# Tank Farm Alarm Response Procedure

**242-A Evaporator**

## Change History (≤ Last 5 Rev-Mods)

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<tr>
<th>Rev-Mod</th>
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<td>I-7</td>
<td>01/03/2019</td>
<td>WRPS-PER-2016-1001</td>
<td>The high alarm set points for tags CI-RW-1 modified from 8.5 to 180 USCM (CI-RW-1). The following References - Drawings updated. Pages 7 &amp; 9 Zone E-2, Page 13 &amp; 16 Zone C-8 Page 18 added Zone D-3, Page 21 Zone F-6 Pages 28 &amp; 30 added the hyphen to Zone E 8 for consistency.</td>
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<tr>
<td>I-5</td>
<td>02/26/2018</td>
<td>Vessel Vent Instrumentation Upgrade Project</td>
<td>Changed the description for the CI-RW-1 Low alarm to reference CI-RW-1 Used Raw Water Conductivity instead of CI-STM-1 Steam Condensate Conductivity</td>
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<td>I-4</td>
<td>06/14/17</td>
<td>242-A Rad monitor upgrade project</td>
<td>Update Purpose and Terms and Definitions. Combination of hardware and software alarms and responses, modified setpoints in Alarms RI-RC2-1, RXA-RC2-1, and PIC-EC1-2</td>
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<td>I-3</td>
<td>05/11/2017</td>
<td>242-A Rad monitor upgrade project</td>
<td>Changed setpoints for RI-RC2-1 to 4.8 cps</td>
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## 242-A evaporator Graphic #17 Alarm Index

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### References

**USQ # EV-18-1975-S, Rev. 0**

**Document No.:** ARP-T-601-017

**Revision:** I-7

**Release Date:** 01/03/2019

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## Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

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<td>CI-RW-1</td>
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<td>CI-RW-1 USED RAW WATER CONDUCTIVITY</td>
<td>YELLOW</td>
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## RECORDS

No records are generated during the performance of this procedure.
1.0 PURPOSE

1.1 This attachment provides guidance to operators for responding to alarms associated with the Used Raw Water Graphic #17 Alarms at the 242-A Evaporator.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Terms and Definitions

Hardware Alarm – Monitoring & Control System detected an instrument hardware / communication problem.

“Alarm Description” contains one or more the following “alarm state” terms:

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Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

**Facility:** 242-A Evaporator

**Graphic:** 17, 151  
**Panel:** N/A  
**Source:** RM-RC2-1

**Alarm #:** N/A

**Setpoint:**
- **Alarm State:** (HI) - 24 cps
- **Alarm State:** (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR) - Hardware problem

**Alarm Class:** Environmental Impact.

**Alarm Description:**
- **Alarm State:** (HI)
  URW SAMPLER RADN (G151, F18); radiation detected in the used raw water stream is above the high alarm setpoint.
  - **Alarm State:** (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR).
  - URW SAMPLER RADN (G151, F18); the MCS has detected a hardware problem with RM-RC2-1 Used Raw Water Radiation Monitor system.

**Automatic Actions:**

- **Alarm State:** (HI)
  1. Activates software interlock #29 – (G151) “ILK29 (URW)” which prohibits manual pig flush via the funnel.
  - **Alarm State:** OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR)
  2. NONE.

**Immediate Actions:**

EVALUATE alarm state for the following:

   OR
   **IF** Alarm State: (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR)
   **PERFORM** Steps [12] through [12.8].

- **Alarm State:** (HI)
  2. **PERFORM** the following for Alarm State (HI).
  3. **IF** multiple area radiation and/or continuous air monitor alarms occur, **EXIT** this ARP AND
     **GO TO** TF-ERP-EVAP-005.

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Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17, 151
Panel: N/A
Source: RM-RC2-1

Setpoint:
Alarm State: (HI) - 24 cps
Alarm State: (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR) - Hardware problem

RED

RI-RC2-1

Immediate Actions (Cont.):

[4] **IF** the Evaporator is SHUTDOWN,

**OR**

**IF** raw water is not going through the condensers, **GO TO** Step [9].

[5] **CHECK** RI-RC2-1 URW SAMPLER RADN current trend display for recent radiation changes:

[5.1] **PRESS** “CURR TREND”, “18”, and “ENTER”.

[5.2] **CHECK** RI-RC2-1 current trend trace for recent radiation increases.

[5.3] **CHECK** that RI-RC2-1 HI-RADN (G151) status is “NORMAL.”

[6] **IF** RI-RC2-1 HI-RADN (G151) status is “NORMAL” and RI-RC2-1 current trend trace is not increasing, **NOTIFY** Shift Manager (SM).

