242-A EVAPORATOR GRAPHIC #18 ALARM INDEX

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Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

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RECORDS

No records are generated during the performance of this procedure.
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A
Source: WFT-C100-1  Setpoint: 82 percent
Alarm Class: Plant Stability
Alarm Description: TK-C-100 WT FACTOR (HIGH-HIGH) (G18/6, F23); Weight Factor in TK-C-100 is above the High-High Alarm Setpoint.

Automatic Actions:
None

Immediate Actions:

[1] CHECK WFIC-C100 TK-C-100 WT FACTOR Current Trend Display for recent changes.
   [1.1] PRESS CURR TREND, 24, and ENTER.
   [1.2] CHECK WFIC-C100 Current Trend trace for recent Weight Factor changes.
[3] NOTIFY the Shift Manager of findings.
[4] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
[5] IF facility is operating and WFIC-C100 Current Trend trace shows a rapid increase, per the following:
   [5.1] ENSURE PC System valve lineup was performed prior to starting the pump per TO-640-020.
   [5.2] ENSURE that P-C100 CONDSATE System is operational per TO-640-020.
   NOTE - Increasing the outflow of the Process Condensate System to more than the inflow indicated by FI-EC1-2 using FIC-C1005 will allow the operating level of TK-C-100 to decrease to the normal operating range.
[6] IF WFIC-C100 Current Trend trace shows a gradual increase, INCREASE FIC-C1005 PC FLOW TO F-C-1 flow rate:
   [6.1] SELECT FIC-C1005 (G18/9, F23).
   [6.2] IF FIC-C1005 is not in MANUAL mode, PRESS AUTO/MAN twice to place FIC-C1005 in MANUAL mode.
   [6.4] MONITOR WFIC-C100 Current Trend trace as FIC-C1005 flow is increasing.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 82 percent
Source: WFT-C100-1

Immediate Actions (Cont.):

[6.5]  **REPEAT** Steps [6.3] and [6.4] until WFIC-C100 Current Trend trace reads 48% to 51%.

[6.6]  **PRESS** AUTO/MAN twice to place FIC-C1005 in AUTO mode.

[6.7]  **SELECT** WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR.

[6.8]  **PRESS** SETPOINT, 50, and ENTER.

[6.9]  **EXIT** this Alarm Response Procedure.

[7]  **IF** FIC-C1005 PC FLOW TO F-C-1 flow will not increase, **PERFORM** the following actions:

[7.1]  **CHECK** PDI-FC1-1 (F24) PC CUNO FILTER DELTA P status.

[7.2]  **IF** PDI-FC1-1 status is normal, **NOTIFY** the Shift Manager of a problem with valve FV-C100-5.

[8]  **IF** FIC-C1005 PC FLOW TO F-C-1 Output is 85% and WFIC-C100 TK-C-100 WT FACTOR does not decrease, **REDUCE** steam flow to Reboiler to reduce boil-off to 10 gpm less than FIC-C1005 flow, **OR**

**ALLOW** TK-C-100 to overflow with Shift Manager permission.

[8.1]  **IF** Shift Manager gives permission to allow TK-C-100 to overflow, **EXIT** this Alarm Response Procedure.

[8.2]  **SET** FIC-EA1-1 (G13/8, F12) REBOILER STEAM FLOW to MANUAL mode.

[8.3]  **SLOWLY** lower FIC-EA1-1 output (no more than 3% at a time).

[8.4]  **MONITOR** FI-EC1-2 (G16, F14) E-C-1 CONDENSR FLOW flow reading for 5 minutes after FIC-EA1-1 output is lowered.

[8.5]  **REPEAT** Steps [8.3] and [8.4] until FI-EC1-2 flow reading is stable at a value 10 gpm less than FIC-C1005 flow value with FIC-C1005 output at 85%.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator  
Graphic: 18  
Panel: N/A  
Source: WFT-C100-1  
Alarm #: N/A  
Setpoint: 82 percent  
WFIC-C100

Probable Causes:
1. Flow rate into TK-C-100 is greater than flow rate from TK-C-100.
2. Instrument malfunction.
3. Equipment malfunction.

References:
- Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System  
  H-2-98999, Sheet 1, P&ID Vacuum Condensate System  
- Documents: TO-640-020, Operate 242-A Process Condensate System
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18                Alarm #: N/A
Panel: N/A
Source: WFT-C100-1          Setpoint: 16.7 percent
Alarm Class: Plant Stability
Alarm Description: TK-C-100 WT FACTOR (LOW-LOW) (G18/6, F23); Weight Factor in TK-C-100 is below the Low-Low Alarm Setpoint.

Automatic Actions:
1. Activates Interlock #9B; shuts down P-C100.

