Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Tank Farm Alarm Response Procedure 242-A Evaporator

USQ # EV-18-0814-S, Rev. 0

CHANGE HISTORY (≤LAST 5 REV-MODS)

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| J-5     | 05/24/2018   | Operations request | Page 17-Added "CONTACT Cognizant System Engineer or Shift Technical Engineer." Struck out "IF DIRECTED proceed with gravity slurry out per TO-600-030."  
Added "IF AUTHORIZED by Engineering, RESET VFD fault." Struck out "PLACE the Evaporator in recirculation with vacuum per TO-600-060."  
Added "PLACE the Evaporator in a configuration per Management direction." Struck out "FLUSH Slurry Line per TO-600-060 at Management direction."
| J-4     | 10/18/2017   | Operations request | Modified seal water pump alarms and steps throughout procedure, struk out LCO 2.4 |
| J-3     | 07/28/2016   | Operations request | Struck out ARP's for SXS PB2 1 & SSL PB2 1 (pages 21 & 25) 
Added "Check VFD interface display for FAULT description on cabinet door." to probable cause on YS-VFD-1 |
| J-2     | 04/07/2016   | Operations request to provide option of isolating with either valve | Page 34, added valve 5-43 or valve 5-29 |
| J-1     | 09/10/2015   | Operations request | Page 34, ADDED steps 11 through 11.4 in Immediate Actions |

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RECORDS

No records are generated during the performance of this procedure.
Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 235 psig
Source: PSH-CA1-3  Panel: N/A

Alarm Class: Plant Stability
Alarm Description: PB-2 SL-DISCH PRESSURE HIGH (G15, F9); Slurry Discharge pressure is above the High Alarm setpoint.

Automatic Actions:
1. Activates hardwired Interlock #18: shuts down PB2.

Immediate Actions:

NOTE - PB-2 is Interlocked to shut down when PI-CA1-8 reaches 87 psig.

[1] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status. (OSD-T-151-00012)
[2] IF PB-2 Status is not OFF or STOPPING, SHUT DOWN PB-2.
   [3.1] CHECK that HV-CA1-2 status changes to BLOCK.
[4] CHECK PI-CA1-8 PB-2 SLURRY OUTLET PRESSURE Current Trend trace for recent pressure changes by performing the following:
   [4.1] PRESS CURR TREND, 10, and ENTER.
   [4.2] CHECK PI-CA1-8 Current Trend trace for recent pressure increases.
[5] IF PI-CA1-8 does not indicate a recent increase in pressure, PERFORM the following:
   [5.1] NOTIFY Shift Manager of possible instrument trouble with PSH-CA1-3.
   [5.2] IF allowed by the Process Memo, GO TO Gravity Slurry Out per TO-600-030 OR Recirc with Vacuum per TO-600-060.
[6] IF PI-CA1-8 pressures did exceed 87 psig, PERFORM the following:
   [6.1] PLACE the Evaporator in recirculation per TO-600-060.
   [6.2] NOTIFY Shift Manager AND REQUEST evaluation from Engineering.

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 235 psig
Source: PSH-CA1-3

Probable Causes:
1. Plugged slurry line.
2. Ongoing maintenance PM.
3. Slurry flow rate too high.
4. Slurry solution density too high.
5. Instrument malfunction.

References:
Drawings: H-2-98989, Zone C-3
TO-600-060, “Shut Down 242-A Evaporator System”
Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 87 psig
Source: PT-CA1-8  Alarm Class: Plant Stability

Alarm Description: PB-2 SLURRY OUTLET PRESSURE (HIGH-HIGH) (G15, F10); Slurry pressure at the outlet of PB-2 is above the High-High Alarm setpoint.

Automatic Actions:
1. Activates Interlock #18: shuts down PB-2.

Immediate Actions:

NOTE - FIC-CA1-4 has a yellow alarm for slurry flow below 42 gpm.
- FIC-CA1-4 has a red alarm for slurry flow below 33 gpm.
- PB-2 is interlocked to shut down when PI-CA1-8 reaches 87 psig.

[1] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status. (OSD-T-151-00012,)
[2] IF PB-2 Status is not OFF or STOPPING, SHUT DOWN PB-2.
   [3.1] CHECK that HV-CA1-2 status changes to BLOCK.
[5] PLACE the Evaporator in recirculation with vacuum per TO-600-060.

Probable Causes:
1. Plugged slurry line.
2. Ongoing maintenance PM.
3. Instrument malfunction.

References:
Drawings: H-2-98989, Zones B-4 and E-3
Documents: TO-600-060, “Shut Down 242-A Evaporator System”
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A
Source: FIT-CA1-2  Setpoint: 0.95 gpm

Alarm Class:  Plant Stability
Alarm Description:  PB-2 SEAL WATER FLOW (LOW-LOW) (G15, F10); Seal Water flow to PB-2 is below the Low-Low Alarm Setpoint.

Automatic Actions:

1. Activates Interlock #22 shuts down PB-2

Immediate Actions:

[1] IF operating PB-2 seal water flow and pressure to value specified in Process Memo, EXIT this ARP. (OSD-T-151-00012,)
[2] IF PB-1 shuts down any time during this ARP, PERFORM the following:
   [2.1] PLACE PB1-BYPAS (G12/8, F5) PB-1 SHUT DOWN BYPASS to BYP ON.
   [2.2] EXIT this ARP AND
         GO TO TF-AOP-EVAP-009, Response to Process Upset.
[3] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.
[4] IF PB-2 Status is not OFF or STOPPING, SHUT DOWN PB-2.
   [5.1] CHECK that HV-CA1-2 status changes to BLOCK.
[6] CHECK PDI-CA1-3 (G12, F6) FCA1-L/R DELTA-P.
[7] IF PDI-CA1-3 reads greater than 15 psig, PERFORM the following:
   [7.1] SWITCH filters.
   [7.2] CLEAN the plugged Seal Water Filter per TO-600-210.
[8] CHECK FI-CA1-2 (G15, F10) PB-2 SEAL WATER FLOW.

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15        Alarm #: N/A
Panel: N/A         Setpoint: 0.95 gpm
Source: FIT-CA1-2  (Continued)

Immediate Actions (Cont.):

[9] IF FI-CA1-2 reads greater than 1 gpm, **PERFORM** the following:
    [9.1] **CHECK** HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.
    [9.2] IF HV-CA1-10 status is CF-FRW, **ENSURE** the Seal Water pumps are in service per TO-600-210.
    [9.3] IF HV-CA1-10 status is CF-PC, **PERFORM** the following:
      [9.3.1] **NOTIFY** Shift Manager.
      [9.3.2] **EXIT** this alarm response procedure (ARP).