[7] **OBTAIN** URW grab samples for analysis, **THEN**

**IF** directed by SM, **CONTINUE**.

[8] **IF** RI-RC2-1 HI-RADN (G151) URW SAMPLER RADN HIGH status is “ACTIVE” and RI-RC2-1 URW SAMPLER RADN current trend trace is INCREASING, **PERFORM** the following:

**NOTE** - The sudden loss of boil off caused by FV-EA1-1 closing will result in erratic Weight Factor (WF) reading, which may cause PB-1 to shut down.

[8.1] **PLACE** Evaporator in Recirculation without vacuum per TO-600-060.

[8.1.1] **IF** PB-1 is not running, **SET** PB1-BYPASS (G12/8, F5) to BYP ON status.

[8.1.2] **RESTART** PB-1.

**OR**

**IF** cannot be restarted at SM direction, **EMPTY** C-A-1 vessel per TO-600-060.

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

Graphic: 17, 151  Panel: N/A

Setpoint:
Alarm State: (HI) - 24 cps
Alarm State: (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR) - Hardware problem

Source: RM-RC2-1

Immediate Actions (Cont.):

[8.2] **SHUTDOWN** cooling water per TO-600-123.

[8.3] **NOTIFY** ETF Control Room of the process disruption due to activation of the used raw water radiation high alarm.

[8.4] **IF** the RC-2 system is restored, **STARTUP** cooling water per TO-600-123 **AND** **GO TO** Step [13].

[8.5] **IF** the RC-2 system cannot be restored within 1 hour, **EMPTY** C-A-1 vessel per TO-600-060.

[9] **CHECK** current trend 18 as follows:

[9.1] **PRESS** “CURR TREND”, “18”, and “ENTER”.

[9.2] **CHECK** RI-RC2-1 current trend for recent radiation increases.

[10] **IF** the current trend shows spikes, **NOTIFY** SM of possible line noise problems.


**Alarm State:** (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR).

[12] **PERFORM** the following for Alarm State (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR):

[12.1] **PLACE** the Evaporator in Recirculation without vacuum mode per TO-600-060.

[12.2] **SHUTDOWN** cooling water per TO-600-123.

[12.3] **NOTIFY** ETF Control Room of the process disruption due to activation of the used raw water radiation system failure.

**NOTE:** In the event of a hardware alarm at the radiation monitor, the green light on top of the instrument will begin to flash, and will continue to do so until the alarm has cleared itself or been manually acknowledged.

[12.4] Shift Manager **CONTACT** Engineering to coordinate troubleshooting and repair of radiation monitor loop.

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17, 151  Alarm #: N/A
Panel: N/A
Setpoint:
Alarm State: (HI) - 24 cps
Alarm State: (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR) - Hardware problem

Supplemental Actions

Immediate Actions (Cont.):

[12.5] IF the RC-2 system is restored, STARTUP cooling water per TO-600-123 AND
GO TO Step [13].

[12.6] IF alarm clears in less than 12 hours, GO TO Step [13].

[12.7] IF alarm is active for 12 hours, per SM direction, EMPTY the C-A-1 vessel per
TO-600-060.

[12.8] GO TO step [13].

Supplemental Actions

Alarm State: (HI) or (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR).

[13] REQUEST SM review of actions taken during this alarm response to validate 242-A
Evaporator is in desired configuration.

[14] REQUEST SM to evaluate the need to notify Environmental on-call per TF-REC-001
and TFC-ESHQ-ENV_FS-C-01.


(Continued on Next Page)
**Facility:** 242-A Evaporator  
**Graphic:** 17, 151  
**Panel:** N/A  
**Source:** RM-RC2-1  

**Setpoint:**  
- Alarm State: (HI) - 24 cps  
- Alarm State: (OBAD, RANG, TMR, OVER, OCD, IBAD, UNDR or CNTR) - Hardware problem

**Possible Causes:**
1. Possible tube leak in E-C-1, E-C-2, or E-C-3.  
2. Excess radiation in URW.  
3. Line noise affecting MCS reading.  
5. Ongoing maintenance PM.

**References:**
- Documents: TO-600-060, “Shut Down the 242-A Evaporator Systems.”  
  TF-ERP-EVAP-005, “242-A Respond to Evaporator High Radiological Release.”  
  TF-REC-001, “Response to Environmental Condition.”  
  TFC-ESHQ-ENV_FS-C-01,” Environmental Notification.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17  Alarm #: N/A
Panel: N/A  Setpoint: Hardware problem
Source: RM-RC2-1  
Alarm Class: Equipment status.
Alarm Description: URW RAD SYSTEM FAIL (G151, F18); the used raw water radiation monitor system has failed.
Alarm State: (BAD).
URW SAMPLER RADN (G151, F18); the MCS has detected a hardware problem with RM-RC2-1 Used Raw Water Radiation Monitor system.