Immediate Actions:
[1] REQUEST the Backside Operator to check the following conditions in the Condenser Room:
   [1.1] CHECK TK-C-100 is not leaking.
   [1.2] CHECK Valve 1-3 CLOSED.
   [1.3] CHECK Valve 1-3A CLOSED.
[2] IF there are leaks present, NOTIFY Shift Manager.
[3] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
NOTE - The shutdown of P-C106 will result in LOW pressure alarm on PI-CA1-20 (Interlock #54), which switches HV-CA1-10 from PC to FRW.
[4] ENSURE that HV-CA1-10 status is CF-FRW.
   [4.1] SET HV-CA1-10 (G12/15, F6) to CF-FRW status.
[5] AFTER HV-CA1-10 status is CF-FRW, CHECK the following:
   • PI-CA1-9 (G12/6, F6) PB1 SEAL WATER PRESSURE is above 45 psig
   • PI-CA1-10 (G15, F10) PB2 SEAL WATER PRESSURE is above 65 psig
   • FI-CA1-1 (G12, F6) SEAL WATER FLOW is above 0.42 gpm
   • F1-CA1-2 (G15, F10) SEAL WATER FLOW is above 1.00 gpm.
[6] IF flows or pressures are not above the setpoints, START P-C105/105A per TO-600-210.
[7] ENSURE that P-C106 CONDSATE RECYCLE PUMP is SHUT DOWN:
   [7.1] SET P-C106 (G18/10, F27) to CF-OFF status.
[8] ENSURE that P-C100 CONDSATE TANK PUMP (G18/7, F23) status is CF-OFF:
   [8.1] SET P-C100 (G18/7, F23) to CF-OFF status.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 16.7 percent
Source: WFT-C100-1

Immediate Actions (Cont.):

[9] CHECK FI-EC1-2 Current Trend display for recent changes:
   [9.1] PRESS CURR TREND, 16, and ENTER.

[10] CHECK WFIC-C100 Current Trend trace for TK-C-100 Weight Factor changes:
   [10.1] PRESS CURR TREND, 24, and ENTER.
   [10.2] CHECK WFIC-C100 current trend trace for recent TK-C-100 Weight Factor changes.

NOTE - The WFIC-C100 Low-Low Alarm resets at approximately 18.7%.

[11] IF the WFIC-C100 Current Trend shows an increasing level but the Low-Low Alarm has not RESET, MONITOR TK-C-100 Level until the Low-Low Alarm RESETS.

[12] AFTER TK-C-100 Level Low-Low Alarm RESETS, RESTART P-C100 (G18/7, F23) CONDSATE TANK PUMP per TO-640-020.

Probable Causes:

1. Flow rate from TK-C100 is greater than flow rate into TK-C-100.
2. Leak in TK-C-100.
3. Drain valve inadvertently opened.
4. Ongoing maintenance PM.
5. Instrument malfunction.

References:

Drawings:  H-2-98990, Sheet 1, P&ID Process Condensate System
          H-2-99003, Sheet 1, P&ID Filtered Raw Water
Documents: TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
          TO-640-020, Operate 242-A Process Condensate System
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A
Source: Calculated (PI-FC1-3) - (PI-FC1-4)  Setpoint: 40 PSID

Alarm Class: Plant Stability
Alarm Description: PC CUNO FILTER DELTA P (HIGH-HIGH) (F24); the ΔP across the Process Condensate Cuno Filter is above the High-High Alarm setpoint.

Automatic Actions:
1. Activates Interlock #34; shuts off P-C100.

Immediate Actions:
[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
[2] ENSURE that P-C100 CONDSATE TANK PUMP is SHUT DOWN:
   [2.1] SET P-C100 (G18/7, F23) to CF-OFF status.
[3] CHECK PDI-FC1-1 PC CUNO FILTER DELTA P Current Trend trace for Cuno Filter ΔP changes:
   [3.1] PRESS CURR TREND, 26, and ENTER.
   [3.2] CHECK PDI-FC1-1 Current Trend trace for recent F-C-1 filter ΔP increases.
[4] IF the PDI-FC1-1 Current Trend display shows a gradually increasing ΔP, indicating that the F-C-1 Filter is plugged, DIRECT maintenance to change the F-C-1 Filter per TO-600-160.
[5] IF the PDI-FC1-1 Current Trend display shows a rapid change, indicating a possible instrument loop error, REQUEST the Shift Manager to arrange for maintenance troubleshooting.
[6] CHECK WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR Level reading.
[7] IF WFIC-C100 reads 50% (40% - 60%) and is stable, MONITOR WFIC-C100 until F-C-1 Filters are replaced.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18   Alarm #: N/A
Panel: N/A   Setpoint: 40 PSID
Source: Calculated (PI-FC1-3) - (PI-FC1-4)   RED
PDI-FC1-1

(Continued)

Immediate Actions (Cont.):

[8] IF WFIC-C100 reads greater than 65%, REDUCE FIC-EA1-1 REBOILER STEAM FLOW until FI-EC1-2 E-C-1 CONDENSR FLOW is at minimum operating flow per Process Memo,

OR

IF repairs or replacement of the F-C-1 filter is going to take longer than a shift to complete, or at the direction of the Shift Manager, SECURE FIC-EA1-1 REBOILER,

OR

ALLOW TK-C-100 to overflow to 241-AW-102, with Shift Manager permission.