[10] IF HV-CA1-10 status is CF-FRW, **SHUTDOWN** P-C106.
    [10.1] **CHECK** that P-C106 changes to CF-OFF.

[11] **CHECK** PDI-FC4/5 (G18, F27) CONSATE RECYCLE FILTER DELTA P.

[12] IF PDI-FC4/5 reads greater than 15 psig, **SWITCH** filter per TO-600-180.

[13] **CHECK** FI-CA1-2 (G15, F10) PB-2 SEAL WATER FLOW.

[14] IF FI-CA1-2 reads greater than 1 gpm, **PERFORM** the following:
    [14.1] **NOTIFY** Shift Manager.
    [14.2] **EXIT** this ARP.

[15] IF FI-CA1-2 reads less than 1 gpm, **SWITCH** seal water system from Process Condensate to Filtered Raw Water per TO-600-210.

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 0.95 gpm

Immediate Actions (Cont.):

[16] CHECK the following points:
- PI-RW-1 (G11, F17) F-RW-1/2 FILTER DNSTREAM PRESSURE
- PI-RW-2 (G11, F17) F-RW-1/2 FILTER UPSTREAM PRESSURE
- PDI-FH3-1 (G10, F4) F-H-3 RW STRAINER DELTA P
- PDI-FH1-1 (G10, F4) F-H-1 RW FILTER DELTA P
- PDI-FH2-1 (G10, F4) F-H-2 RW FILTER DELTA P.

[17] IF PI-RW-2 shows pressure and PI-RW-1 does not show pressure and backup raw water strainer bank is available, PERFORM the following:

[17.1] PLACE backup raw water strainer bank in service per TO-600-130.
[17.2] ISOLATE primary raw water strainer bank per TO-600-130.

[18] IF a loss of Raw Water Supply Pressure has occurred, as indicated by PI-RW-1 or PI-RW-2 LOW, PERFORM the following:


[18.2] EXIT this ARP.

[19] IF PDI-FH1-1 or PDI-FH2-1 read greater than 15 psig, SWITCH to STANDBY filter per TO-600-180.

[20] IF PDI-FH3-1 reads greater than 5 psig, SWITCH the strainer per TO-600-180.

NOTE - After any Seal Water System problems have been corrected, the Seal Water Pumps must be ensured as being configured for normal operation per TO-600-210.


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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 0.95 gpm
Source: FIT-CA1-2

Probable Causes:
1. Plugging of RW filters.
2. Problem with Seal Water Pump P-C-105A or P-C-105.
3. RW supply problem.
4. Ongoing maintenance PM.
5. Instrument malfunction.
7. Failure of PCV-CA1-10, Condensate Recycle Pressure regulating valve.
8. Plugging of FC4/5 Condensate Recycle filters.

References:

Drawings:  H-2-99003, Zone E-3
            TF-AOP-EVAP-009, “Response to Process Upset”
            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 P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A
Source: PT-CA1-10  Setpoint: 60 psig
Alarm Class: Plant Stability
Alarm Description: PB-2 (G15, F10) SEAL WATER PRESSURE (LOW-LOW); Seal Water pressure to PB-2 is below the Low-Low Alarm Setpoint.

Automatic Actions:

1. Activates Interlock #22: shuts down PB-2

Immediate Actions:

[1] IF operating PB-2 seal water flow and pressure to value specified in Process Memo, EXIT this ARP. (osd-T-151-00012,
[2] IF PB-1 shuts down any time during this ARP, PERFORM the following:
   [2.1] PLACE PB1-BYPAS (G12/8, F5) PB-1 SHUT DOWN BYPASS to BYP ON.
   [2.2] EXIT this ARP AND GO TO TF-AOP-EVAP-009, Response to Process Upset.
[3] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.
[4] IF PB-2 Status is not OFF or STOPPING, SHUT DOWN PB-2.
[6] CHECK PDI-CA1-3 (G12, F6) FCA1-L/R DELTA-P.
[7] IF PDI-CA1-3 read greater than 15 psig, PERFORM the following:
   [7.1] SWITCH filters.
   [7.2] CLEAN the plugged Seal Water Filter per TO-600-210.
[8] CHECK PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.
[9] IF PI-CA1-10 reads greater than 60 psig, PERFORM the following:
   [9.1] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.
   [9.2] IF HV-CA1-10 status is CF-FRW, ENSURE the Seal Water pumps are in service per TO-600-210.
   [9.3] IF HV-CA1-10 status is CF-PC, PERFORM the following:
      [9.3.1] NOTIFY Shift Manager.
      [9.3.2] EXIT this ARP.

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Facility: 242-A Evaporator
Graphic: 15                Alarm #: N/A
Panel: N/A                 Setpoint: 60 psig
Source: PT-CA1-10

[10] IF HV-CA1-10 status is CF-FRW, ENSURE P-C106 (G18/10, F27) CONDSATE RECYCLE PUMP is CF-OFF.
    [10.1] GO TO Step [18].
[12] IF PDI-FC4/5 reads greater than 15 psig, SWITCH filter per TO-600-180.
[13] CHECK PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.
[14] IF PI-CA1-10 reads greater than 60 psig, PERFORM the following:
    [14.2] EXIT this ARP.
[16] CHECK PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.
[17] IF PI-CA1-10 reads greater than 60 psig, PERFORM the following:
    [17.1] NOTIFY Shift Manager.
    [17.2] EXIT this ARP.
[18] ENSURE the Seal Water Pumps are in service per TO-600-210:

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15       Alarm #: N/A
Panel: N/A       Setpoint: 60 psig
Source: PT-CA1-10

Immediate Actions (Cont.):

[19] CHECK the following points:
- PI-RW-1 (G11, F17) F-RW-1/2 FILTER DNSTREAM PRESSURE
- PI-RW-2 (G11, F17) F-RW-1/2 FILTER UPSTREAM PRESSURE
- PDI-FH3-1 (G10, F4) F-H-3 RW STRAINER DELTA P
- PDI-FH1-1 (G10, F4) F-H-1 RW FILTER DELTA P
- PDI-FH2-1 (G10, F4) F-H-2 RW FILTER DELTA P.

