Inject Anti-Foam Chemicals into the 242-A Vapor/Liquid Separator C-A-1

USQ # EV-18-0485, Rev. 1

<table>
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<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
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<tr>
<td>K-9</td>
<td>10/29/2018</td>
<td>Operations Request</td>
<td>Added new section “system flush”</td>
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<td>Moved previous system flush to new section ”anti-foam line flush” Added new Step : ENSURE valves 5-37 and 5-42 are CLOSED.</td>
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<td>K-8</td>
<td>07/12/2018</td>
<td>Operations Request</td>
<td>Under Page 21 after ”After boil-off established: 0.2” level drop per hour (0.6” drop for three hours)”, add the following as a separate line (and underline): &quot;OR as stated per Process Memo&quot;.</td>
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<td>K-7</td>
<td>03/28/2018</td>
<td>Operations Request</td>
<td>Changing the time (from two hours to three hours) on both Sec. 5.3.9 and 5.4.12 to match with its Data Sheet 2 time.</td>
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<td>K-6</td>
<td>12/19/2017</td>
<td>WRPS-PER-2017-1808</td>
<td>Changed Attachment 2 to Data Sheet 2 and put in required initial columns for NCO and SM/OE. Added a signature sheet. Updated RECORDS section.</td>
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<td>Operations Request</td>
<td>Modified Attachment 2 - recording anti-foam tank level readings from 1 hour to three hours also during startup (6” drop for three hours) and after boil off established (0.6” drop for three hours)</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for mixing and adding Anti-Foam Chemicals to the Evaporator Vessel C-A-1.

1.2 Scope

This procedure applies to the 242-A Anti-Foam Tank TK-E-102, the Anti-Foam injection pump P-E-102, Agitator A-E-102, and their associated instrumentation and controls.
2.0 INFORMATION

2.1 General Information

2.1.1 Liquid Silicon Anti-foam chemicals are used to prevent foaming of some types of waste in the evaporator. Foaming can lead to fouling of the Deentrainer screens and possible carryover of process solution into the vacuum condenser system.

2.1.2 Liquid Silicon Anti-foam chemicals are pre-mixed with water in TK-E-102 in the AMU room, and then pumped at a constant rate with pump P-E-102 into the C-A-1 Vessel.

2.1.3 Batches of antifoam will be made up at 4% active ingredient. The concentration used will depend on the type of waste being processed at the evaporator. The antifoam is purchased at 20% active ingredient. Batches of 4% (active ingredient) will be made up in TK-E-102.

2.1.4 The Anti-foam tank TK-E-102, Anti-Foam injection Pump P-E-102, and the associated piping must be flushed at the end of each use with plain water to avoid the solidification of the anti-foam Emulsion in the tank and lines.

2.1.5 Normal injection flowrate is controlled by the FIC-E102 ANTIFOAM FLOW CONTROLR (G19/10, F35) on the MCS; the normal setting is 0.05 gpm. At this injection rate, it will take approximately 16 hours to lower TK-E-102 level from a 23 to 7 inch level.

2.1.6 Injection flowrate can also be set using the local P-E-102 Speed Controller, located on top of Pump P-E-102, and facing the west wall of the AMU room. To use the local Speed Controller, the OVERRIDE switch located on the upper left of the Controller must be set to MAN. The flowrate is then set with the Speed Controller dial; a setting of 10 on the dial gives a flowrate of 0.1 gpm.

2.1.7 No more than 165 gallons of undiluted anti-foam is allowed in C-A-1 at one time. (242-A TSR AC 5.9.1 and RPP-CALC-29700)
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

**WARNING** - Failure to wear appropriate protective gear during chemical transfer could result in skin or eye irritation from uncontrolled exposure to the Anti-Foam Emulsion.

3.1.1 Care should be taken to avoid eye or skin contact with the anti-foam Emulsion, which can produce irritation. If the chemical does come into contact with eyes or skin, flush the area with fresh water. A permanent or portable eye wash station must be available to perform this procedure.

3.1.2 Safety Glasses and rubber gloves must be worn when working with the anti-foam Emulsion. After working with the chemical, wash thoroughly with soap and warm water before eating or drinking.