[8.1] IF Shift Manager gives permission to allow TK-C-100 to overflow, EXIT this Alarm Response Procedure.

[8.2] SET FIC-EA1-1 (G13/8, F12) to MANUAL mode.

[8.3] MONITOR FI-EC1-2 (G16, F14) as FIC-EA1-1 Steam Flow is lowered.

[8.4] LOWER Reboiler Steam flow (no more than 3% at a time).

[9] NOTIFY the Shift Manager of all findings.

Probable Causes:

1. Plugged F-C-1 filter.
2. Instrument malfunction.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
H-2-98986, Sheet 2, P&ID Legend and Interlock Schedule
Documents: TO-600-160, Evaluate and Change 242-A Process Condensate Filter F-C-1
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 20 PSID
Source: PDT-FC4/5

Alarm Class: Plant Stability
Alarm Description: CONDSATE RECYCLE FILTERS DELTA P (HIGH-HIGH) (G18, F27); the ΔP across the Condensate Recycle Cuno Filters is above the High-High Alarm setpoint.

Automatic Actions:

1. Activates Interlock #52; shuts off P-C106; switches HV-CA1-10 from PC to FRW.

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

[2] ENSURE that HV-CA1-10 status is CF-FRW.

   [2.1] SET HV-CA1-10 (G12/15, F6) to CF-FRW status.

[3] AFTER HV-CA1-10 status is CF-FRW, CHECK the following:

   • PI-CA1-9 (G12/6, F6) PB1 SEAL WATER PRESSURE is above 45 psig
   • PI-CA1-10 (G15, F10) PB2 SEAL WATER PRESSURE is above 65 psig
   • FI-CA1-1 (G12, F6) SEAL WATER FLOW is above 0.42 gpm
   • F1-CA1-2 (G15, F10) SEAL WATER FLOW is above 1.00 gpm.

[4] IF flows or pressures are not above the setpoints, START P-C105/105A per TO-600-210.

[5] ENSURE that P-C106 CONDSATE RECYCLE PUMP is SHUT DOWN:

   [5.1] SET P-C106 (G18/10, F27) to CF-OFF status.


   [6.1] PRESS CURR TREND, 47, and ENTER.

   [6.2] CHECK PDI-FC4/5 Current Trend trace for recent FC4/5 filter ΔP increases.

[7] IF the PDI-FC4/5 Current Trend display shows a gradually increasing ΔP, indicating that the FC4/5 Filters are plugged, SWITCH Seal Water System from FRW to PC using the clean filter bank per TO-600-210 AND

DIRECT maintenance to change the FC4/5 Filters per TO-600-180.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 20 PSID
Source: PDT-FC4/5

Immediate Actions (Cont.):

[8] IF the PDI-FC4/5 Current Trend display shows a rapid change, indicating a possible instrument loop error, REQUEST the Shift Manager to arrange for maintenance troubleshooting.

[9] NOTIFY the Shift Manager of all findings.

Probable Causes:

1. Plugged F-C-5 or F-C-4 filters.
2. Instrument malfunction.

References:

Drawings:  H-2-98986, Sheet 2, P&ID Legend and Interlock Schedule
H-2-99003, Sheet 1, P&ID Filtered Raw Water

Documents:  TO-600-180, Change Raw Water and Process Condensate Filters, and Clean In Line Strainer
TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18                     Alarm #: N/A
Panel: N/A                      Setpoint: 66 percent
Source: WFT-C100-1             Alarm Description: TK-C-100 WT FACTOR (HIGH) (G18/6, F23); the Weight Factor in TK-C-100 is above the High Alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
[2] CHECK WFIC-C100 TK-C-100 WT FACTOR Current Trend Display for recent changes:
   [2.1] PRESS CURR TREND, 24, and ENTER.
   [2.2] CHECK WFIC-C100 Current Trend trace for recent Weight Factor changes.
[5] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
[6] IF WFIC-C100 Current Trend trace shows a rapid increase, ENSURE that P-C100 CONDSATE TANK PUMP (G18/7, F23) status is CF-ON:
   [6.1] SET P-C100 to CF-ON status.
   [6.2] IF P-C100 will not START, NOTIFY the Shift Manager.
   [6.3] WHEN P-C100 status is CF-ON, CHECK that II-P-C100 PROCESS CONDSATE PUMP CURRENT (G18, F23) current reads 7 - 11 amps.
   [6.4] IF II-P-C100 does not read 7 - 11 amps, NOTIFY the Shift Manager of possible P-C100 malfunction.