Automatic Actions:
None.

Immediate Actions:

[1] EVALUATE alarm state for the following:
IF Alarm State: (CFN) or (BAD) PERFORM Steps [2] through [2.8].

[2] PERFORM the following for Alarm State (CFN or BAD):
NOTE - The sudden loss of boil off caused by FV-EA1-1 closing will result in erratic Weight Factor (WF) reading, which may cause PB-1 to shut down.

[2.1] PLACE Evaporator in Recirculation without vacuum per TO-600-060.
[2.1.1] IF PB-1 is not running, SET PB1-BYPASS (G12/8, F5) to BYP ON status.
[2.1.2] RESTART PB-1,

OR
IF cannot be restarted at SM direction, EMPTY C-A-1 vessel per TO-600-060.

[2.2] SHUTDOWN cooling water per TO-600-123.

[2.3] NOTIFY ETF Control Room of the process disruption due to activation of the used raw water radiation system failure.

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator  
Graphic: 17  
Panel: N/A  
Source: RM-RC2-1  
Alarm #: N/A  
Setpoint: Hardware problem  

Immediate Actions (Cont.):

NOTE: In the event of a hardware alarm at the radiation monitor, the green light on top of the instrument will begin to flash, and will continue to do so until the alarm has cleared itself or been manually acknowledged.

[2.4] Shift Manager CONTACT Engineering to coordinate troubleshooting and repair of radiation monitor loop.

[2.5] IF the RC-2 system is restored, STARTUP cooling water per TO-600-123 AND GO TO Step [3].

[2.6] IF alarm clears in less than 12 hours, GO TO Step [3].

[2.7] IF alarm is active for 12 hours, per SM direction, EMPTY the C-A-1 vessel TO-600-060.

[2.8] GO TO step [3].

Supplemental Actions

Alarm State: (CFN) or (BAD)

[3] REQUEST SM review of actions taken during this alarm response to validate 242-A Evaporator is in desired configuration.

[4] REQUEST SM to evaluate the need to notify Environmental on-call per TF-REC-001 and TFC-ESHQ-ENV_FS-C-01.


Possible Causes:

1. Detector failure.
3. Loss of signal from the detector.
5. Ongoing maintenance PM.

References:

Documents: TO-600-060 “Shut Down the 242-A Evaporator Systems.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17  Alarm #: N/A
Panel: N/A  Setpoint: 20 psig

Source: PT-EC1-9  Alarm Class: Auxiliaries.

Alarm Description: URW BACK PRESSURE CONTROLR (LOW) (G17/8, F18/14); the used raw water backpressure is below the low alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

NOTE - Normal pressure on PI-RW-2 is greater than 100 psig.

[1] IF Evaporator is SHUTDOWN, CHECK that PIC-EC1-2 is inhibited (F91/8).
[1.1] IF alarm is not inhibited, NOTIFY SM that alarm needs to be INHIBITED.
[1.2] EXIT ARP.


[3] IF a loss of raw water supply pressure has occurred as indicated by a PI-RW-2 low pressure alarm, EXIT ARP AND GO TO TF-AOP-EVAP-003.


[5] IF PI-RW-1 reads less than 70 psig, CHECK PDI-RW-1 F-RW-1 FILTER DELTA P and PDI-RW-2 F-RW-2 FILTER DELTA P current trend display for recent differential pressure changes:
[5.1] PRESS “CURR TREND”, “17”, and “ENTER”.
[5.2] CHECK PDI-RW-1 and PDI-RW-2 current trend traces for recent differential pressure increases.

[6] IF PDI-RW-1 F-RW-1 or PDI-RW-2 current trend traces read greater than 13 psid, REQUEST the Backside Operator to backwash the applicable raw water strainer per TO-600-130.

[7] IF PDI-RW-1 or PDI-RW-2 current trend traces still reads greater than 13 psid, and backup raw water strainer bank is available for service, REQUEST the Backside Operator perform the following:
[7.1] PLACE backup raw water strainer bank in service per TO-600-130.
[7.2] ISOLATE primary raw water strainer bank per TO-600-130.

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

[7.3] IF alarm resets, GO TO Step [15].

[8] IF PI-RW-1 is greater than 70 psig and F-RW-1 and/or F-RW-2 FILTER DELTA Ps are normal, CHECK PIC-EC1-2 URW BACKPRESSURE CONTROLR current trend display for recent changes:

[8.1] PRESS “CURR TREND”, “18”, and “ENTER”.