3.1.3 The anti-foam chemical is Liquid Silicon Antifoam Emulsion. See the GHS-SDS and/or MSDS information sheet #12961A.

3.2 Limits

HNF-15279 242-A EVAPORATOR TECHNICAL SAFETY REQUIREMENTS

242-A TSR AC 5.9.1 - C-A-1 Vessel Time to Lower Flammability Limit
(AC Key Element)
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies
   - One drum of Dow-Corning 1520-US Silicone Antifoam
   - Drum pump
   - Rubber gloves
   - Safety glasses
   - Drum wrench.

4.2 Field Preparation

The following conditions must be met before any of the following Sections may commence:

4.2.1 PRIOR to performing Section 5.1, ENSURE Supervisor direction to prepare Initial Anti-Foam chemical for addition to the C-A-1 Vessel has been received.

4.2.2 PRIOR to performing Section 5.2, ENSURE the following:
   - Anti-Foam system operating
   - Supervision direction to prepare Anti-Foam chemical and continue Anti-Foam chemical injection to the C-A-1 Vessel.

4.2.3 PRIOR to performing Section 5.3, ENSURE Supervisor direction to inject Anti-Foam chemical to the C-A-1 Vessel has been received.

4.2.4 PRIOR to performing Section 5.4, ENSURE Supervisor direction to shut down and flush the Anti-Foam system has been received.
5.0 PROCEDURE

NOTE - Sections 5.1 through 5.6 can be performed in any order and at any time, per shift manager direction.

This procedure may be used to operate the anti-foam system with water only for training and testing.

5.1 Initial Pre-dilute and Mix Anti-Foam Chemical

NOTE - This Section should be performed at least two hours prior to beginning Anti-Foam chemical injection unless otherwise specified by Supervision or Engineering.

5.1.1 ENSURE the following block valves, located on the Condenser Room 5th level, are OPEN:

- Valve 5-37
- Valve 5-42.

5.1.2 ENSURE the following valves are CLOSED. (See Figure 1):

- A-7
- A-8
- A-8A
- A-8B
- A-9
- A-21

5.1.3 ENSURE the TK-E-102 Dip Tube Air Purge controllers FIC-E102-1 and FIC-E102-2, located on the TK-E-102 Control Panel, are set at 0.5 to 1.5 scfh. (See Figure 2).

5.1.4 ENSURE valve A-5 is OPEN. (See Figure 1)
5.1 Initial Pre-dilute and Mix Anti-Foam Chemical (Cont.)

5.1.5 IF reading on local weight factor indicator WFI-E102-2, located on the TK-E-102 instrument panel (see Figure 2) or on WFI-E102 ANTIFOAM TANK WT FACTOR (G19, F35), is greater than 0 inches, DRAIN TK-E-102 as follows:

5.1.5.1 OPEN TK-E-102 drain valve A-9.

5.1.5.2 WAIT until flow through the drain line stops.

5.1.5.3 CLOSE valve A-9.

5.1.6 RECORD the following on Data Sheet 1 on initial fill:
- Date
- Time
- Initial fill
- % active ingredient of anti-foam to be made up per Process Memo / Supervision
- Current TK-E-102 tank level from WFI-E102-2.

NOTE - If the facility is in operation on filtered raw water for seal water, opening valve A-8 abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

5.1.7 SLOWLY OPEN the following Filtered Raw Water valves to begin adding filtered raw water to TK-E-102.
- A-8
- A-8B.

5.1.8 WHEN WFI-E102-2 reads 19” WF, SLOWLY CLOSE the following valves to stop filtered raw water flow:
- A-8
- A-8B.
5.1 Initial Pre-dilute and Mix Anti-Foam Chemical (Cont.)

5.1.9 RECORD on Data Sheet 1:
- TK-E-102 level after water addition
- Using TK-E-102 conversion table (Attachment 1), amount of water added in gallons.

5.1.10 POSITION 55-gallon drum(s) of Anti-Foam Emulsion near TK-E-102.

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**WARNING**

Failure to wear appropriate protective gear during chemical transfer could result in skin or eye irritation from uncontrolled exposure to the Anti-Foam Emulsion.

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5.1.11 DON rubber gloves and safety glasses.

5.1.12 OPEN the drum of Anti-Foam Emulsion.

5.1.13 INSERT drum pump suction line into drum.

5.1.14 CONNECT drum pump discharge line to TK-E-102 chemical addition port quick disconnect fitting.

5.1.15 ENSURE the vent cover is secure and closed.

5.1.16 START drum pump to begin adding Anti-Foam Emulsion to TK-E-102.

5.1.17 MONITOR TK-E-102 local weight factor indicator WFI-E102-2, located on the TK-E-102 instrument panel (see Figure 2) as the Anti-Foam Emulsion is added. (See Figure 2)
5.1 Initial Pre-dilute and Mix Anti-Foam Chemical (Cont.)