NOTE - Increasing the outflow of the Process Condensate System to more than the inflow indicated by FI-EC1-2 using FIC-C1005 will allow the operating level of TK-C-100 to decrease to the normal operating range.

[7] IF WFIC-C100 Current Trend trace shows a gradual increase, INCREASE FIC-C1005 PC FLOW TO F-C-1 flow rate:
   [7.1] SET FIC-C1005 (G18/9, F23) to MANUAL mode.
   [7.2] INCREASE FIC-C1005 flow rate.

(Continued on Next Page)
Immediate Actions (Cont.):

[7.3] MONITOR WFIC-C100 Current Trend trace as FIC-C1005 flow is increasing.

[7.4] REPEAT Steps [7.2] and [7.3] until WFIC-C100 Current Trend trace reads 45% to 55%.

[7.5] PRESS AUTO/MAN twice to place FIC-C1005 in AUTO mode.

[7.6] SELECT WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR.

[7.7] PRESS SETPOINT, 50, and ENTER.

[7.8] EXIT this Alarm Response Procedure.

[8] IF FIC-C1005 PC FLOW TO F-C-1 flow will not increase, PERFORM the following actions:

[8.1] CHECK PDI-FC1-1 (F24) PC CUNO FILTER DELTA P status.

[8.2] IF PDI-FC1-1 status trace is normal, NOTIFY the Shift Manager of a problem with valve FV-C100-5.

[9] IF FIC-C1005 PC FLOW TO F-C-1 Output is 85% AND WFIC-C100 TK-C-100 WT FACTOR does not decrease, REDUCE Steam flow to Reboiler to reduce boil-off to 10 gpm less than FIC-C1005 flow, OR ALLOW TK-C-100 to overflow with Shift Manager permission.

[9.1] IF Shift Manager gives permission to allow TK-C-100 to overflow, EXIT this Alarm Response Procedure.

[9.2] SET FIC-EA1-1 (G13/8, F12) REBOILER STEAM FLOW to MANUAL mode.

[9.3] SLOWLY lower FIC-EA1-1 output (no more than 3% at a time).

[9.4] MONITOR FI-EC1-2 (G16, F14) E-C-1 CONDENSR FLOW flow reading for 5 minutes after FIC-EA1-1 output is lowered.

[9.5] REPEAT Steps [9.3] and [9.4] until FI-EC1-2 flow reading is stable at a value 10 gpm less than FIC-C1005 flow value with FIC-C1005 output at 85%.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18       Alarm #: N/A
Panel: N/A       Setpoint: 66 percent
Source: WFT-C100-1

Probable Causes:
1. Flow rate into TK-C-100 is greater than flow rate from TK-C-100.
2. Ongoing maintenance PM.
3. Instrument malfunction.

References:
Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: TO-600-160, Evaluate and Change 242-A Process Condensate Filter F-C-1
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

**Facility:** 242-A Evaporator

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<th>Graphic</th>
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<th>Panel</th>
<th>Source</th>
<th>Setpoint</th>
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<td>18</td>
<td>N/A</td>
<td>N/A</td>
<td>WFT-C100-1</td>
<td>27.0 %</td>
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**Alarm Class:** Plant Stability

**Alarm Description:** TK-C-100 WT FACTOR (LOW) (G18/6, F23); the Weight Factor in TK-C-100 is below the Low Alarm setpoint.

**Automatic Actions:**

1. Activates Interlock #9A: Shuts down TK-C-100 Agitator. Shuts down P-C106 Condensate Recycle Pump, positions HV-CA1-10 to CF-FRW.

**Immediate Actions:**

NOTE - If the Evaporator is being shut down, FI-EC1-2 flow reading should be expected to decrease to 0.

1. **CHECK** FI-EC1-2 (G16, F14) E-C-1 CONDENSR FLOW Current Trend display for recent condensate flow changes:
   
   1.1 **PRESS** CURR TREND, 16, and ENTER.

2. **IF** WFIC-C100 Current Trend trace is decreasing rapidly, **REQUEST** the Backside Operator to ensure the following:
   - Valve 1-3 is CLOSED
   - Valve 1-3A is CLOSED
   - TK-C-100 is not damaged or leaking.

3. **NOTIFY** the Shift Manager of findings.

4. **IF** the facility is not in an OPERATING mode, **EXIT** this Alarm Response Procedure.

5. **ENSURE** that A-C100 (G18/5, F23) CONDSATE TANK AGITATOR status is CF-OFF:
   
   5.1 **SET** A-C100 (G18/5, F23) to CF-OFF status.

6. **ENSURE** that P-C106 (G18/10, F27) CONDSATE RECYCLE PUMP status is CF-OFF:
   
   6.1 **SET** P-C106 (G18/10, F27) to CF-OFF status.

