Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Tank Farm Alarm Response Procedure

242-A Evaporator

USQ # EV-15-1058-S, Rev. 2

CHANGE HISTORY (≤ LAST 5 REV-MODS )

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<tr>
<td>J-2</td>
<td>11/28/2017</td>
<td>Operations Request</td>
<td>Page 2 struck out RSH-RW-1 Alarm</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Page 3 Alarm PI-RW-1 changed setpoint from 132 to 120</td>
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<tr>
<td>J-1</td>
<td>12/21/2015</td>
<td>Operations Request</td>
<td>Page 3 changed setpoint from &quot;120&quot; to &quot;132&quot; psig</td>
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<tr>
<td>J-0</td>
<td>06/25/2015</td>
<td>Periodic review</td>
<td>Pages 12 &amp; 14 Added supplemental actions.</td>
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<td>I-1</td>
<td>12/03/2014</td>
<td>Operations Request</td>
<td>Added steps to exit procedure if alarms were expected,</td>
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<td></td>
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<td></td>
<td>updated possible causes for expected alarms, updated step to notify Shift Manager only if pressure was lost.</td>
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<tr>
<td>I-0</td>
<td>05/20/2013</td>
<td>Periodic review</td>
<td>No changes identified. Updated footer.</td>
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<td>WTR-SERV BUILDING SUMP LEVEL LO WHITE</td>
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RECORDS

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

Graphic: 11 Alarm #: N/A
Panel: N/A
Source: PT-RW-1 Setpoint: 120 psig

Alarm Class: Plant Stability

Alarm Description: F-RW-1/2 FILTER DNSTREAM PRESSURE (HIGH) (G11, F17); the Raw Water pressure downstream of Raw Water Filters F-RW-1 and F-RW-2 is above the high alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] IF valve 3-11 is closed, this alarm is expected. NOTIFY Shift Manager and exit this ARP.

[2] CHECK PI-RW-1, F-RW-1/2 FILTER DNSTREAM PRESSURE, and PI-RW-2, F-RW-1/2 FILTER UPSTREAM PRESSURE, current trend traces for recent pressure increases:

[2.1] PRESS “CURR TREND,” “17,” and “ENTER.”

NOTE - If PI-RW-1 shows a pressure increase and PI-RW-2 does not, it indicates a possible failure of one of the raw water Pressure Control Valves PCV-RW-1, 1A, -2, or -2A, or Pressure Transmitter PT-RW-1.

[2.2] CHECK PI-RW-1 and PI-RW-2 current trend traces for recent Raw Water Pressure increases.

[2.3] REQUEST backside operator to check local Pressure Indicators PI-RW-3 and PI-RW-4, located in the 242-A-81 raw water building.

[2.4] IF backup raw water strainer bank is available for service, PERFORM the following:

[2.4.1] PLACE backup raw water strainer bank in service per TO-600-130.

[2.4.2] ISOLATE primary raw water strainer bank per TO-600-130.


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Facility: 242-A Evaporator

Graphic: 11  
Alarm #: N/A

Panel: N/A

Source: PT-RW-1  
Setpoint: 120 psig

Possible Causes:
1. Failure of PCV-RW-1 and PCV-RW-1A.
2. Failure of PCV-RW-2 and PCV-RW-2A.
3. Failure of Pressure Transmitter PT-RW-1.
5. Valve 3-11 is closed.

References:
Drawings: H-2-98991
Documents: TO 600 130, “Operate 242 A 81 Raw Water Strainer System”
Facility: 242-A Evaporator

Graphic: 11  Alarm #: N/A
Panel: N/A  Setpoint: 60 psig

Source: PT-RW-1  Alarm Class: Plant Stability

Alarm Description: F-RW-1/2 FILTER DNSTREAM PRESSURE (LOW) (G11, F17); the Raw Water pressure downstream of Raw Water Filters F-RW-1 and F-RW-2 is below the Low Alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] IF both raw water strainer banks have been isolated in the raw water service building, this alarm is expected. NOTIFY Shift Manager and exit this ARP.