5.1.18 WHEN WFI-E102-2 located on the TK-E-102 instrument panel reads 23 STOP the drum pump.

5.1.19 RECORD data on Data Sheet 1:
- TK-E-102 level after anti-foam addition
- Using conversion table (Attachment 1), amount of anti-foam added in gallons.

5.1.20 START the Agitator A-E-102 (G19/4 or HS-E102-1).

5.1.21 AGITATE TK-E-102 for a minimum of 10-15 minutes or as directed by process memo.

5.1.22 AFTER agitation AND at supervision direction, PERFORM Section 5.3 of this procedure.
5.2 Dilute and Mix Anti-Foam Chemical During Injection Into C-A-1 Vessel

5.2.1 IF the agitator is running, STOP the Agitator A-E-102 (G19/4 or HS-E102-1).

5.2.2 POSITION 55-gallon drum(s) of Anti-Foam Emulsion near TK-E-102.

**WARNING**

Failure to wear appropriate protective gear during chemical transfer could result in skin or eye irritation from uncontrolled exposure to the Anti-Foam Emulsion.

5.2.3 DON rubber gloves and safety glasses.

5.2.4 START pump to begin adding Anti-Foam Emulsion to TK-E-102.

5.2.5 OPEN the drum of Anti-Foam Emulsion.

5.2.6 INSERT drum pump suction line into drum.

5.2.7 ENSURE vent cover is secure and closed.

5.2.8 CHECK reading on local weight factor indicator WFI-E102-2, located on the TK-E-102 instrument panel. (see Figure 2)

5.2.9 RECORD the following on Data Sheet 1 in Refill:

- Date
- Time
- Refill
- % active ingredient of anti-foam to be made up per Process Memo / Supervision
- Current TK-E-102 tank level from WFI-E102-2.

5.2.10 START drum pump to begin adding Anti-Foam Emulsion to TK-E-102.

5.2.11 MONITOR TK-E-102 level local weight factor indicator WFI-E102-2 located on the TK-E-102 instrument panel (see Figure 2) as the Anti-Foam Emulsion is being added.
5.2 Dilute and Mix Anti-Foam Chemical During Injection Into C-A-1 Vessel (Cont.)

5.2.12 WHEN local weight factor indicator WFI-E102-2 located on the TK-E-102 instrument panel (see Figure 2) readings have increased by 2” of WF or to a level specified by process memo greater than the reading in Step 5.2.8, STOP the drum pump.

5.2.13 REMOVE drum pump discharge line from TK-E-102 chemical addition port quick disconnect fitting, as required.

5.2.14 RECORD data on Data Sheet 1:
- TK-E-102 level after anti-foam addition
- Using conversion table (Attachment 1), amount of anti-foam added in gallon.

NOTE - If the facility is in operation on filtered raw water for seal water, opening valves A-8 and A-8B abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

5.2.15 SLOWLY OPEN the following valves to begin adding filtered raw water to TK-E-102:
- A-8
- A-8B.

5.2.16 MONITOR TK-E-102 local weight factor indicator WFI-E102-2, located on the TK-E-102 instrument panel (see Figure 2) as the filtered raw water is being added.

5.2.17 WHEN local weight factor indicator WFI-E102-2 located on the TK-E-102 instrument panel (see Figure 2) reads 23 inches (+ 0.5 inches), SLOWLY CLOSE the following valves to stop filtered raw water flow:
- A-8
- A-8B.

5.2.18 RECORD on Data Sheet 1:
- TK-E-102 level after water addition
- Using TK-E-102 conversion table amount of water added in gallons.

5.2.19 AGITATE the antifoam mixture continuously, or as directed by process memo.

5.2.20 START the Agitator A-E-102 (G19/4 or HS-E102-1).
5.3 Inject Anti-Foam Emulsion Into C-A-1 Vessel

**Set Chemical Injection Pump P-E-102 Speed Control**

NOTE: Process Memo or Supervision can request a flowrate setpoint from 0.03 to 0.07 gpm. Unless otherwise instructed by supervision, flowrate setpoint will be 0.05 gpm. Anti-Foam injection pump P-E-102 local Speed Controller is located on top of the pump, facing West wall.