[20] IF PI-RW-2 shows pressure and PI-RW-1 does not show pressure and backup raw water strainer bank is available, PERFORM the following:
[20.1] PLACE backup raw water strainer bank in service per TO-600-130.
[20.2] ISOLATE primary raw water strainer bank per TO-600-130.

[21] IF a loss of Raw Water Supply Pressure has occurred, as indicated by PI-RW-1 and PI-RW-2 LOW, EXIT this Alarm Response Procedure AND
GO TO TF-AOP-EVAP-003, Response to 242-A Evaporator Loss of Raw Water System.

[22] IF PDI-FH1-1 or PDI-FH2-1 read greater than 15 psig, SWITCH to STANDBY filter per TO-600-180.

[23] IF PDI-FH3-1 reads greater than 5 psig, SWITCH the strainer per TO-600-180.

NOTE - After any Seal Water System problems have been corrected, the Seal Water Pumps must be ensured as being configured for normal operation per TO-600-210.


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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A
Source: PT-CA1-10  Setpoint: 60 psig

Probable Causes:
2. RW supply problem.
3. Ongoing maintenance PM.
6. Failure of PCV-CA1-10, Condensate Recycle Pressure Regulating valve.

References:
Drawings:  H-2-99003, Zone E-3
            TF-AOP-EVAP-009, “Response to Process Upset”
            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”

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

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<td>Source: FT-CA1-4</td>
<td>Setpoint: 33 gpm</td>
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<td>Alarm Class: Plant Stability</td>
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Alarm Description: EVAP SLURRY FLOW (LOW-LOW) (G15, F10); Slurry Flow is below the Low-Low Flow Alarm setpoint.

Automatic Actions:
1. Activates Interlock #1: shuts down PB-2 after 8 minutes.

Immediate Actions:

1. **CHECK** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.
2. **IF** PB-2 status is OFF and INTERLOK and Timer KY-CA1-2F has timed out, **GO TO** Step [4].
3. **IF** PB-2 status is OFF and INTERLOK and Timer KY-CA1-2F has not timed out, **PERFORM** the following actions:
   3.1 **SELECT** HV-CA1-2 (G15/11, G47/14, F9) SLURRY FLUSH VALVES.
   3.2 **POSITION** HV-CA1-2 to BLOCK.
   
   NOTE - Active interlocks on G46 are indicated by having a red box around them.

4. **SELECT** Graphic #46 (G46) PUMP PB2 INTERLOCKS to display all PB-2 interlocks.

5. **RESPOND** to other interlock related Alarms AND **ATTEMPT** to clear PB-2 interlocks.
6. **AFTER** PB-2 status is NOT INTERLOCK, **RESTART** PB-2 per TO-600-030.

7. **IF** PB-2 status is OFF and INTERLOCK and KY-CA1-2F has timed out, initiating the flush sequence, **PERFORM** the following:
   7.1 **OBSERVE** FQI-RW-1 to confirm the flush.
   7.2 **AFTER** the flush sequence is complete, **PERFORM** the following:
      7.2.1 **SELECT** HV-CA1-2 (G15/11, G47/14, F9) SLURRY FLUSH VALVES.
      7.2.2 **PRESS** CMD 4/ENTER to RESET the LOCKOUT.

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15                     Alarm #: N/A
Panel: N/A                      Setpoint: 33 gpm
Source: FT-CA1-4               RED

Immediate Actions (Cont.):

[4.3] IF HV-CA1-2 is not in MANUAL mode, PRESS AUTO/MAN twice to place HV-CA1-2 in MANUAL mode.
     [4.3.1] CHECK that HV-CA1-2 changes to MANUAL mode.

NOTE - Active interlocks on G46 are indicated by having a red box around them.

[4.4] SELECT Graphic #46 (G46) PUMP PB2 INTERLOCKS to display all PB-2 interlocks.

[4.5] RESPOND to other interlock related Alarms AND ATTEMPT to clear PB-2 interlocks.

[4.6] SELECT Graphic #15 (G15/11).

[4.7] IF permitted by the Process Memo, PRESS CMD 1 twice to position HV-CA1-2 to SLURRY OUT and start gravity slurry flow.

[4.8] AFTER PB-2 status is NOT INTERLOCK, RESTART PB-2 per TO-600-030.

[5] IF PB-2 status is NOT INTERLOK and PB-2 status is ON, ENSURE that SIC-PB2-1 SLURRY PUMP SPEED CONTROLR is in AUTO mode with a CLOSED Cascade by performing the following:

[5.1] SELECT SIC-PB2-1 (G15/15, F10).

[5.2] IF SIC-PB2-1 is in MANUAL mode, PRESS AUTO/MAN twice to place SIC-PB2-1 in AUTO mode.
     [5.2.1] CHECK that SIC-PB2-1 changes to AUTO mode.

[5.3] IF SIC-PB2-1 does not indicate a CLOSED Cascade (i.e., shows a white "O" and not a green "C"), PRESS CASC once to CLOSE the Cascade.
     [5.3.1] CHECK that SIC-PB2-1 changes to a CLOSED Cascade (i.e., shows a green "C").

[6] ENSURE that FIC-CA1-4 EVAP SLURRY FLOW Setpoint is greater than 33 gpm by performing the following:

[6.1] SELECT FIC-CA1-4 (G15/14, F10).

[6.2] IF FIC-CA1-4 setpoint is greater than 42 gpm, GO TO Step [7].

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Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 33 gpm
Source: FT-CA1-4

Immediate Actions (Cont.):

[6.3] **IF** FIC-CA1-4 setpoint is less than 42 gpm, **PRESS** the following in the order given to set FIC-CA1-4 setpoint to the proper value:
- SETPOINT,
- The numerical value for FIC-CA1-4 Slurry Flow setpoint as given in the Process Memo, and
- ENTER.

[6.4] **MONITOR** FIC-CA1-4 Slurry Flow reading until Slurry Flow stabilizes at the setpoint value.

[7] **IF** normal Slurry Flow does not return, **PERFORM** the following actions:

[7.1] **SELECT** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP.

[7.2] **SHUT DOWN** PB-2.

[7.3] **NOTIFY** Shift Manager of possible problems with the PB-2 speed controller or related instrumentation.

[7.4] **REQUEST** Management direction on restarting Slurry flow per TO-600-030 or SHUT DOWN to recirculation with vacuum per TO-600-060.