[8.2] CHECK PIC-EC1-2 current trend trace for recent decreases.

[9] IF PIC-EC1-2 current trend trace is increasing, MONITOR PIC-EC1-2 current trend trace closely.

[10] IF PIC-EC1-2 backpressure reading increases causing this low pressure alarm to reset, GO TO Step [15].

[11] IF PIC-EC1-2 current trend trace is decreasing or not increasing, CHECK PIC-EC1-2 (G17/8, F14) URW BACK PRESSURE CONTROLR mode and output:


[11.2] CHECK if PIC-EC1-2 is in AUTO or MANUAL mode.


[12] IF PIC-EC1-2 is in MANUAL mode, and PIC-EC1-2 output is not at the maximum value of 55%, SLOWLY INCREASE backpressure:

[12.1] MONITOR PIC-EC1-2 current trend trace as PIC-EC1-2 backpressure is increased.

[12.2] SLOWLY increase PIC-EC1-2 backpressure to 25 (23 to 27) psig.

[12.3] AFTER PIC-EC1-2 backpressure increases to 25 psig and the low pressure alarm resets, PRESS AUTO/MAN twice to place PIC-EC1-2 in AUTO mode.


[12.5] IF increasing PIC-EC1-2 output has no effect on backpressure, GO TO Step [13].

[12.6] GO TO Step [15].

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17  Alarm #: N/A
Panel: N/A
Source: PT-EC1-9  Setpoint: 20 psig

YELLOW

PIC-EC1-2

Immediate Actions (Cont.):
[13] IF PIC-EC1-2 (G17/8, F14) URW BACK PRESSURE CONTROLR is in AUTO mode, and the setpoint is not 25, **INCREASE** backpressure (slowly) in MANUAL mode:
[13.1] **SELECT** PIC-EC1-2 (G17/8, F14), URW BACK PRESSURE CONTROLR.
[13.2] **PLACE** PIC-EC1-2 in MANUAL mode.
[13.3] **MONITOR** PIC-EC1-2 current trend trace as PIC-EC1-2 backpressure is increased.
[13.4] **SLOWLY** increase PIC-EC1-2 backpressure to 25 (23 to 27) psig.
[13.5] IF the maximum output of 55% is reached, and backpressure is not 25 (23 to 27) psig, **GO TO** Step [14].
[13.6] **AFTER** PIC-EC1-2 backpressure increases to 25 psig, and this low pressure alarm resets, **PRESS** PIC-EC1-2 in AUTO mode.
[13.8] IF URW backpressure cannot be restored to 23 to 27 psig, **GO TO** Step [14].
[14] IF URW backpressure cannot be restored to normal, **SHUT DOWN** the Evaporator per TO-600-060 at SM direction **AND** **CONTINUE**.

Supplemental Actions
[15] **REQUEST** Shift Manager review of actions taken during this alarm response to validate 242-A Evaporator is in desired configuration.

Possible Causes:
1. Low raw water supply pressure.
2. Failure of HV-EC1-2, backpressure regulating valve.
3. Instrument malfunction.
4. Ongoing maintenance PM.

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17  Alarm #: N/A
Panel: N/A
Source: PT-EC1-9  Setpoint: 20 psig

YELLOW
PIC-EC1-2

(Continued)

References:

Drawings:  H-2-98994, Zone C-8.
            TO-600-060, “Shut Down 242-A Evaporator.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17                      Alarm #: N/A
Panel: N/A                      PIC-EC1-2
Source: PT-EC1-9                 Setpoint: 30 psig

Alarm Class: Auxiliaries

Alarm Description: URW BACK PRESSURE CONTROLR (HIGH) (G17/8, F18); the used raw water backpressure is above the high alarm setpoint.

Automatic Actions: None.

Immediate Actions:

[1] CHECK PIC-EC1-2 URW BACKPRESSURE CONTROLR current trend display for recent changes:
   [1.1] PRESS “CURR TREND”, “18”, and “ENTER”.
   [1.2] CHECK PIC-EC1-2 current trend trace for recent increases.

[2] IF PIC-EC1-2 current trend trace is decreasing, PERFORM the following:
   [2.1] MONITOR the PIC-EC1-2 current trend trace.
   [2.2] IF backpressure decreases causing this high alarm to reset, EXIT ARP.

[3] IF PIC-EC1-2 current trend trace is increasing or stable, CHECK PIC-EC1-2 (G17/8, F18) URW BACK PRESSURE CONTROLR mode and output:
   [3.2] CHECK if PIC-EC1-2 is in AUTO or MANUAL mode.
   [3.3] CHECK PIC-EC1-2 output.