5.3.1 **ENSURE** FIC-E102 (G19/10) is SET to AUTO with a setpoint of 0.05 or flowrate specified by Process Memo or supervision.

**Prepare Anti-Foam Injection System Flowpath**

5.3.2 **ENSURE** TK-E-102 Drain valve HV-A-6 is CLOSED.

5.3.3 **OPEN** the following valve (Anti-Foam Injection Pump P-E-102 suction and discharge):

- A-7

5.3.4 **ENSURE** the following block valves, located on the Condenser Room 5th level, are OPEN and the Anti-Foam injection pump P-E-102 discharge valve:

- Valve 5-37
- Valve 5-42.

**Start Anti-Foam Injection Pump**

5.3.5 **START** Anti-Foam Injection Pump P-E-102 (G19/7, F35 or HS-E101-2).

5.3.6 **CHECK** that Anti-Foam Emulsion flowrate on FIC-E102 (G19/10) is 0.05 (0.03 to 0.07) gpm or the flowrate specified by Process Memo or supervision.

5.3.7 **CONTROL** Anti-Foam Emulsion flowrate by using TK-E-102 dropout rate Data Sheet 2 - TK-E-102 dropout rate ROUND SHEET at the direction of the Shift Manager.

5.3.8 **IF** Anti-Foam Injection Pump P-E-102 (G19/7, F35) did not start **ENSURE** pump P E 102 Stroke Controller OVERRIDE switch is in the AUTO position. (See Figure 1)
5.3 Inject Anti-Foam Emulsion Into C-A-1 Vessel (Cont.)

**Monitor Tank Level**

NOTE - The A-E-102 Agitator will automatically shut OFF at a Lo level of 12 inches. The A-E-102 Antifoam Injection Pump will automatically shut down at a LoLo level of 5 inches.

5.3.9 CHECK TK-E-102 level every three hours while Anti-Foam Emulsion is being injected on one of the following instruments:
- WFI-E102 ANTIFOAM TANK WT FACTR (G19, F35)
- Local Weight Factor Indicator WFI-E102-2, located on the TK-E-102 Instrument panel in the AMU room. (See Figure 2)

5.3.10 WHEN TK-E-102 level has decreased to approximately 13 inches as read on WFI-E102 (G19, F35) or WFI-E102-2, or P-E-102 Antifoam Tank Agitator (G19/7, F35) has automatically shut down, PERFORM Section 5.2 to mix another batch of Antifoam chemicals and continue pumping.

5.3.11 IF shutting down Antifoam system PERFORM Section 5.4.
5.4 Shut Down and Flush Anti-Foam Chemical Injection System

NOTE - The A-E-102 Agitator should shut down automatically at a level of 12 inches in TK-E-102.

5.4.1 IF Agitator A-E-102 is not OFF, STOP Agitator A-E 102. (G19/4, F35 or HS-E102-1)

NOTE - Chemical Injection pump P-E-102 should shut down automatically at a level of 5 inches in TK-E-102.

5.4.2 IF Anti-Foam Injection pump P-E-102 is not OFF, STOP Anti-Foam Injection Pump P-E-102. (G19/7, F35 or HS-E101-2)

First Flush Fill

NOTE - If the facility is in operation on filtered raw water for seal water, opening valves A-8 and A-8B abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

5.4.3 DRAIN TK-E-102 contents by OPENING valve A-9.

5.4.4 WHEN local weight factor indicator WFI-E102-2, located on the TK-E-102 instrument panel (see Figure 2) reads < 3” WF, CLOSE valve A-9.

NOTE - If the facility is in operation on filtered raw water for seal water, opening valve A-8 abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

5.4.5 SLOWLY OPEN the following Filtered Raw Water valves to begin adding filtered raw water to TK-E-102:
   • A-8
   • A-8B.

5.4.6 MONITOR TK-E-102 level on local weight factor indicator WFI-E102-2, located on the TK-E-102 Control Panel, as the filtered raw water is being added (see Figure 2).

5.4.7 WHEN local weight factor indicator WFI-E102-2 located on the TK-E-102 instrument panel (see Figure 2) reads 21 to 23 inches, SLOWLY CLOSE the following valves to stop filtered raw water flow:
   • A-8
   • A-8B.

5.4.8 START Agitator A-E-102. (G19/4, F35 or HS-E102-1)
5.4 Shut Down and Flush Anti-Foam Chemical Injection System (Cont.)