7. **SET** HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status to CF-FRW and INTERLOK.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 27.0 %
Source: WFT-C100-1

YELLOW

WFIC-C100

Immediate Actions (Cont.):

[8] AFTER HV-CA1-10 status is CF-FRW, **CHECK** the following:
   - PI-CA1-9 (G12/6, F6) PB1 SEAL WATER PRESSURE is above 45 psig
   - PI-CA1-10 (G15, F10) PB2 SEAL WATER PRESSURE is above 65 psig
   - FI-CA1-1 (G12, F6) SEAL WATER FLOW is above 0.42 gpm
   - FI-CA1-2 (G15, F10) SEAL WATER FLOW is above 1.00 gpm.

[9] IF flows or pressures are not above the setpoints, **START** P-C105/105A per TO-600-210.

[10] **CHECK** WFIC-C100 Current Trend trace for TK-C-100 Weight Factor changes:
   - [10.1] **PRESS** CURR TREND, 24, and ENTER.
   - [10.2] **CHECK** WFIC-C100 Current Trend trace for recent TK-C-100 Weight Factor changes.
   - [10.3] **CHECK** FI-EC1-2 Current Trend trace for recent decreases in Process Condensate flow.

[11] **ENSURE** that FIC-C1005 PC FLOW TO F-C-1 is in AUTO mode and shows a CLOSED Cascade (i.e., shows a green "C"):
   - [11.1] **SET** FIC-C1005 (G18/9, F23) to AUTO mode.
   - [11.2] **IF** FIC-C1005 shows an OPEN Cascade (i.e., shows a white "O"), **PRESS** CASC once to CLOSE the Cascade **AND**
     **CHECK** that FIC-C1005 Cascade changes to CLOSED (i.e., shows a green "C").


[13] **IF** FI-EC1-2 flow reads less than FIC-C1005 flow reading, **SHUT DOWN** P-C100 CONDSATE TANK PUMP:
   - [13.1] **SELECT** P-C100 (G18/7, F23) to CF-OFF status.

[14] **AFTER** P-C100 is SHUT DOWN and this Alarm RESETS, **RESTART** the Process Condensate system per TO-640-020.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18 Alarm #: N/A
Panel: N/A
Source: WFT-C100-1 Setpoint: 27.0 %

Probable Causes:

1. Flow rate into TK-C-100 is less than flow rate from TK-C-100.
2. Leak in TK-C-100.
3. Instrument malfunction.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
TO-640-020, Operate 242-A Process Condensate System
Facility: 242-A Evaporator
Graphic: 18
Panel: N/A
Source: TE-C100-1

Alarm Class: Plant Stability
Alarm Description: TK-C-100 PROCESS CONDSATE TEMP (HIGH) (G18, F23); the temperature in TK-C-100 is above the High Alarm setpoint. If Evaporator vacuum Steam Jets are left on for a long enough period without any boil-off, input to TK-C-100 from E-C-2 and E-C-3 could heat up the tank considerably.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

[2] CHECK the following points temperature readings:
   - TIC-EC1-2 (G16/8, F14) E-C-1 PC OUTLET TEMP
   - TI-EC2-2 (G16, F15) E-C-2 PC OUTLET TEMP
   - TI-EC3-2 (G16, F15.) E-C-3 PC OUTLET TEMP.

[3] CHECK the following points' flow readings:
   - FIC-EC3-1 (G16/9, F14) E-C-3 CONDENSR URW FLOW CONTROLR
   - FIC-EC1-1 (G17/5, F14) E-C-1 CONDENSR URW FLOW CONTROLR
   - FI-EC1-2 (G16, F14) E-C-1 CONDENSR PC FLOW.


[5] NOTIFY the Shift Manager of findings.

[6] IF directed by Shift Manager, SHUTDOWN steam jets per TO-600-060 AND/OR REMOVE any potential organic layer in TK-C-100 per TO-600-190.

Probable Causes:

1. Low raw water flow in E-C-1.
2. Steam jets running without boil-off.
3. Instrument malfunction.
4. Ongoing maintenance PM.
5. Ignition of organics in TK-C-100.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator  
Graphic: 18  
Alarm #: N/A  
Panel: N/A  
Source: TE-C100-1  
Setpoint: 120 °F

References:

Drawings:  
H-2-98990, Sheet 1, P&ID Process Condensate System  
H-2-98991, Sheet 1, P&ID Raw Water System  
H-2-98994, Sheet 1, P&ID Used Raw Water System  
H-2-98999, Sheet 1, Vacuum Condensate System

Documents:  
TO-600-060, Shut Down 242-A Evaporator System  
TO-600-190, Remove Organics from the TK-C-100

(Continued)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator  
Graphic: 18  
Panel: N/A  
Source: LYL-C100-1  
Alarm Class: Equipment Status  
Alarm Description: TK-C-100 OVERFLOW TRAP LEVEL LOW (F23); the water level in the TK-C-100 Overflow trap is low.