[4] IF PIC-EC1-2 is in MANUAL mode, DECREASE backpressure (slowly):
   [4.1] MONITOR PIC-EC1-2 current trend trace as PIC-EC1-2 backpressure is decreased.
   [4.2] SLOWLY decrease PIC-EC1-2 backpressure to 25 (23 to 27) psig.
   [4.3] IF automatic backpressure control is desired, PERFORM the following:
         [4.3.1] SET PIC-EC1-2 to AUTO mode.
         [4.3.2] CHECK that PIC-EC1-2 changes to AUTO mode.

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17    Alarm #: N/A
Panel: N/A    Setpoint: 30 psig
Source: PT-EC1-9

YELLOW

PIC-EC1-2

Immediate Actions (Cont.):

[5] AFTER PIC-EC1-2 backpressure decreases to 23 to 27 psig, and this high pressure alarm resets, EXIT ARP.

[6] IF decreasing PIC-EC1-2 output has NO effect on backpressure, GO TO Step [7.8].

[7] IF PIC-EC1-2 (G17/8, F14) URW BACK PRESSURE CONTROLR is in AUTO mode, and the SETPOINT is not 25, SLOWLY DECREASE backpressure in MANUAL mode:

[7.1] PLACE PIC-EC1-2 in MANUAL mode.

[7.2] MONITOR PIC-EC1-2 current trend trace as PIC-EC1-2 backpressure is decreased.

[7.3] SLOWLY decrease PIC-EC1-2 backpressure to 25 (23 to 27) psig.

[7.4] IF output reaches 0% and backpressure is not 25 (23 to 27) psig, GO TO Step [8].

[7.5] AFTER PIC-EC1-2 backpressure decreases to 23 to 27 psig, and this high pressure alarm resets, PRESS AUTO/MAN twice to place PIC-EC1-2 in AUTO mode.


[7.7] CHECK that PIC-EC1-2 setpoint changes to 25 AND EXIT ARP.

[7.8] IF URW backpressure cannot be restored to normal, SHUT DOWN the Evaporator per TO-600-060 at SM direction AND CONTINUE.

Supplemental Actions

[8] REQUEST Shift Manager review of actions taken during this alarm response to validate 242-A Evaporator is in desired configuration.

(Continued on Next Page)
Facility: 242-A Evaporator
Graphic: 17 Alarm #: N/A
Panel: N/A
Source: PT-EC1-9 Setpoint: 30 psig

Possible Causes:
1. High raw water supply pressure.
2. Failure of HV-EC1-2, backpressure regulating valve.
3. Instrument malfunction.
4. Ongoing maintenance PM.

References:
Drawings: H-2-98994, Zone C-8.
Documents: TO-600-060, “Shut Down the 242-A Evaporator.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17  Alarm #: N/A
Panel: N/A
Source: FIAS-RC2-1  Setpoint: 0.3 GPM

Alarm Class: Auxiliaries
Alarm Description: URW SAMPLER FLOW LOW (F18); the flowrate through the RC2 used raw water sampler is below the low flow alarm setpoint.

Automatic Actions:
None

Immediate Actions:

[1] IF Evaporator is SHUTDOWN, CHECK that RC2-PIG is inhibited (F91).
   [1.1] IF alarm is not inhibited, NOTIFY SM that this alarm needs to be inhibited.
   [1.2] EXIT ARP.
[2] IF Evaporator is operating, CHECK PIC-EC1-2 (G17/8, F18) URW BACKPRESSURE CONTROLR.
[4] IF PIC-EC1-2 reads greater than 20 psig, REQUEST Backside Operator check that flow through the sampler as read on FIAS-RC2-1 is greater than 0.33 gpm.
[5] IF FIAS-RC2-1 does not read greater than 0.33 gpm, PERFORM the following:
   [5.1] REQUEST Backside Operator adjust valve RC2-3 until FIAS-RC2-1 reads greater than 0.33 gpm.
   [5.2] CHECK RC2-PIG to verify the low flow alarm has RESET.
   [5.3] IF the RC2-PIG low flow alarm has not reset and rotameter FIAS-RC2-1 shows flow greater than 0.33 gpm, CHECK that flow through FIAS-RC2-1 is greater than 0.33 gpm once every 2 hours until this alarm is reset.
[6] IF flow through RC-2 sample pig cannot be restored to greater than 0.33 gpm, NOTIFY SM AND
   PERFORM the following:
   [6.1] PLACE the Evaporator in recirculation without vacuum mode per TO-600-060.
   [6.2] SHUT DOWN raw water to the condensers per TO-600-060.