5.4.10 **ENSURE** FIC-E102 (G19/10) is SET to AUTO with a setpoint of 0.1 or flowrate specified by supervision.

5.4.11 **START** Anti-Foam Injection Pump P-E-102 (G19/7, F35 or HS-E101-2).

5.4.12 **CHECK** TK-E-102 level every three hours while Anti-Foam flush is being injected on one of the following instruments:
   - WFI-E102 ANTIFOAM TANK WT FACTR (G19, F35) or
   - Local Weight Factor Indicator WFI-E102-2, located on the TK-E-102 Instrument panel in the AMU room. (See Figure 2)

**NOTE:** The Agitator A-E-102 should shut down automatically at a level of 12 inches in TK-E-102.

5.4.13 **IF** Agitator A-E-102 is not OFF, **STOP** Agitator A-E-102. (G19/4, F35 or HS-E102-1).

**NOTE:** Anti-Foam Injection Pump P-E-102 should shut down automatically at a level of 5 inches in TK-E-102.

5.4.14 **IF** Anti-Foam Injection Pump P-E-102 is not OFF, **STOP** Anti-Foam Injection Pump P-E-102. (G19/7, F35 or HS-E101-2)
5.4 Shut Down and Flush Anti-Foam Chemical Injection System (Cont.)

Flush the Anti-Foam line

NOTE - If the facility is in operation on filtered raw water for seal water, opening valve A-8 abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

5.4.15 CLOSE Anti-Foam injection pump P-E-102 suction valve A-7.

5.4.16 SLOWLY OPEN filtered water valve A-8.

5.4.17 SLOWLY OPEN filtered water injection line flush valve A-8A AND FLUSH approximately 10-30 minutes.

5.4.18 SLOWLY CLOSE filtered water valve A-8.

5.4.19 OPEN Anti-Foam injection pump P-E-102 suction valve A-7.

5.4.20 OPEN TK-E-102 drain valve A-9.

5.4.21 OPEN P-E-102 suction line drain valve HV-A-6.

5.4.22 AFTER drain flow has stopped, CLOSE the following valves in the order given:
   • A-8A
   • HV-A-6
   • A-9
   • A-7.

5.4.23 CLOSE the following block valves in the order given:
   • 5-37
   • 5-42.

5.4.24 NOTIFY Shift Manager the Anti-Foam Chemical Injection System has been shut down.
5.5 System Flush

**Flush the Anti-Foam system**

NOTE - If the facility is in operation on filtered raw water for seal water, opening valve A-8 abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

- Section 5.5 may be performed at any time as directed by the Shift Manager.

5.5.1 **ENSURE** the following block valves, located on the Condenser Room 5th level, are OPEN:
- Valve 5-37
- Valve 5-42.

5.5.2 **ENSURE** the following valves are CLOSED. (See Figure 1):
- A-7
- A-8
- A-8A
- A-8B
- A-9
- A-21

5.5.3 **ENSURE** the TK-E-102 Dip Tube Air Purge controllers FIC-E102-1 and FIC-E102-2, located on the TK-E-102 Control Panel, are set at 0.5 to 1.5 scfh. (See Figure 2)

5.5.4 **ENSURE** valve A-5 is OPEN. (See Figure 1)

5.5.5 **SLOWLY OPEN** the following Filtered Raw Water valves to begin adding filtered raw water to TK-E-102:
- A-8
- A-8B.

5.5.6 **MONITOR** TK-E-102 level on local weight factor indicator WFI-E102-2, located on the TK-E-102 Control Panel, AS the filtered raw water is being added (see Figure 2)

5.5.7 **WHEN** local weight factor indicator WFI-E102-2 located on the TK-E-102 instrument panel (see Figure 2) reads 21 to 23 inches, **SLOWLY CLOSE** the following valves to stop filtered raw water flow:
- A-8
- A-8B.
5.5 System Flush (Cont.)

5.5.8 OPEN Anti-Foam injection pump P-E-102 suction valve A-7.

5.5.9 ENSURE FIC-E102 (G19/10) is SET to AUTO with a setpoint of 0.1 or flowrate specified by supervision.

5.5.10 START Anti-Foam Injection Pump P-E-102 (G19/7, F35 or HS-E101-2).

5.5.11 CHECK TK-E-102 level every three hours while Anti-Foam flush is being injected on one of the following instruments:

- WFI-E102 ANTIFOAM TANK WT FACTR (G19, F35)
- Local Weight Factor Indicator WFI-E102-2, located on the TK-E-102 Instrument panel in the AMU room. (See Figure 2).