Automatic Actions:  
None

Immediate Actions:
   [1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
   [2] REQUEST the Backside Operator check the following:
      [2.1] CHECK TK-C-100 seal loop level on sight glass LG-C100-1.
      [2.2] CHECK for leaks in seal loop.
   [3] IF LG-C100-1 is BELOW 1/3 full, REQUEST the Backside Operator to add water to the seal loop:
      [3.1] ENSURE Valves 1-3A and 1-5 are CLOSED.
      [3.3] OPEN Valve 1-2 to fill Seal Loop.
      [3.4] CLOSE Valve 1-2 when the seal loop is greater than 2/3 full.
      [3.5] CLOSE Valve 1-3.

Probable Causes:
   1. Leak in, or evaporation from, Seal Loop.
   2. Drain valve 1-5 is open.
   3. Instrument malfunction.

References:
   Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
   Documents: None
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 18   Alarm #: N/A
Panel: N/A   Setpoint: N/A
Source: LYL-SP-1   Alarm Description: VES VENT SEAL-POT LEVEL LOW (F23); the level in the Vessel Vent Seal Pot is low.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure
[2] REQUEST the Backside Operator perform the following:
   [2.1] CHECK Vessel Vent seal loop level in sight glass LG-SP-1.
   [2.2] CHECK for leaks around seal pot.
   [2.3] ENSURE drain valve 2C-4 is CLOSED.
[3] IF LG-SP-1 water level is BELOW 75%, REQUEST the Backside Operator fill the seal pot:
   [3.1] OPEN raw water valve 2C-1 to fill seal pot until LG-SP-1 liquid level is AT 75%.
   [3.2] CLOSE raw water valve 2C-1.

Probable Causes:

1. Leak in, or evaporation from, Seal Pot.
2. Drain valve 2C-4 is open.
3. Ongoing maintenance PM.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: None
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 55 psig
Source: PT-FC1-3  Alarm Class: Plant Stability

Alarm Description: PC CUNO FILTER UPSTREAM PRESSURE (HIGH) (F24); the pressure upstream of the Process Condensate Cuno Filter is above the high Alarm point.

Automatic Actions:

None

Immediate Actions:

[1] If the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

[2] CHECK PI-FC1-3 (F24) PC CUNO FILTER UPSTREAM PRESSURE, PI-FC1-4 (F24) PC CUNO FILTER DNSTREAM PRESSURE, and PDI-FC1-1 (G18, F24) PC CUNO FILTER DELTA P Current Trend display for recent pressure changes:

   [2.1] PRESS CURR TREND, 26, and ENTER.

   [2.2] CHECK PI-FC1-3, PI-FC1-4, and PDI-FC1-1 Current Trend traces for recent pressure increases.

[3] IF PI-FC1-3 and PDI-FC1-1 pressures show gradual increases, NOTIFY Shift Manager to request maintenance to change the F-C-1 Filter per TO-600-160 AND EXIT this ARP.

[4] IF pressure increased rapidly and flow decreased rapidly, SHUT DOWN P-C100 CONDSATE TANK PUMP:

   [4.1] SET P-C100 (G18/7, F23) to CF-OFF status.

[5] REQUEST the Backside Operator ensure the following conditions:

   [5.1] ENSURE Valves 1-15 and 2-33 are OPEN.

[6] IF PDI-FC1-1 reads greater than 20 psi, DIRECT maintenance to change the F-C-1 Filter per TO-600-160.

[7] CHECK WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR level reading.

[8] IF WFIC-C100 reads 50% (40% - 60%) and is stable, MONITOR WFIC-C100 until F-C-1 filters are replaced.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator  
Graphic: 18  
Panel: N/A  
Source: PT-FC1-3  
Alarms at the 242-A Evaporator

Yellow  
PI-FC1-3

Setpoint: 55 psig

Immediate Actions (Cont.):

[9] IF WFIC-C100 reads greater than 65%, REDUCE FIC-EA1-1 (G13/8, F12) REBOILER STEAM FLOW until FI-EC1-2 (G16, F14) E-C-1 CONDENSR PC FLOW is at minimum operating flow per Process Memo,

 OR

 IF repairs or replacement of the F-C-1 filter is going to take longer than a shift to complete, or at the direction of the Shift Manager, SECURE FIC-EA1-1 REBOILER STEAM FLOW,

 OR

 WITH Shift Manager permission, ALLOW TK-C-100 to overflow to 241-AW-102:

 [9.1] IF Shift Manager gives permission to allow TK-C-100 to overflow, EXIT this Alarm Response Procedure.

 [9.2] SET FIC-EA1-1 (G13/8, F12) to MANUAL mode.

 [9.3] MONITOR FI-EC1-2 (G16, F14) as FIC-EA1-1 steam flow is lowered.

 [9.4] SLOWLY lower FI-EC1-2 steam flow (no more than 3% at a time).

 [10] NOTIFY the Shift Manager.