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

Graphic: 17  Alarm #: N/A
Panel: N/A
Source: FIAS-RC2-1  Setpoint: 0.3 GPM

YELLOW

RC2-PIG

(Continued)

Supplemental Actions

[7] **REQUEST** SM review of actions taken during this alarm response to validate 242-A Evaporator is in desired configuration.

Possible Causes:

1. Sample line valve misalignment.
2. Sample line leak.
3. Ongoing maintenance PM.

References:

- Drawings: H-2-98994, Zone D-3
- Documents: TO-600-060, “Shut Down the 242-A Evaporator.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17  Alarm #: N/A
Panel: N/A  Setpoint: 1200 gpm
Source: FT-EC1-1  Alarm Class: Auxiliaries.

Alarm Description: E-C-1 CONDENSR URW FLOW CONTROLR (LOW) (G17, F18); used raw water flow through the E-C-1 Condenser is below the low alarm setpoint.

Automatic Actions: None.

Immediate Actions:

NOTE - Normal pressure on PI-RW-2 is greater than 100 psig.

[1]  IF Evaporator is SHUT DOWN, CHECK that PIC-EC1-2 (F91) is inhibited.
   [1.1]  IF alarm is not inhibited, NOTIFY SM that this alarm needs to be INHIBITED.
   [1.2]  EXIT ARP.


[3]  IF a loss of raw water supply pressure has occurred as indicated by a combination of the following alarms, TI-HC1-2, FIC-EC1-1, PI-RW-1, and PI-RW-2 low pressure alarm, EXIT ARP AND GO TO TF-AOP-EVAP-003.

NOTE - Normal pressure on PI-RW-1 is 70 to 105 psig.


[5]  IF PI-RW-1 reads less than 70 psig, CHECK PDI-RW-1 F-RW-1 FILTER DELTA P and PDI-RW-2 F-RW-2 FILTER DELTA P current trend display for recent differential pressure changes:
   [5.1]  PRESS “CURR TREND”, “17”, and “ENTER”.
   [5.2]  CHECK PDI-RW-1 and PDI-RW-2 current trend traces for recent differential pressure increases.

[6]  IF PDI-RW-1 F-RW-1 or PDI-RW-2 current trend traces read greater than 13 psid, REQUEST the Backside Operator to backwash the applicable raw water strainer per TO-600-130.

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

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>[7]</td>
<td>IF PDI-RW-1 F-RW-1 or PDI-RW-2 current trend traces still reads greater than 13 psid, and backup raw water strainer bank is available for service, REQUEST the Backside Operator perform the following:</td>
</tr>
<tr>
<td></td>
<td>[7.1] PLACE backup raw water strainer bank in service per TO-600-130.</td>
</tr>
<tr>
<td></td>
<td>[7.2] ISOLATE primary raw water strainer bank per TO-600-130.</td>
</tr>
<tr>
<td>[8]</td>
<td>CHECK FIC-EC1-1 (G17/5, F18) E-C-1 CONDENSER URW FLOW CONTROLR output value.</td>
</tr>
<tr>
<td>[9]</td>
<td>IF FIC-EC1-1 OUTPUT is less than 100%, RAISE FIC-EC1-1 flow rate manually:</td>
</tr>
<tr>
<td></td>
<td>[9.1] SELECT FIC-EC1-1 (G17/5, F18).</td>
</tr>
<tr>
<td></td>
<td>[9.2] IF FIC-EC1-1 is not in MANUAL mode, PLACE FIC-EC1-1 in MANUAL mode AND CHECK that FIC-EC1-1 changes to MANUAL mode.</td>
</tr>
<tr>
<td></td>
<td>[9.3] RAISE FIC-EC1-1 flow rate to 2500 (2300 to 2700) gpm.</td>
</tr>
<tr>
<td></td>
<td>[9.4] AFTER FIC-EC1-1 flow rate is restored to 2500 (2300 to 2700) gpm and the LOW flow alarm resets, EXIT ARP.</td>
</tr>
<tr>
<td>[10]</td>
<td>IF E-C-1 URW flow cannot be restored, SHUT DOWN the Evaporator per TO-600-060 at SM direction AND CONTINUE.</td>
</tr>
</tbody>
</table>

### Supplemental Actions

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
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</table>

(Continued on Next Page)
Possible Causes:

1. Low raw water pressure or flow.
2. High differential pressure on raw water strainers F-RW-1 or F-RW-2.
3. FV-EC1-1, E-C-1 URW flow control valve malfunction.
5. Ongoing maintenance PM.