[2] IF a loss of raw water supply pressure has occurred, as indicated by PI-RW-2 LOW pressure alarm, PERFORM the following:
[2.2] EXIT this alarm response procedure.

[3.1] PRESS “CURR TREND,” “17,” and “ENTER.”
[3.3] CHECK PDI-RW-1 and PDI-RW-2 current trend traces for recent differential pressure increases.

[4] IF either PDI-RW-1 or PDI-RW-2 read greater than 13 psid, REQUEST backside operator to backwash the applicable raw water strainer per TO-600-130.

[5] IF in service raw water strainer PDI still reads greater than 13 psid, and backup raw water strainer bank is available for service, PERFORM the following:
[5.1] PLACE backup raw water strainer bank in service per TO-600-130.
[5.2] ISOLATE primary raw water strainer bank per TO-600-130.

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Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 11  Alarm #: N/A
Panel: N/A
Source: PT-RW-1  Setpoint: 60 psig

In Immediate (Cont.):
[6] IF PI-RW-2 shows a pressure decrease, NOTIFY the power house of a possible raw water main pressure loss.
[7] IF raw water pressure "cannot" be restored, SHUT DOWN the evaporator per TO-600-060.

Possible Causes:
1. Low supply pressure.
3. Instrument malfunction.
4. Both raw water strainer banks have been isolated in the raw water service building.

References:
Drawings: H-2-98991
Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 11  Alarm #: N/A
Panel: N/A
Source: PT-RW-2  Setpoint: 60 psig

Alarm Class: Plant Stability
Alarm Description: F-RW-1/2 FILTER UPSTREAM PRESSURE (LOW) (G11, F17); the Raw Water pressure upstream of Raw Water Filters F-RW-1 and F-RW-2 is below the Low Alarm setpoint.

Automatic Actions:
None.

Immediate Actions:


[2] CHECK PI-RW-1 F-RW-1/2 FILTER DNSTREAM PRESSURE and PI-RW-2 F-RW-1/2 FILTER UPSTREAM PRESSURE current trend traces for recent pressure decreases:
   [2.1] PRESS “CURR TREND,” “17,” and “ENTER.”
   [2.2] CHECK PI-RW-1 and PI-RW-2 current trend traces for recent raw water pressure decreases.

[3] IF local reading indicates a pressure decrease, NOTIFY the power house of possible raw water main pressure loss.

[4] IF a loss of raw water supply pressure has occurred, as indicated by this alarm and PI-RW-1 LOW pressure alarm or by pressure readings of less than 60 psig on local Pressure Indicators PI-RW-3 OR PI-RW-4, PERFORM the following:
   [4.2] EXIT this alarm response procedure.

[5] IF raw water supply pressure has not been lost, NOTIFY Shift Manager of a possible failure of pressure transmitter PT-RW-2.

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Facility: 242-A Evaporator

Graphic: 11          Alarm #: N/A
Panel: N/A
Source: PT-RW-2     Setpoint: 60 psig

(Continued)

Possible Causes:
1. Low raw water supply pressure.
2. Failure of Pressure Transmitter PT-RW-2.
3. Instrument malfunction.

References:
Drawings: H-2-98991
Documents: TF-AOP-EVAP-003, Response to 242-A Evaporator Loss of Raw Water System,
Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 11  Alarm #: N/A
Panel: N/A  Setpoint: 13 psid
Source: PDT-RW-1  Plant Stability
Alarm Class: PDI-RW-1 (G11, F17) FILTER DELTA P (HIGH); the ΔP across the F-RW-1 raw water filter is above the high alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] CHECK PDI-RW-1 F-RW-1 FILTER DELTA P current trend trace for recent changes:
   [1.1] PRESS “CURR TREND,” “17,” and “ENTER.”
   [1.2] CHECK PDI-RW-1 current trend trace for recent ΔP increases.

[2] IF PDI-RW-1 ΔP is greater than or equal to 13 psid, BACKWASH Raw Water Strainer F-RW-1 manually per TO-600-130.

[3] IF F-RW-1 ΔP "does not" return to normal after backwashing, and F-RW-2 is available for service, PERFORM the following:
   [3.1] PLACE F-RW-2 in service per TO-600-130.
   [3.2] ISOLATE F-RW-1 per TO-600-130.