5.5.12 OPERATE P-E-102 for duration specified by the Shift Manager.

5.5.13 STOP P-E-102 when directed by the Shift Manager.

5.5.14 CLOSE valve A-7.

5.5.15 IF directed to DRAIN TK-E-102, OPEN valve A-9.

5.5.16 ENSURE valve A-9 is closed.

5.5.17 ENSURE valves 5-37 and 5-42 are closed.
5.6 Anti-Foam line Flush

Flush the Anti-Foam line

NOTE - If the facility is in operation on filtered raw water for seal water, opening valve A-8 abruptly can cause a loss-of-seal-water condition for PB1 and PB2.

- Section 5.6 may be performed at any time as directed by the Shift Manager.

5.6.1 **ENSURE** valves 5-37 and 5-42 are OPEN.

5.6.2 **CLOSE** Anti-Foam injection pump P-E-102 suction valve A-7.

5.6.3 **SLOWLY OPEN** filtered water valve A-8.

5.6.4 **SLOWLY OPEN** filtered water injection line flush valve A-8A AND **FLUSH** approximately 10 – 30 minutes.

5.6.5 **SLOWLY CLOSE** filtered water valve A-8.

5.6.6 **OPEN** Anti-Foam injection pump P-E-102 suction valve A-7.

5.6.7 **ENSURE** valves 5-37 and 5-42 are CLOSED.
5.7 Records

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

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

OR

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

5.7.1.2 **SUBMIT** the package to FWS/OE/Shift Manager.

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<th>Records Submittal Checklist</th>
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<td><strong>Data Sheets</strong></td>
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<tr>
<td>Data Sheet 1 – Anti-Foam Makeup</td>
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<td>Data Sheet 2 - TK-E-102 dropout rate ROUND SHEET</td>
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<td><strong>Signature Sheets</strong></td>
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<td>Signature Sheet 1</td>
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FWS/OE/Shift Manager **SEND** the completed records to the Central Shift Office for records retention.

_________________________ / ______________________ / ________
Signature                          Print (First & Last)          Date
FWS/OE/Shift Manager

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.
## Data Sheet 1 – Anti-Foam Makeup

<table>
<thead>
<tr>
<th>Initial Fill Only</th>
<th>Process status (i.e. feed/slurrying, recirc with vacuum, recirc without vacuum)**</th>
<th>% active ingredient in anti-foam to be made up</th>
<th>Current TK-E-102 tank level</th>
<th>TK-E-102 level after water addition</th>
<th>TK-E-102 level after anti-foam addition</th>
<th>Amount of water added</th>
<th>Amount of anti-foam added***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>A (Inches)</td>
<td>B (Gal*)</td>
<td>C (Inches)</td>
<td>D (Gal*)</td>
<td>E (Inches)</td>
<td>F (Gal*)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4%</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>4%</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Refill</th>
<th>Process status (i.e. feed/slurrying, recirc with vacuum, recirc without vacuum)**</th>
<th>% active ingredient in anti-foam to be made up</th>
<th>Current TK-E-102 tank level</th>
<th>TK-E-102 level after anti-foam addition</th>
<th>TK-E-102 level after water addition</th>
<th>Amount of water added</th>
<th>Amount of anti-foam added***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>Time</td>
<td>A (Inches)</td>
<td>B (Gal*)</td>
<td>C (Inches)</td>
<td>D (Gal*)</td>
<td>E (Inches)</td>
<td>F (Gal*)</td>
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<tr>
<td></td>
<td></td>
<td>4%</td>
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<td>4%</td>
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</tbody>
</table>

* Use TK-E-102 tank conversion table for calculation of gallons of water added or gallons of anti-foam added

** If process status is recirculation with or without vacuum, request permission to secure the anti-foam system

*** No more than 165 gallons of undiluted anti-foam is allowed to be added to C-A-1 at one time (242-A TSR AC 5.9.1)

**** N/A if not an Initial Fill

---

Signature: ___________________________ / Print (First and Last): ___________________________ / Date: __________

Shift Manager / OE

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<table>
<thead>
<tr>
<th>Type</th>
<th>Document No.</th>
<th>Rev/Mod</th>
<th>Release Date</th>
<th>Page</th>
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<tr>
<td>REFERENCE</td>
<td>TO-660-141</td>
<td>K-9</td>
<td>10/29/2018</td>
<td>22</td>
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</table>
Inject Anti-Foam Chemicals into the 242-A Vapor/Liquid Separator C-A-1

Data Sheet 2 - TK-E-102 dropout rate ROUND SHEET

A-1/A-2 record anti-foam tank level every three hours and ensure dropout rate listed below, per plant status.