References:

Drawings: H-2-98994, Zone F-6.
TO-600-060, “Shut Down the 242-A Evaporator.”
Facility: 242-A Evaporator

Alarm 

Graphic: 17, 151

Panel: N/A

Source: AI-RW-1

Alarm Class: Environmental Impact.

Alarm Description: AI-RW-1 USED RAW WATER PH HIGH. The pH of the used raw water is above the HIGH alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] IF RI-RC2-1 HI-RADN (G151) status is ACTIVE, RESPOND per ARP-T-601-017, RI-RC2-1.

[2] NOTIFY LWPF SM and TEDF operators of the high used raw water pH alarm at the Evaporator.

[3] TAKE a grab sample of the used raw water as follows:

[3.1] ENSURE valve 2-21 is OPEN.


[3.3] OPEN valve 2-20 for 10 seconds, using a bucket to catch spillage, to flush tygon tubing with cooling water.

[3.4] AFTER flushing is complete, CLOSE valve 2-20 AND DISCARD flush water into appropriate Condenser Room drain.

[3.5] PLACE tygon tube in clean sample container.


[3.7] ALLOW sample container to fill.


[3.10] REMOVE tygon tube from sample container.

[4] MEASURE the pH of the used raw water using a portable pH tester or litmus paper.

[5] DISPOSE of sample in appropriate Condenser Room drain.

(Continued on Next Page)
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17, 151  Alarm #: N/A
Panel: N/A
Source: AI-RW-1  Setpoint: 9.0

Immediate Actions (Cont.):

[6] IF the pH as indicated by the portable tester or litmus paper is within 6.5 to 9.0 pH,
NOTIFY SM of the URW pH monitor problems AND
MONITOR the pH using Steps [3],[4] and [5] once every 8 hours until the pH
monitoring system problem is corrected.

[7] IF pH as indicated by portable tester or litmus paper is not within 6.5 to 9.0 pH,
SHUTDOWN Evaporator, per SM direction, per TO-600-060.

Supplemental Actions:

[8] REQUEST Shift Manager to evaluate the need to notify Environmental on-call per
TF-REC-001 and TFC-ESHQ-ENV_FS-C-01.

Possible Causes:

1. Ongoing maintenance PM.
2. Instrument malfunction.
3. Condenser tube leak.

References:

Documents:  TO-600-060, “Shut Down the 242-A Evaporator Systems.”
            TF-REC-001, “Response to Environmental Condition.”
            TFC-ESHQ-ENV_FS-C-01,” Environmental Notification.”
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17, 151  Alarm #: N/A
Panel: N/A
Source: AI-RW-1  Setpoint: 6.5

Alarm Class: Environmental Impact.

Alarm Description: AI-RW-1 USED RAW WATER PH LOW. The pH of the used raw water is below the low alarm setpoint.

Automatic Actions:

None.

Immediate Actions:

[1] IF RI-RC2-1 HI-RADN (G151) URW SAMPLER RADN HIGH status is ACTIVE, RESPOND per ARP-T-601-017, RI-RC2-1.

[2] NOTIFY the LWPF SM and TEDF operators of the low used raw water pH alarm at the Evaporator.

[3] TAKE a grab sample of the used raw water as follows:

[3.1] ENSURE valve 2-21 is OPEN.


[3.3] OPEN valve 2-20 for 10 seconds, using a bucket to catch spillage, to flush tygon tubing with cooling water.

[3.4] AFTER flushing is complete, CLOSE valve 2-20 AND DISCARD flush water into appropriate Condenser Room drain.

[3.5] PLACE tygon tube in clean sample container.


[3.7] ALLOW sample container to fill.


[3.10] REMOVE tygon tube from sample container.

[4] MEASURE the pH of the used raw water using a portable pH tester or litmus paper.

[5] DISPOSE of sample in appropriate Condenser Room drain.

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

[6] IF pH as indicated by portable tester or litmus paper is within 6.5 to 9.0 pH, NOTIFY SM of the URW pH monitor problems AND MONITOR the pH using Steps [3],[4] and [5] once every 8 hours until the pH monitoring system problem is corrected.

[7] IF pH as indicated by portable tester or litmus paper is not within 6.5 to 9.0 pH, SHUTDOWN Evaporator, per SM direction, per TO-600-060.

Supplemental Actions:

[8] REQUEST Shift Manager to evaluate the need to notify Environmental on-call per TF-REC-001 and TFC-ESHQ-ENV_FS-C-01.

Possible Causes:

1. Ongoing maintenance PM.
2. Instrument malfunction.
3. Condenser tube leak.

References:

Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17  Alarm #: N/A
Panel: N/A  Setpoint: 3200 gpm
Source: FI-RC2-1  Alarm Class: Equipment status.