Probable Causes:

1. Plugged Slurry line.
2. Valves HV-CA1-2 or HV-CA1-2A incorrectly positioned.
3. Ongoing maintenance PM.

References:

Drawings: H-2-98989, Zone F-5
            TO-600-060, “Shut Down 242-A Evaporator System”
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: N/A
Source: PB-2 VFD  Alarm Class: Plant Stability

Alarm Description: PB-2 (G15, F11) PUMP VFD FAULT; the pump VFD has experienced a fault. This is a hardwired sensor within the VFD itself.

Immediate Actions:

[1] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.
[2] IF PB-2 Status is not OFF or STOPPING, SHUT DOWN PB-2.
[7] PLACE the Evaporator in a configuration per Management direction.

Probable Causes:

1. PB-2 VFD fault. Check VFD interface display for FAULT description on cabinet door.

References:

Drawings: H-2-98989, Zone E-4
Documents: TO-600-060, “Shut Down 242-A Evaporator System”
## Graphic #15 Alarms at the 242-A Evaporator

### Facility: 242-A Evaporator

**Graphic:** 15  
**Alarm #:** N/A  
**Panel:** N/A  
**Source:** IY-PB2-2  
**Setpoint:** 190 amps

### Alarm Class:
Plant Stability  
### Alarm Description:
PB-2 (G15, F9) SLURRY PUMP CURRENT (HIGH)

### Automatic Actions:
None

### Immediate Actions:
1. **ENSURE** PB-2 Status is OFF.
2. **SET** HV-CA1-2 SLURRY FLUSH VALVES to BLOCK status.
3. **CHECK** FIC-CA1-4 EVAP SLURRY FLOW Current Trend trace for recent flow changes.
4. **PLACE** the Evaporator in recirculation with vacuum per TO-600-060.
5. **FLUSH** Slurry Line per TO-600-060, at Management direction.

### Probable Causes:
1. Slurry too viscous.
2. Pump malfunction.
3. Ongoing maintenance PM.

### References:
- **Drawings:** H-2-98989, Zone F-4
- **Documents:** TO-600-060, “Shut Down 242-A Evaporator System”  
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A
Source: YS-PB2-IL  Setpoint: INTERLOCK ACTIVE
Alarm Class: Plant Stability
Alarm Description: PB2 (G15, F9) HARDWARE INTERLOCK STATUS (one or more hardwired interlocks which shut down PB-2 are active, or the PB2 VFD is in the OFF/OPEN position.)

Automatic Actions:
None

Immediate Actions:
NOTE - This alarm is expected to be received in combination with other Alarms related to the condition(s) which activated the interlock.
[1] ENSURE that PB-2 SLURRY TRANSFER PUMP is SHUT DOWN.
NOTE - Active interlocks on G46 are indicated by having a red box around them.
[3] SELECT Graphic #46 (G46) PUMP PB2 INTERLOCKS to display all PB-2 interlocks.

Probable Causes:
1. One of the following interlocks has activated:
   • VFD in the OFF/OPEN position
   • Excessive pressure detected in Slurry Discharge line (PSH-CA1-3: G15, F9)
   • Low Seal Water Flow or Pressure
   • C-A-1 Vessel Level Low
   • High PB-2 Amperage.

References:
Drawings:  H-2-98986, Sheet 2
Documents:  None

YELLOW
YS-PB2-IL
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

<table>
<thead>
<tr>
<th>Facility: 242-A Evaporator</th>
<th>Alarm #: N/A</th>
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</thead>
<tbody>
<tr>
<td>Graphic: 15</td>
<td>Panel: N/A</td>
</tr>
<tr>
<td>Source: TE-PB2-1</td>
<td>Setpoint: N/A</td>
</tr>
<tr>
<td>Alarm Class: Plant Stability</td>
<td></td>
</tr>
<tr>
<td>Alarm Description: PB-2 (G15, F9) PUMP TEMP HIGH; the temperature of the motor windings of the PB-2 pump is too high. This is a hardwired sensor within the motor itself.</td>
<td></td>
</tr>
</tbody>
</table>

**Automatic Actions:**

None

**Immediate Actions:**

1. **CHECK** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.
2. **IF** PB-2 Status is not OFF or STOPPING, **SHUT DOWN** PB-2.
3. **SET** HV-CA1-2 SLURRY FLUSH VALVES to BLOCK status.
4. **CHECK** II-PB2-1 PB-2 SLURRY PUMP CURRENT Current Trend #10 display for recent PB-2 current changes.
5. **NOTIFY** Shift Manager.
6. **PLACE** the Evaporator in recirculation with vacuum per TO-600-060.
7. **FLUSH** Slurry Line per TO-600-060 at Management direction.

**Probable Causes:**

1. High current.
2. Pump failure.
3. Ongoing maintenance PM.

**References:**

- **Drawings:** H-2-98989, Zone E-4
- **Documents:** TO-600-060, “Shut Down 242-A Evaporator System”
Facility: 242-A Evaporator

Graphic: 15  
Alarm #: N/A

Panel: N/A  
Setpoint: 42 gpm

Source: FT-CA1-4

Alarm Class: Plant Stability

Alarm Description: EVAP SLURRY FLOW (LOW) (G15, F10); Slurry Flow is below the Low Flow Alarm setpoint.

Automatic Actions:

1. Activates Interlock #1: shuts down PB-2 after 8 minutes, if HS-SLF-SP (GR15/18, FP10) status is 42 gpm.
2. No automatic action occurs if HS-SLF-SP (G15/18, F10) status is 33 gpm.

Immediate Actions:

[1] IF HS-SLF-SP (G15/18, F10) status is 33 gpm, EXIT this ARP; further action is not required.

[2] CHECK PB-2 (G15/6, F9) SLURRY TRANSFER PUMP status.

[3] IF PB-2 status is OFF and INTERLOK and timer KY-CA1-2F has timed out, GO TO Step [5].

[4] IF PB-2 status is OFF AND INTERLOK AND Timer KY-CA1-2F has not timed out, PERFORM the following actions:

[4.1] SET HV-CA1-2 (G15/11, G47/14, F9) SLURRY FLUSH VALVES to BLOCK status.

NOTE - Active interlocks on G46 are indicated by having a red box around them.

[4.2] SELECT Graphic #46 (G46) PUMP PB2 INTERLOCKS to display all PB-2 interlocks.