Probable Causes:

1. Plugged F-C-1 filter.
2. Instrument malfunction.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: TO-600-160, Evaluate and Change 242-A Process Condensate Filter F-C-1
Facility: 242-A Evaporator

Graphic: 18  
Alarm #: N/A

Panel: N/A

Source: Calculated (PI-FC1-3) - (PI-FC1-4)  
Setpoint: 20 psid

Alarm Class: Plant Stability

Alarm Description: PC CUNO FILTER DELTA P (HIGH) (G18, F24); the ΔP across the Process Condensate Cuno Filter is above the Alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

[2] LOWER FIC-C1005 PC FLOW TO F-C-1 flow until this Alarm clears:
   [2.1] SET FIC-C1005 (G18/9, F23) to MANUAL mode.
   [2.2] SLOWLY lower FIC-C1005 output.
   [2.3] REPEAT Step [2.2] until this Alarm clears.

[3] AFTER this Alarm clears, CHECK WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR.


[5] IF FI-EC1-2 flow reads greater than FIC-C1005, NOTIFY the Shift Manager that Steam to the Reboiler will need to be lowered to reduce boil-off OR the F-C-1 Cuno Filters will need to be changed.

[6] CHECK WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR level reading.

[7] IF WFIC-C100 reads 50% (40% - 60%) and is stable, MONITOR WFIC-C100 until F-C-1 filters are replaced.
Immediate Actions (Cont.)

[8] IF WFIC-C100 reads greater than 65%, REDUCE FIC-EA1-1 (G13/8, F12) REBOILER STEAM FLOW until FI-EC1-2 (G16, F14) E-C-1 CONDENSR PC FLOW is at minimum operating flow per Process Memo,

OR

IF repairs or replacement of the F-C-1 filter is going to take longer than a shift to complete, or at the direction of the Shift Manager, SECURE FIC-EA1-1 REBOILER STEAM FLOW,

OR

WITH Shift Manager permission, ALLOW TK-C-100 to overflow to 241-AW-102:

[8.1] IF Shift Manager gives permission to allow TK-C-100 to overflow, EXIT this Alarm Response Procedure.

[8.2] SET FIC-EA1-1 (G13/8, F12) to MANUAL mode.

[8.3] MONITOR FI-EC1-2 (G16, F14) as FIC-EA1-1 steam flow is lowered.

[8.4] SLOWLY lower FI-EC1-2 steam flow (no more than 3% at a time).

Probable Causes:

1. Plugged F-C-1 filter.
2. Instrument malfunction.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: None
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A
Source: PDT-FC4/5  Setpoint: 15 psid
Alarm Class: Plant Stability
Alarm Description: CONDSATE RECYCLE FILTERS DELTA P (HIGH) (G18, F27); the ΔP across the Condensate Recycle Cuno Filters is above the High Alarm setpoint.

Automatic Actions:
None

Immediate Actions:
[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

Probable Causes:
1. Plugged F-C-5 or F-C-4 filter.
2. Instrument malfunction.

References:
Drawings: H-2-99003, Sheet 1, P&ID Filtered Raw Water System
Documents: TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A
Source: II-P-C106  Setpoint: 8
Alarm Class: Plant Stability
Alarm Description: CONDSATE RECYCLE PUMP CURRENT (G18, F27); Condensate Recycle Pump current is above the high alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

[2.1] SELECT II-P-C106 CURR TREND, 47 AND PRESS ENTER.
[2.2] CHECK II-P-C106 Current Trend Trace for recent P-C106 current increases.

[3] IF the II-P-C106 Current Trend display shows a gradually increasing current, MONITOR for approximately 5 minutes.
[4] IF II-P-C106 status is still in alarm after 5 minutes, SHUTDOWN P-C106 as follows:

[4.1] SET P-C106 (G18/10, F27) to CF-OFF status.
[5] IF the II-P-C106 Current Trend display shows a rapid change indicating a possible instrument loop error, SHUTDOWN P-C106 as follows:

[5.1] SET P-C106 (G18/10, F27) to CF-OFF status.

[6] IF P-C106 is shut down, CHECK that HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status is CF-FRW.

[7] IF HV-CA1-10 Status is not CF-FRW, SELECT HV-CA1-10 AND CHECK that HV-CA1-10 changes to CF-FRW.

[8] AFTER HV-CA1-10 status is CF-FRW, CHECK the following:
  • PI-CA1-9 (G12/6, F6) PB1 SEAL WATER PRESSURE is above 45 psig
  • PI-CA1-10 (G15, F10) PB2 SEAL WATER PRESSURE is above 65 psig
  • FI-CA1-1 (G12, F6) SEAL WATER FLOW is above 0.42 gpm
  • F1-CA1-2 (G15, F10) SEAL WATER FLOW is above 1.00 gpm.