[4] IF F-RW-1 ΔP does not return to normal after backwashing, and F-RW-2 is not available, SHUT DOWN the evaporator.


Possible Causes:
1. Raw water strainer is clogged.
2. Instrument malfunction.

References:
Drawings: H-2-98991
Documents: TO-600-060 “Shut Down the 242-A Evaporator Systems”  
TO-620-160, “Operate the 242-A Compressed Air System”
Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 11                  Alarm #: N/A
Panel: N/A                      PDI-RW-2
Source: PDT-RW-2                  Setpoint: 13 psid

Alarm Class: Plant Stability

Alarm Description: PDI-RW-2 (G11, F17) FILTER DELTA P (HIGH); the ΔP across the F-RW-2 raw water filter is above the high alarm setpoint.

Automatic Actions:
None.

Immediate Actions:

[1] CHECK PDI-RW-2 F-RW-2 FILTER DELTA P current trend trace for recent changes:
[1.1] PRESS “CURR TREND,” “17,” and “ENTER.”
[1.2] CHECK PDI-RW-2 current trend trace for recent ΔP increases.

[2] IF PDI-RW-2 ΔP is greater than or equal to 13 psid, BACKWASH raw water strainer F-RW-2 manually per TO-600-130.

[3] IF F-RW-2 ΔP "does not" return to normal after backwashing, and F-RW-1 is available for service, PERFORM the following:
[3.1] PLACE F-RW-1 in service per TO-600-130.
[3.2] ISOLATE F-RW-2 per TO-600-130.

[4] IF F-RW-2 ΔP "does not" return to normal after backwashing, and F-RW-1 is not available, SHUT DOWN the Evaporator.


Possible Causes:
1. Raw Water Strainer is clogged.
2. Instrument malfunction.

References:

Drawings: H-2-98991
Documents: TO-600-060 “Shut Down the 242-A Evaporator Systems”
           TO-620-160, “Operate the 242-A Compressed Air System”
Facility: 242-A Evaporator

Graphic: 11   Alarm #: N/A
Panel: N/A    Setpoint: N/A
Source: LDE-BFP-1   Alarm Class: Auxiliaries

Alarm Description: WTR-SERV BUILDING BFP-1 LEAK (G11, F17); water has been detected leaking from Backflow Preventer BFP-1 in the 242-A-81 Raw Water Services Building. This water discharges to the W-049H Disposal Facility. The alarm signal is also logged into the Treated Effluent Disposal Facility (TEDF) “Message History,” which is viewable from the “Summaries” menu on TEDF stations in the Effluent Treatment Facility (ETF) Control Room.

Automatic Actions: None.

Immediate Actions:

[1] REQUEST the backside operator to investigate Backflow Preventer BFP-RW-1, located downstream of Raw Water Strainer F-RW-1 in the raw water services building, for leaks.

[2] CHECK PI-RW-2 current trend trace for recent raw water pressure changes:
   [2.1] PRESS “CURR TREND,” “17,” and “ENTER.”
   [2.2] CHECK PI-RW-2 current trend trace for recent sudden pressure decreases.

[3] IF leak is verified, NOTIFY Shift Manager and TEDF of potential flow.

[4] IF F-RW-2 is available for service, PERFORM the following:
   [4.1] PLACE F-RW-2 in service per TO-600-130.
   [4.2] ISOLATE F-RW-1 per TO-600-130.

[5] IF F-RW-2 is not available, Shift Manager DETERMINE amount of leakage from BFP-RW-1.
   [5.1] IF leakage is greater than 2 gpm, PERFORM the following:
      [5.1.1] SLOWLY ISOLATE affected train per TO-600-130.
      [5.1.2] NOTIFY TEDF.
   [5.2] IF leakage is equal to or less than 2 gpm, PROVIDE estimate to TEDF every 8 hours until the leak is repaired or taken off line.