[4.3] RESPOND to other interlock related Alarms AND ATTEMPT to clear PB-2 interlocks.

[4.4] AFTER PB-2 status is NOT INTERLOCK, RESTART PB-2 per TO-600-030.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 42 gpm
Source: FT-CA1-4

Immediate Actions (Cont.):

[5] IF PB-2 status is CF-OFF and INTERLOCK and KY-CA1-2F has timed out, initiating the flush sequence, PERFORM the following:
[5.1] OBSERVE FQI-RW-1 to confirm the flush.
[5.2] AFTER the flush sequence is complete, SELECT HV-CA1-2 (G15/11, G47/14, F9) SLURRY FLUSH VALVES
[5.3] PRESS CMD 4/ENTER to RESET the LOCKOUT.
[5.4] IF HV-CA1-2 is not in MANUAL mode, PRESS AUTO/MAN twice to place HV-CA1-2 in MANUAL mode.
[5.4.1] CHECK that HV-CA1-2 changes to MANUAL mode.

NOTE - Active interlocks on G46 are indicated by having a red box around them.
[5.5] SELECT Graphic #46 (G46) PUMP PB2 INTERLOCKS to display all PB-2 interlocks.
[5.6] RESPOND to other interlock related alarms AND ATTEMPT to clear PB-2 interlocks.
[5.7] SELECT Graphic #15 (G15/11).
[5.8] IF permitted by the Process Memo, PRESS CMD 1 twice to position HV-CA1-2 to SLURRY OUT and start gravity slurry flow.
[5.9] AFTER PB-2 status is NOT INTERLOCK, RESTART PB-2 per TO-600-030.

[6] IF PB-2 status is NOT INTERLOK and PB-2 status is ON, ENSURE that SIC-PB2-1 SLURRY PUMP SPEED CONTROLR is in AUTO mode with a CLOSED Cascade by performing the following:
[6.1] SELECT SIC-PB2-1 (G15/15, F10).
[6.2] IF SIC-PB2-1 is in MANUAL mode, PRESS AUTO/MAN twice to place SIC-PB2-1 in AUTO mode.
[6.2.1] CHECK that SIC-PB2-1 changes to AUTO mode.
[6.3] IF SIC-PB2-1 does not indicate a CLOSED Cascade (i.e., shows a white "O" and not a green "C"), PRESS CASC once to CLOSE the Cascade.
[6.3.1] CHECK that SIC-PB2-1 changes to a CLOSED Cascade (i.e., shows a green "C").

(Continued on Next Page)
**Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator**

**Facility:** 242-A Evaporator  
**Graphic:** 15  
**Panel:** N/A  
**Source:** FT-CA1-4  

**Alarm #:** N/A  
**Setpoint:** 42 gpm

**Immediate Actions (Cont.):**

[7] **ENSURE** that FIC-CA1-4 EVAP SLURRY FLOW Setpoint is greater than 42 gpm by performing the following:

[7.1] **SELECT** FIC-CA1-4 (G15/14, F10).

[7.2] **IF** FIC-CA1-4 setpoint is greater than 42 gpm, **GO TO** Step [8].

[7.3] **IF** FIC-CA1-4 setpoint is less than 42 gpm, **PRESS** the following in the order given to set FIC-CA1-4 setpoint to the proper value:
- SETPOINT
- The numerical value for FIC-CA1-4 Slurry Flow setpoint as given in the Process Memo
- ENTER.

[7.4] **MONITOR** FIC-CA1-4 Slurry Flow reading until Slurry Flow stabilizes at the setpoint value.

[8] **IF** normal Slurry Flow does not return, **SHUTDOWN** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP.

[8.1] **NOTIFY** Shift Manager of possible problems with the PB-2 speed controller or related instrumentation.

[8.2] **REQUEST** Management direction on restarting Slurry flow per TO-600-030 or **SHUT DOWN** to recirculation with vacuum per TO-600-060.

**Probable Causes:**

1. Plugged Slurry line.
2. Valves HV-CA1-2 or HV-CA1-2A incorrectly positioned.
3. Ongoing maintenance PM.

**References:**

- **Drawings:** H-2-98989, Zone F-5
- **Documents:** TO-600-030, “Start Up 242-A Evaporator System”  
**TO-600-060, “Shut Down 242-A Evaporator System”**
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A
Source: PT-CA1-8  Setpoint: 81 psig
Alarm Class: Plant Stability
Alarm Description: PB-2 (G15, F10) SLURRY OUTLET PRESSURE (HIGH); Slurry pressure at the outlet of the PB-2 Slurry pump is above the High Alarm setpoint.

Automatic Actions:
None

Immediate Actions:
[1] CHECK PI-CA1-8 Current Trend display #10 for recent pressure changes.

Probable Causes:
1. Slurry line plugging.
2. Ongoing maintenance PM.
3. Instrument malfunction.

References:
Drawings: H-2-98989, Zone E-3
Documents: None
Facility: 242-A Evaporator

Graphic: 15

Panel: N/A

Source: VE-PB2-1

Alarm #: N/A

Setpoint: 0.4 in/sec

Alarm Class: Plant Stability

Alarm Description: PB-2 (G15, F10) PUMP LATERAL VIBS (HIGH); the PB-2 Slurry Pump is vibrating over the High Lateral Vibration Alarm setpoint.

Automatic Actions:

None

Immediate Actions:

[1] CHECK VI-PB2-1A (G15, F10) PB-2 PUMP LATERAL VIBS reading.
[2] CHECK VI-PB2-1A Current Trend display #11 for recent changes.
[3] MONITOR VI-PB2-1A Current Trend for at least five minutes.

Probable Causes:

1. Solid material going through pump.
2. Pump malfunction.
3. Ongoing maintenance PM.

References:

Drawings: H-2-98989, Zone B-4
Documents: None
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 0.6 in/sec
Source: VE-PB2-1  Alarm Class: Plant Stability

Alarm Description: PB-2 (G15, F10) PUMP LATERAL VIBS (HIGH-HIGH); the PB-2 Slurry Pump is vibrating over the High Lateral Vibration Alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] CHECK VI-PB2-1A (G15, F10) PB-2 PUMP LATERAL VIBS reading.
[2] CHECK VI-PB2-1A Current Trend display #11 for recent changes.
[3] MONITOR VI-PB2-1A Current Trend for at least five minutes.
[4] IF vibrations continue greater than 0.65 in/sec after 5 minutes, SHUT DOWN PB-2 SLURRY TRANSFER PUMP.
[7] IF this Vibration Alarm activates again, SHUT DOWN the Evaporator to recirculation with vacuum per TO-600-060 AND NOTIFY Shift Manager.
[8] FLUSH Slurry Line per TO-600-060 at Management direction.