**Start-up:** 2” level drop per hour. (6” drop for three hours)

**After boil-off established:** 0.2” level drop per hour. (0.6” drop for three hours)

OR as stated per Process Memo.

If reading obtained is outside of above values, NOTIFY SM.

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME</th>
<th>Tank E-102 level</th>
<th>Level change from previous level reading</th>
<th>OPERATOR INITIAL (1)</th>
<th>242-A Shift Manager Review Initials (1)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

(1) All personnel performing signature required steps shall enter their signature, printed name, and initials on Signature Sheet 1
Inject Anti-Foam Chemicals into the 242-A Vapor/Liquid Separator C-A-1

Attachment 1 – TK-E-102 Conversion Table

<table>
<thead>
<tr>
<th>Weight Factor</th>
<th>Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>4.0</td>
</tr>
<tr>
<td>2</td>
<td>8.0</td>
</tr>
<tr>
<td>3</td>
<td>11.0</td>
</tr>
<tr>
<td>4</td>
<td>14.0</td>
</tr>
<tr>
<td>5</td>
<td>16.9</td>
</tr>
<tr>
<td>6</td>
<td>19.8</td>
</tr>
<tr>
<td>7</td>
<td>22.7</td>
</tr>
<tr>
<td>8</td>
<td>25.6</td>
</tr>
<tr>
<td>9</td>
<td>28.6</td>
</tr>
<tr>
<td>10</td>
<td>31.5</td>
</tr>
<tr>
<td>11</td>
<td>34.5</td>
</tr>
<tr>
<td>12</td>
<td>37.4</td>
</tr>
<tr>
<td>13</td>
<td>40.4</td>
</tr>
<tr>
<td>14</td>
<td>43.4</td>
</tr>
<tr>
<td>15</td>
<td>46.4</td>
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<tr>
<td>16</td>
<td>49.3</td>
</tr>
<tr>
<td>17</td>
<td>52.2</td>
</tr>
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<td>18</td>
<td>55.1</td>
</tr>
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<td>19</td>
<td>58.1</td>
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<td>21</td>
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<td>24</td>
<td>72.8</td>
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<tr>
<td>25.5</td>
<td>78.0</td>
</tr>
</tbody>
</table>

Initial Pre-dilute Concentrations for Liquid Silicon Anti-Foam Emulsion

<table>
<thead>
<tr>
<th>% Active Ingredient in Antifoam</th>
<th>Water in Weight Factor (± 0.5 WF)</th>
<th>Antifoam in Weight Factor (± 0.5 WF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>19” WF</td>
<td>4” WF</td>
</tr>
<tr>
<td>7%</td>
<td>15” WF</td>
<td>8” WF</td>
</tr>
<tr>
<td>10%</td>
<td>11” WF</td>
<td>12” WF</td>
</tr>
</tbody>
</table>

Dilute and Mix Anti-Foam Emulsion During Injection Into C-A-1 Vessel

<table>
<thead>
<tr>
<th>% Active Ingredient in Antifoam</th>
<th>Water in Weight Factor</th>
<th>Antifoam in Weight Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4%</td>
<td>Fill to 23” WF</td>
<td>2” WF*</td>
</tr>
<tr>
<td>7%</td>
<td>Fill to 23” WF</td>
<td>3.5” WF*</td>
</tr>
<tr>
<td>10%</td>
<td>Fill to 23” WF</td>
<td>5” WF*</td>
</tr>
</tbody>
</table>

*Antifoam values are based on 13” WF
Signature Sheet 1

All personnel performing signature required steps shall enter their printed name, signature, and initials below.

<table>
<thead>
<tr>
<th>Name (Printed First &amp; Last)</th>
<th>Signature</th>
<th>Initials</th>
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<tbody>
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</table>
Inject Anti-Foam Chemicals into the 242-A Vapor/Liquid Separator C-A-1

Figure 1 - Anti-Foam Chemical Injection System
Inject Anti-Foam Chemicals into the 242-A Vapor/Liquid Separator C-A-1

Figure 2 - TK-E-102 Control Panel