB-2 to OFF status.

5.5.3.10 **SET** HV-CA1-2 (G15/11, F9) to BLOCK status.

5.5.4 **RECORD** Gallons Ending for FQI-CA1-4 on Data Sheet 1.
5.6 S2 Purge Line Flush

5.6.1 IF flush water will drain directly to AW-102, THEN NOTIFY Central Shift Manager.

5.6.2 IF an unexpected high level in C-A-1 occurs from the purge air flushing, REDUCE the vessel level per TO-600-030.

5.6.3 START circumference ring spray as follows:

NOTE - S2 will trip if purge air flow is not restored in less than 30 minutes.

5.6.3.1 CLOSE valves HV-CA1-21 and 5-3F.

5.6.3.2 POSITION the following valves as indicated:

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-69C</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-77A</td>
<td>OPEN</td>
</tr>
<tr>
<td>5-77B</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

5.6.4 WAIT twenty (20) minutes AND

CLOSE the following valves:

- 5-77B
- 5-69C.

5.6.5 OPEN valves HV-CA1-21 and 5-3F.

5.6.5.1 CONFIRM purge air flow is restored to normal and S2 is clear.

5.6.6 IF flush water will drain directly to AW-102, THEN NOTIFY Central Shift Manager that a purge air flush is complete.
5.7 Cool Down C-A-1 and Dump

5.7.1 242-A SM REVIEW completion of directed sections of procedure.

_________________________/ _________________________ / ________________
Signature  Print (First and Last)  Date

Shift Manager / OE

5.7.2 NOTIFY the Central Shift Manager that hot water flush is complete.

5.7.3 ADJUST vacuum to 60 torr to prepare for transition to TO-600-060.

5.7.4 EMPTY the evaporator per TO-600-060.
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

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 complete records.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2  C-A-1 Vessel Deep Flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4  Feed Line Flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.4.1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.5  Flush Slurry Line with Hot Water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.5.1.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.7  Cool Down C-A-1 and Dump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.7.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checklists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checklist 1 – Valve Alignment for Flushing De-Entrainer Pads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 1 - Evaporator Vessel and Loop Flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FWS/OE/Shift Manager <strong>SEND</strong> the completed records to the Central Shift Office for records retention.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature / Print (First &amp; Last) / Date</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
## Checklist 1 – Valve Alignment for Flushing De-Entrainer Pads

### Sheet 1 of 3

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Description</th>
<th>Position</th>
<th>Check (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-69A</td>
<td>Decon to CA1 Spray Down</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-69B</td>
<td>Decon to CA1 Spray Down</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-69C</td>
<td>FRW to CA1 Spray Down</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-72</td>
<td>Decon to lower De-entrainer Pad Sprays</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-73</td>
<td>Decon to lower De-entrainer Pad Sprays</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-73A</td>
<td>HV-CA1-15 Bypass</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-74</td>
<td>Decon to lower De-entrainer Pad Sprays</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-75</td>
<td>Decon to lower De-entrainer Pad Sprays</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-75A</td>
<td>HV-CA1-14 Bypass</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>*5-77B</td>
<td>FRW- CA1 Spraydown</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>*5-92A</td>
<td>FRW to CA1-WF Drip System</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-93</td>
<td>FIT-CA1-6 Bypass</td>
<td>CLOSED</td>
<td></td>
</tr>
</tbody>
</table>

* - Valves marked with this designator may have component status seals.

(Continued on Next Page)
### Checklist 1 – Valve Alignment for Flushing De-Entrainer Pads (Cont.)

**Sheet 2 of 3**

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Description</th>
<th>Position</th>
<th>Check (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-94A</td>
<td>F-CA1-1 Drain</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-96</td>
<td>FV-CA1-6 Bypass</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-98</td>
<td>Decon to lower De-entrainer</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>5-99</td>
<td>Decon to lower De-entrainer</td>
<td>CLOSED</td>
<td></td>
</tr>
<tr>
<td>4-50A</td>
<td>Inlet to Back Flow Preventer CA1-1</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>4-50B</td>
<td>Outlet to Back Flow Preventer CA1-1</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-70</td>
<td>PI-CA1-4 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>HV-IA-CA1-15</td>
<td>Instrument Air to HY-CA1-15</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>HV-IA-CA1-14</td>
<td>Instrument Air to HY-CA1-14</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-71</td>
<td>FRW to Lower De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-76</td>
<td>FRW to Lower De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-77</td>
<td>PI-CA1-17 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-77A</td>
<td>PI-CA1-18 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-78</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-79</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-80</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-81</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-82</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-83</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-84</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-85</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
</tbody>
</table>

* - Valves marked with this designator may have component status seals.

(Continued on Next Page)
Flush 242-A Evaporator Vessel, Recirculation Loop and De-Entrainer Pads

Checklist 1 – Valve Alignment for Flushing De-Entrainer Pads (Cont.)

Sheet 3 of 3

<table>
<thead>
<tr>
<th>Valve Number</th>
<th>Description</th>
<th>Position</th>
<th>Check (✔)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*5-86</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>*5-87</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-88</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-89</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-90</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-91</td>
<td>FRW to Upper De-Entrainer Pad Sprays</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-92</td>
<td>FIT-CA1-6 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-94</td>
<td>FIT-CA1-6 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-95</td>
<td>FIT-CA1-6 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>5-97</td>
<td>FIT-CA1-6 Isolation</td>
<td>OPEN</td>
<td></td>
</tr>
<tr>
<td>HV-IA-CA1-6</td>
<td>Instrument Air to FY-CA1-6</td>
<td>OPEN</td>
<td></td>
</tr>
</tbody>
</table>

* - Valves marked with this designator may have component status seals.

COMMENTS:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

_____________________________ / ______________________________ / _____________
Signature                      Print (First & Last)          Date
Operator

_____________________________ / ______________________________ / _____________
Signature                      Print (First & Last)          Date
Shift Manager Review
## Data Sheet 1 - Evaporator Vessel and Loop Flush

### Section 5.3 Deep Flush Monitoring

<table>
<thead>
<tr>
<th>EPN</th>
<th>DATA AT RECIRC. INITIAL 0 HOUR (Step 5.3.1)</th>
<th>DATA AT RECIRC. PLUS 1 HOUR (Step 5.3.1)</th>
<th>DATA AT RECIRC. PLUS 2 HOUR (Step 5.3.1)</th>
<th>DATA AT RECIRC. PLUS 3 HOUR (Step 5.3.1)</th>
<th>DATA AT RECIRC. PLUS 4 HOURS (Step 5.3.1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-CA1-3G (G10, F3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TI-CA1-6 (G10, F4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDI-EA1-1 (G13, F13)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Section 5.5 Flush Slurry Line with Hot Water (G15, F10)

<table>
<thead>
<tr>
<th>FQI-CA1-4 SLURRY TO FARMS TOTALIZR (X10) (Steps 5.5.1 and 5.5.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gallons Starting</td>
</tr>
<tr>
<td>Gallons Ending</td>
</tr>
</tbody>
</table>

### COMMENTS:

________________________________________________________________________________________

________________________________________________________

Signature Print (First & Last) Date

Operator

________________________________________________________________________________________

Signature Print (First and Last) Date

Shift Manager Review