Probable Causes:

1. Solid material going through pump.
2. Pump malfunction.
3. Ongoing maintenance PM.

References:

Drawings: H-2-98989, Zone B-4
Documents: TO-600-060, “Shut Down 242-A Evaporator System”
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 2.0 gpm
Source: FIT-CA1-2

Alarm Class: Plant Stability
Alarm Description: PB-2 (G15, F10) SEAL WATER FLOW (HIGH); water flow to the PB-2 pump seals is above the High Alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] CHECK PI-CA1-10 PB-2 SEAL WATER PRESSURE and FI-CA1-2 PB-2 SEAL WATER FLOW Current Trend #8 for recent changes

[2] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.

[3] IF HV-CA1-10 status is CF-PC, PERFORM the following:

[3.1] CHECK PI-CA1-20 (G12, F6) CONDSATE RECYCLE OUTLET PRESSURE.

[3.2] IF PI-CA1-20 reads less than 130 psig, GO TO Step [9].

[3.3] IF PI-CA1-20 reads greater than 130 psig, SWITCH Seal Water System from Process Condensate to Filtered Raw Water per TO-600-210 AND GO TO Step [9].

NOTE - Seal Water pumps P-C-105 and P-C-105A should only be placed in service while system is operating on Filtered Raw Water unless otherwise directed by Shift Manager.

[4] CHECK status of Seal Water pumps P-C-105 (G12/12, F6) SEAL WATER PUMP and P-C-105A (G12/13, F6) SEAL WATER PUMP.

[5] IF the Backup Seal Water pump has started, SHUT DOWN the Backup Seal Water Pump by performing the following:

[5.1] SELECT P-C-105 (G12/12, F6) OR P-C-105A (G12/13, F6), whichever was selected as the Backup Seal Water Pump.

[5.2] PRESS AUTO/MAN twice to place the Backup Seal Water pump in MANUAL mode.

[5.3] CHECK that the pump changes to MANUAL mode.

[5.4] PRESS CMD 0 twice to shut down the Backup Seal Water pump.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15              Alarm #: N/A
Panel: N/A                Setpoint: 2.0 gpm
Source: FIT-CA1-2         (Continued)

Immediate Actions (Cont.):

[6] **AFTER** the Backup Seal Water pump status is CF-OFF, **PRESS** AUTO/MAN twice to place the pump in AUTO mode (to allow auto-start).

[7] **CHECK** that the pump changes to AUTO mode.

[8] **CHECK** FI-CA1-2 (G15, F10) PB-2 SEAL WATER FLOW.

[9] **IF** FI-CA1-2 reads greater than 2 gpm, **REQUEST** the Backside Operator check for seal water leaks.

[10] **NOTIFY** Shift Manager.

[11] **IF** direct by Shift Manager **PERFORM** the following:

    **NOTE** The following step may cause PI-CA1-10 to Alarm low

    [11.1] **CONFIRM** flow of P-B-2 Seal water into drain funnel.

    [11.2] **SLOWLY CLOSE** valve 5-43 or valve 5-29 until FI-CA1-2 is back in range

    [11.3] **IF** PI CA1-10 alarms low during this procedure **PLACE** Alarm in into inhibit.

    [11.4] Shift Manager **NOTIFY** Engineering of Alarm, actions taken and status of PI-CA1-10

Probable Causes:

1. Seal water leak. 
2. Seal failure. 
3. Ongoing maintenance PM. 

References:

Drawings: H-2-99003, Zone E-3
Documents: TO-600-210, “Operate PB-1 and PB-2 Seal Water Filter System”
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  
Alarm #: N/A

Panel: N/A

Source: FIT-CA1-2  
Setpoint: 1.00 gpm

Alarm Class: Plant Stability

Alarm Description: PB-2 SEAL WATER FLOW (LOW) (G15, F10); Seal Water Flow to the PB-2 Recirculation Pump is below the Low Alarm Setpoint.

Automatic Actions:

1. If Seal Water pumps are in operation, then the Backup Seal Water Pump will start.
2. If Seal Water Flow is not within the normal range when the 4-minute timer times out, then both Seal Water Pumps will automatically SHUT DOWN, which will shut down PB-1 and PB-2 and initiate an automatic Evaporator Shutdown.

Immediate Actions:

[1] IF operating PB-2 seal water flow and pressure to value specified in Process Memo, EXIT this ARP.

[2] IF while performing ARP the PB-1 shuts down, PERFORM the following:
   [2.1] SET (G12/8, F5) PB1-BYPAS PB-1 SHUT DOWN BYPASS to BYP ON.
   [2.2] EXIT this ARP AND GO TO TF-AOP-EVAP-009, Response to Process Upset.

[3] CHECK PDI-CA1-3-P (G12,F6) FCA1-L/R DELTA.


[5] CHECK FI-CA1-2 (G15, F10) PB-2 SEAL WATER FLOW.

[6] IF FI-CA1-2 reads greater than 1 gpm, PERFORM the following:
   [6.1] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.
   [6.2] IF HV-CA1-10 status is CF-FRW, GO TO Step [13].
   [6.3] IF HV-CA1-10 status is CF-PC, NOTIFY Shift Manager AND EXIT this ARP.

[7] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.

[8] IF HV-CA1-10 status is CF-FRW, GO TO Step[13].