Alarm Description: AVERAGE URW FLOW (F19). The 5-minute average flowrate through the used raw water is above the high alarm setpoint.

Automatic Actions: None.

Immediate Actions:

[1] CHECK FIC-EC1-1 (G17/5, F18) E-C-1 CONDENSER URW FLOW CONTROLR output value.
[2] IF URW flow is less than 3200 gpm, NOTIFY SM of discrepancies in the two flow readings AND EXIT this ARP.
[3] IF URW flow is greater than 3200 gpm, REDUCE URW flow to 2500 (2300 to 2700) gpm or to value specified in Process Memo.
[4] IF URW flow is greater than 3200 and cannot be reduced to desired level, NOTIFY SM of alarm status AND REQUEST direction.

Possible Causes:
1. Ongoing maintenance PM.

References:

Documents: None.
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 17, 151  Alarm #: N/A
Panel: N/A
Source: CI-RW-1  Setpoint: 180 USCM

Alarm Class: Environmental Impact.

Alarm Description: CI-RW-1 USED RAW WATER CONDUCTIVITY HIGH (G17, F19/4). The conductivity of the USED RAW WATER is above the HIGH alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] IF RI-RC2-1 HI-RADN (G151) status is ACTIVE, **RESPOND** per ARP-T-601-017, RI-RC2-1 (URW Sampler RADN).

[2] **VERIFY** valve line up is correct.

[3] **IF** conductivity remains high, **NOTIFY** the LWPF Shift Manager and TEDF operators of the high used raw water conductivity alarm at the evaporator.

[4] **IF** AI-RW-1 (G17, F19) URW PH HIGH is active, **RESPOND** per ARP-T-601-017, HIGH-AI-RW-1 used raw water PH.

[5] **IF** AI-RW-1 (G17, F19) URW PH LOW is active, **RESPOND** per ARP-T-601-017, LOW-AI-RW-1 used raw water PH.

[6] **MONITOR** RI-RC2-1 and pH until conductivity monitoring system problem is corrected.

Supplemental Actions:

[7] **REQUEST** Shift Manager to notify Environmental per TFC-ESHQ-ENV_FS-C-01 of any abnormal conductivity readings or process disruption.

(Continued on Next Page)
**Facility:** 242-A Evaporator  
**Graphic:** 17, 151  
**Panel:** N/A  
**Source:** CI-RW-1  
**Alarm #:** N/A  
**Setpoint:** 180 USCM

### Possible Causes:

1. Ongoing maintenance PM.  
2. Instrument malfunction.  
3. Disruption of flow to the conductivity instrument.

### References:

- **Drawings:** H 2 98994, Zone E-8.  
- **Documents:** RPP-16922, Environmental Specification Requirements.  
  TO-600-060, Shut Down 242-A Evaporator System.
Respond to Used Raw Water Graphic #17 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 17, 151  Alarm #: N/A
Panel: N/A  Setpoint: 5.5
Source: CI-RW-1  Alarm Class: Environmental Impact.

Alarm Description: CI-RW-1 USED RAW WATER CONDUCTIVITY LOW (G17, F19/4). The conductivity of the USED RAW WATER is below the LOW alarm setpoint 5.5.

Automatic Actions:
None.

Immediate Actions:

[1] IF RI-RC2-1 HI RADN (G151) URW SAMPLIER RADN status is ACTIVE, RESPOND per ARP-T-601-017, “RI-RC2-1 URW SAMPLIER RADN”.
[2] VERIFY valve line up is correct.
[3] IF conductivity remains low, NOTIFY the LWPF Shift Manager and TEDF operators of the low used raw water conductivity alarm at the evaporator.
[4] IF AI-RW-1 (G17, F19) URW PH HIGH is active, RESPOND per ARP-T-601-017, HIGH-AI-RW-1 used raw water PH.
[5] IF AI-RW-1 (G17, F19) URW PH LOW is active, RESPOND per ARP-T-601-017, LOW-AI-RW-1 used raw water PH.

Supplemental Actions:

[7] REQUEST Shift Manager to notify Environmental per TFC-ESHQ-ENV_FS-C-01 of any abnormal conductivity readings or process disruption.

(Continued on Next Page)
Facility: 242-A Evaporator
Graphic: 17, 151  Alarm #: N/A
Panel: N/A
Source: CI-RW-1  Setpoint: 5.5

Possible Causes:
1. Ongoing maintenance PM.
2. Instrument malfunction.
3. Disruption of flow to the conductivity instrument.

References:
Drawings: H 2 98994, Zone E-8.
            TO-600-060, Shut Down 242-A Evaporator System.