(Continued on Next Page)
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A  Setpoint: 8
Source: II-P-C106

YELLOW
II-P-C106

(Continued)

Immediate Actions (Cont.):

[9] IF flows or pressures are not above the setpoints, START P-C105/105A per TO-600-210.

[10] NOTIFY the Shift Manager of all findings.

Probable Causes:

1. Failure of PCV-CA1-10, Condensate Recycle Pressure Regulating Valve.
2. Instrument malfunction.

References:

Drawings:  H-2-99003, Sheet 1, P&ID Filtered Raw Water
Documents: TO-600-210, Operate PB-1 and PB-2 Seal Water Filter System
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18  Alarm #: N/A
Panel: N/A
Source: LT-C100-2  Setpoint: SpG less than 0.98 at upper pair of dip tubes in TK-C-100

Alarm Class: Plant Stability
Alarm Description: TK-C-100 UPPER INTERFACE (F23); there are indications of the presence of Organic compounds in TK-C-100.

Automatic Actions: None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.

NOTE - This alarm indicates possible presence of organics in TK-C-100.

[2] CHECK LI-C100-1 TK-C-100 UPPER INTERFACE Current Trend trace for recent changes:

[2.1] PRESS CURR TREND, 25, and ENTER.

[2.2] CHECK LI-C100-1 Current Trend trace for recent changes.


[4] IF requested by Shift Manager, SAMPLE TK-C-100 for organics per TO-600-190.

[5] IF organics are present, REMOVE them per TO-600-190.

Probable Causes:

1. Organics in TK-C-100.
2. Instrument malfunction.
3. TK-C-100 level is below bottom of upper dip tube (occurs when WFIC-C100 is approximately 47.6%).

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: TO-600-190, Remove Organics from TK-C-100
Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 18            Alarm #: N/A
Panel: N/A            Yellow
Source: P-C100        Setpoint: Motor stopped
                      Alarm Class: Equipment Status
Alarm Description: P-C100 PUMP CONFIRM (F23); Process Condensate Pump P-C100 is OFF.

Automatic Actions:
None

Immediate Actions:

[1] IF the facility is not in an OPERATING mode, EXIT this Alarm Response Procedure.
NOTE - This alarm is a status indicator for the P-C100 pump. If shutdown of the P-C100 pump was intentional, NO Operator Actions are required.

[2] CHECK WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR level reading.

[3] IF P-C100 SHUT DOWN from a Low-Low TK-C-100 level (WFIC-C100 is less than 16.7%), MONITOR WFIC-C100 level reading.
   [3.1] AFTER WFIC-C100 level reading is greater than 18.7%, RESTART P-C100 CONDSATE TANK PUMP per TO-640-020.

NOTE - Active interlocks on Graphic #62 are indicated by having a red box around them.

[4] SELECT Graphic #62 P-C100 INTERLOCKS to determine any active P-C100 interlocks 
   ATTEMPT to clear the active interlocks.


Probable Causes:

1. Pump has been shut off either manually or due to an Interlock.
2. Low-Low level in TK-C-100 shut down pump.
3. Ongoing maintenance PM.
5. Breaker trip.

References:

Drawings: H-2-98990, Sheet 1, P&ID Process Condensate System
Documents: TO-640-020, Operate 242-A Process Condensate System
## Respond to TK-C-100 Graphic #18 Alarms at the 242-A Evaporator

**Facility:** 242-A Evaporator  
**Graphic:** 18  
**Alarm #:** N/A  
**Panel:** N/A  
**Source:** A-C100 MCC 0237  
**Setpoint:** Motor Stopped  
**Alarm Class:** Equipment Status  
**Alarm Description:** A-C100 AGITATOR CONFIRM (F23); Agitator A-C100 is OFF.  

### Automatic Actions:
None

### Immediate Actions:

1. **IF** the facility is not in an OPERATING mode, **EXIT** this Alarm Response Procedure.  
   **NOTE** - This alarm is a status indicator for the A-C100 Agitator motor. If shutdown of the A-C100 agitator was intentional, **NO Operator Actions are required.**

2. **CHECK** WFIC-C100 (G18/6, F23) TK-C-100 WT FACTOR level reading.

3. **IF** A-C100 SHUT DOWN from a Low TK-C-100 level (WFIC-C100 is less than 23.8%), **MONITOR** WFIC-C100 level reading.

4. **AFTER** WFIC-C100 level reading is greater than 25.8%, **RESTART** A-C100 CONDSATE TANK AGITATOR at Shift Manager request:
   - **[4.1]** **SET** A-C100 (G18/5, F23) to CF-ON status.

5. **NOTIFY** the Shift Manager.

### Probable Causes:
1. Agitator has been shut off.
2. Low level in TK-C-100 shut agitator off.
3. Ongoing maintenance PM.
5. Breaker tripped.

### References:

**Drawings:** H-2-98990, Sheet 1, P&ID Process Condensate System  
**Documents:** None