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15
Panel: N/A
Source: FIT-CA1-2

YELLOW

FI-CA1-2

Alarm #: N/A
Setpoint: 1.00 gpm

Immediate Actions (Cont.):

[9] CHECK PDI-FC4/5 (G18, F27) CONDSATE RECYCLE FILTER DELTA P.
[10] IF PDI-FC4/5 reads greater than 15 psig, SWITCH filter per TO-600-180.
[12] IF FI-CA1-2 reads greater than 1 gpm, PERFORM the following:
  [12.1] NOTIFY Shift Manager.
  [12.2] EXIT this ARP.
[13] IF FI-CA1-2 reads less than 1 gpm, PERFORM the following:
  [13.2] EXIT this ARP.
[14] CHECK the following points:
  • PI-RW-1 (G11, F17) F-RW-1/2 FILTER DNSTREAM PRESSURE
  • PI-RW-2 (G11, F17) F-RW-1/2 FILTER UPSTREAM PRESSURE
  • PDI-FH3-1 (G10, F4) F-H-3 RW STRAINER DELTA P
  • PDI-FH1-1 (G10, F4) F-H-1 RW FILTER DELTA P
  • PDI-FH2-1 (G10, F4) F-H-2 RW FILTER DELTA P.
[15] IF PI-RW-2 shows pressure and PI-RW-1 does not show pressure and backup raw water strainer bank is available, PERFORM the following:
  [15.1] PLACE backup raw water strainer bank in service per TO-600-130.
  [15.2] ISOLATE primary raw water strainer bank per TO-600-130.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15 Alarm #: N/A
Panel: N/A Setpoint: 1.00 gpm
Source: FIT-CA1-2

Immediate Actions (Cont.):

[16] IF a loss of Raw Water Supply Pressure has occurred, as indicated by PI-RW-2 LOW, EXIT this ARP AND GO TO TF-AOP-EVAP-003, Response to 242-A Evaporator Loss of Raw Water System.

[17] IF PDI-FH1-1 OR PDI-FH2-1 reads greater than 15 psig, SWITCH to the STANDBY filter per TO-600-180.

[18] IF PDI-FH3-1 reads greater than 5 psig, SWITCH the strainer per TO-600-180.

NOTE - After any Seal Water System problems have been corrected, the Seal Water Pumps must be ensured as being configured for normal operation.

[19] ENSURE the Seal Water pumps are in service per TO-600-210.


Probable Causes:

2. RW supply problem.
3. Ongoing maintenance PM.
4. Instrument malfunction.(Continued on Next Page)

References:

Drawings: H-2-99003, Zone E-3
TO-600-210, “Operate PB-1 and PB-2 Seal Water Filter System”
TO-600-180, “Change Raw Water and Process Condensate Filters, and Clean In-Line Strainer”

Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15          Alarm #: N/A
Panel: N/A          PI-CA1-10
Source: PT-CA1-10   Setpoint: 75 psig

Alarm Class: Plant Stability
Alarm Description: PB-2 (G15, F10) SEAL WATER PRESSURE (HIGH); Seal Water pressure to the PB-2 pump seals is above the High Alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1]   MONITOR PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE pressure while performing this ARP. (OSD-T-151-00012)
[2]   IF PI-CA1-10 pressure exceeds 75 psig, NOTIFY Shift Manager of the OSD limit violation.

NOTE - A pressure increase on PI-CA1-10 combined with a flow decrease on FI-CA1-2 is an indication of seal water blockage.

[3]   CHECK PI-CA1-10 PB-2 SEAL WATER PRESSURE and FI-CA1-2 PB-2 SEAL WATER FLOW Current Trend trace #8 for recent changes.


[5]   IF HV-CA1-10 is CF-PC, PERFORM the following:

[5.1]  CHECK PI-CA1-20 (G12, F6) CONDSATE RECYCLE OUTLET PRESSURE.
[5.2]  IF PI-CA1-20 reads less than 130 psig, GO TO Step [10].
[5.3]  IF PI-CA1-20 reads greater than 130 psig, PERFORM the following:

[5.3.2]  GO TO Step [10].

[6]   CHECK the following for Seal Water Pump status:

- P-C-105 (G12/12, F6) SEAL WATER PUMP
- P-C-105A (G12/13, F6) SEAL WATER PUMP.

[7]   IF the Backup Seal Water pump has started, SHUT DOWN the Backup Seal Water Pump by performing the following:

[7.1]  SELECT P-C-105 (G12/12, F6) or P-C-105A (G12/13, F6), whichever was selected as the Backup Seal Water Pump.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15
Panel: N/A
Source: PT-CA1-10
Alarm #: N/A
Setpoint: 75 psig

Immediate Actions (Cont.):

[7.2] **PRESS** AUTO/MAN twice to place the Backup Seal Water pump in MANUAL mode.
[7.3] **CHECK** that the pump changes to MANUAL mode.
[7.4] **PRESS** CMD 0 twice to shut down the Backup Seal Water pump.
[7.5] **CHECK** that the pump status changes to CF-OFF.

[8] **AFTER** the Backup Seal Water pump status is CF-OFF, **PRESS** AUTO/MAN twice to place the pump in AUTO mode (to allow auto-start).

[9] **CHECK** that the pump changes to AUTO mode.
[10] **CHECK** PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.
[11] **IF** PI-CA1-10 reads greater than 75 psig, **PERFORM** the following at Management direction.

[11.1] **SELECT** PB-2 (G15/6, F9) SLURRY TRANSFER PUMP.
[11.2] **IF** PB-2 status is not OFF, **SHUT DOWN** PB-2.
[11.3] **SET** HV-CA1-2 (G15/11, G47/14, F9) SLURRY FLUSH VALVES to BLOCK status.

[11.5] **PLACE** the Evaporator in recirculation with vacuum per TO-600-060.

[12] **NOTIFY** Shift Manager on the status of the Seal Water System and of the possible OSD limit violation.

Probable Causes:

1. Failure of PCV-CA1-2.
2. Ongoing maintenance PM.
3. Instrument malfunction.

References:

Drawings: H-2-99003, Zone E-3
Documents: TO-600-060, “Shut Down 242-A Evaporator System”
TO-600-210, “Operate PB-1 and PB-2 Seal Water Filter System”
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15
Panel: N/A
Source: PT-CA1-10

Alarm #: N/A

Setpoint: 65 psig

Alarm Class: Plant Stability

Alarm Description: PB-2 (G15, F10) SEAL WATER PRESSURE (LOW); Seal Water pressure to the PB-2 pump seals is below the Low Alarm setpoint.

Automatic Actions:

1. If Seal Water pumps are in operation, then the Backup Seal Water Pump will start.
2. If Seal Water pumps are in operation, then a 4-minute timer will start.
3. If Seal Water Flow is not within the Normal range when the 4-minute timer times out, then both Seal Water Pumps will automatically SHUT DOWN, which WILL shut down PB-1 and PB-2 and initiate an automatic Evaporator Shutdown.

Immediate Actions:

[1] IF operating PB-2 seal water flow and pressure to value specified in Process Memo, EXIT this ARP.