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### Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

**Facility:** 242-A Evaporator

**Graphic:** 11  
**Alarm #:** N/A  
**Panel:** N/A  
**Source:** LDE-BFP-1  
**Setpoint:** N/A

**Reference:** Document No. ARP-T-601-011  
**Revision/Modification:** J-2  
**Release Date:** 11/28/2017  
**Page:** 11 of 14

**LDS-BFP-1**

### Immediate Actions (Cont.):


### Supplemental Actions

- [7] REQUEST Shift Manager evaluate the need to notify Environmental field representative for 242-A concerning the activation of the BFP leak detector alarms.

### Possible Causes:

1. Backflow preventer leaking.
2. Instrument malfunction.

### References:

- **Drawings:** H-2-98991
- **Documents:** HNF-SD-W049H-ECD-001, “200 Area TEDF Interface Control Document”
Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator

Graphic: 11  Alarm #: N/A
Panel: N/A
Source: LDE-BFP-2  Setpoint: N/A

Alarm Class: Auxiliaries
Alarm Description: WTR-SERV BUILDING BFP-2 LEAK (G11, F17); water has been detected leaking from Backflow Preventer BFP-2 in the 242-A-81 Raw Water Services Building. This water discharges to the W-049H Disposal Facility. The alarm signal is also logged into the Treated Effluent Disposal Facility (TEDF) “Message History,” which is viewable from the “Summaries” menu on TEDF stations in the Effluent Treatment Facility (ETF) Control Room.

Automatic Actions:
None.

Immediate Actions:

[1] REQUEST the backside operator to investigate Backflow Preventer BFP-RW-2, located downstream of Raw Water Strainer F-RW-2 in the raw water services building, for leaks.

[2] CHECK PI-RW-2 current trend trace for recent Raw water pressure changes:
   [2.1] PRESS “CURR TREND,” “17,” and “ENTER.”
   [2.2] CHECK PI-RW-2 current trend trace for recent sudden pressure decreases.

[3] IF leak is verified, NOTIFY Shift Manager and TEDF of potential flow.

[4] IF F-RW-1 is available for service, PERFORM the following:
   [4.1] PLACE F-RW-1 in service per TO-600-130.
   [4.2] ISOLATE F-RW-2 per TO-600-130.

   [5.1] IF leakage is greater than 2 gpm, PERFORM the following:
      [5.1.1] SLOWLY ISOLATE affected train per TO-600-130.
      [5.1.2] NOTIFY TEDF.
   [5.2] IF leakage is equal to or less than 2 gpm, PROVIDE estimate to TEDF every 8 hours until the leak is repaired or taken off line.

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Respond to Raw Water Graphic #11 Alarms at the 242-A Evaporator

Facility: 242-A Evaporator
Graphic: 11  Alarm #: N/A
Panel: N/A
Source: LDE-BFP-2  Setpoint: N/A

(Continued)

Immediate Actions (Cont.):

Supplemental Actions
[7] REQUEST Shift Manager evaluate the need to notify Environmental field representative for 242-A concerning the activation of the BFP leak detector alarms.

Possible Causes:
1. Backflow preventer leaking.
2. Instrument malfunction.

References:
Drawings: H-2-98991
Documents: HNF-SD-W049H-ECD-001, “200 Area TEDF Interface Control Document”
Facility: 242-A Evaporator

Graphic: 11  Alarm #: N/A

Panel: N/A

Source: LEL-RW-SUMP  Setpoint: N/A

Alarm Class: Auxiliaries

Alarm Description: WTR-SERV BUILDING SUMP LEVEL LO (F17); the water level in the 242-A-81 Raw Water Services Building is low.

Automatic Actions:
None.

Immediate Actions:
[1] IF the Raw Water Services Building sump level is low, REQUEST backside operator to perform a manual backwash of one of the raw water strainers per TO-600-130 to add water to the sump.

[2] IF the low sump level alarm clears, REQUEST backside operator to terminate the manual backwash.

[3] IF the Low Sump Level Alarm does not clear within 1 minute of initiating the Manual Backwash, PERFORM the following:
[3.1] REQUEST backside operator to terminate the manual backwash.
[3.2] NOTIFY Shift Manager of possible sump level instrument malfunction.

Possible Causes:
1. Low level in sump.
2. Instrument malfunction.

References:

Drawings: H-2-98991