[2] IF while performing ARP, the PB-1 shuts down, PERFORM the following:

[2.1] SET PB1-BYPAS (G12/8, F5) PB-1 SHUT DOWN BYPASS to BYP ON.

[2.2] EXIT this ARP AND GO TO TF-AOP-EVAP-009, Response to Process Upset.

[3] CHECK PDI-CA1-3 (G12, F6) FCA1-L/R DELTA-P.

[4] IF PDI-CA1-3 reads greater than 15 psig, PERFORM the following:

[4.1] SWITCH filters.

[4.2] CLEAN the plugged Seal Water Filter per TO-600-210.

[5] CHECK PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.

[6] IF PI-CA1-10 reads greater than 65 psig, PERFORM the following:

[6.1] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.

[6.2] IF HV-CA1-10 status is CF-FRW, ENSURE the Seal Water pumps are in service per TO-600-210.

[6.3] IF HV-CA1-10 status is CF-PC, NOTIFY Shift Manager AND EXIT this ARP.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15
Panel: N/A
Source: PT-CA1-10

Yellow

Alarm #: N/A
Setpoint: 65 psig

Immediate Actions (Cont.):

[7] IF PI-CA1-10 reads less than 65 psig, PERFORM the following:
   [7.1] CHECK HV-CA1-10 (G12/15, F6) SEAL WATER VALVE status.
[8] CHECK PDI-FC4/5 (G18, F27) CONDSATE RECYCLE FILTER DELTA P.
[9] IF PDI-FC4/5 reads greater than 15 psig, SWITCH filter per TO-600-180.
[10] CHECK PI-CA1-10 (G15, F10) PB-2 SEAL WATER PRESSURE.
[11] IF PI-CA1-10 reads greater than 65 psig, PERFORM the following:
   [11.2] EXIT this ARP.
[12] IF PI-CA1-10 reads less than 65 psig, PERFORM the following:
   [12.2] EXIT this ARP.
[13] CHECK the following points:
   • PI-RW-1 (G11, F17) F-RW-1/2 FILTER DNSTREAM PRESSURE
   • PI-RW-2 (G11, F17) F-RW-1/2 FILTER UPSTREAM PRESSURE
   • PDI-FH3-1 (G10, F4) F-H-3 RW STRAINER DELTA P
   • PDI-FH1-1 (G10, F4) F-H-1 RW FILTER DELTA P
   • PDI-FH2-1 (G10, F4) F-H-2 RW FILTER DELTA P.
[14] IF PI-RW-2 shows pressure and PI-RW-1 does not show pressure and backup raw water strainer bank is available, PERFORM the following:
   [14.1] PLACE backup raw water strainer bank in service per TO-600-130.
   [14.2] ISOLATE primary raw water strainer bank per TO-600-130.

(Continued on Next Page)
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 15
Panel: N/A
Source: PT-CA1-10

Alarm #: N/A
Setpoint: 65 psig

Immediate Actions (Cont.):

[15] IF a loss of Raw Water Supply Pressure has occurred, as indicated by PI-RW-1 and PI-RW-2 LOW, PERFORM the following:

[15.1] EXIT this ARP.

[16] IF PDI-FH1-1 or PDI-FH2-1 read greater than 15 psig, SWITCH to the STANDBY filter per TO-600-180.

[17] IF PDI-FH3-1 reads greater than 5 psig, SWITCH the strainer per TO-600-180.

NOTE - After any Seal Water System problems have been corrected, the Seal Water Pumps must be ensured as being configured for normal operation per TO-600-210.


(Continued on Next Page)
Facility: 242-A Evaporator

Graphic: 15  Alarm #: N/A
Panel: N/A  Setpoint: 65 psig
Source: PT-CA1-10

Probable Causes:
2. RW Supply problem.
3. Ongoing maintenance PM.
6. Failure of PCV-CA1-10, Condensate Recycle Pressure Regulating valve.

References:
Drawings: H-2-99003, Zone E-3
            TF-AOP-EVAP-009, “Response to Process Upset”
            TO-600-210, “Operate PB-1 and PB-2 Seal Water Filter System”
            TO-600-180, “Change Raw Water, and Process Condensate Filters, and Clean In-Line Strainer”
Facility: 242-A Evaporator

Graphic: 15          Alarm #: N/A
Panel: N/A           Setpoint: Any integration on Raw Water Meter
Source: FQI-RW-1    Alarm Class: Plant Stability

Alarm Description: BUILDING RAW WATER FLOW (G15, F10); flow has been detected through the Building Raw Water Meter. This Alarm point is scanned every 15 seconds by the MCS, and will activate if an increase in the Raw Water meter reading of greater than 10 gallons is seen.

Automatic Actions:
None

Immediate Actions:
[1] IF an intentional flush is in progress, EXIT this ARP.
[2] IF no intentional flushes are in progress, CHECK whether FQI-RW-1 (G15, F10) BOTTOMS FLUSH TOTALIZR reading is increasing.
[4] IF directed by Shift Manager, PERFORM the following.
   [4.1] DO NOT enter the condenser room during evaporator operations without donning proper hearing protection.
   [4.2] CLOSE the following valves (both located on the fifth level of the Condenser Room):
         • RW to Slurry Flush Line Isolation valve 5-47
         • RW to Evaporator Dump Line Isolation valve 5-59.

Probable Causes:
1. Evaporator or Farm Flush in progress.
2. Loss of power.
3. Instrument malfunction.

References:
Drawings: H-2-98991, Sheet 2
Documents: None
Respond to P-B-2 Graphic #15 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 15  
Alarm #: N/A

Panel: N/A  
Setpoint: 95% of Maximum Speed

Source: ST-PB2-1  
Plant Stability

Alarm Description: SLURRY PUMP SPEED CONTROLLER (OUTPUT HIGH) (G15, F10); the Slurry Pump Speed Controller is above its normal high rate.

Automatic Actions:  
None

Immediate Actions:

NOTE - The MCS has been set up to prevent the PB2 Speed Controller from exceeding 85%.

[1] SHUT DOWN PB-2 SLURRY TRANSFER PUMP.
[4] PLACE the Evaporator in recirculation with vacuum mode per TO-600-060.

Probable Causes:

1. Software problem.
2. Ongoing maintenance PM.
3. SIC-PB2-1 (PB-2 Speed Controller) malfunction.

References:

Drawings: H-2-98989, Zone D-4
Documents: TO-600-060, “Shut Down 242-A Evaporator System”