Check, Clean, Replace 242-A Evaporator Level Elements

Tank Farm Maintenance Procedure

MAINTENANCE

USQ # Routine Maintenance

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B-1</td>
<td>04/04/2018</td>
<td>Maintenance Request</td>
<td>Changed “probes” to “elements” and made procedure more compliant with pm data sheets.</td>
</tr>
<tr>
<td>B-0</td>
<td>02/08/2016</td>
<td>Operations request</td>
<td>Deleted warning in 3.0, changed pages 4 &amp; 7, changed caution to be applicable to the entire procedure, changed note above 5.1 to special instructions and changed verify to confirm.</td>
</tr>
<tr>
<td>A-2</td>
<td>11/10/2014</td>
<td>Operations request</td>
<td>CHAMPS Removal</td>
</tr>
<tr>
<td>A-1</td>
<td>05/19/2014</td>
<td>Operations request</td>
<td>Deleted Caution. Made changes to allow work to continue if alarm remains active. Added steps to check alarm relay.</td>
</tr>
<tr>
<td>A-0</td>
<td>03/07/2013</td>
<td>Engineering request. Corrective Action for PER-2012-1377</td>
<td>New procedure.</td>
</tr>
</tbody>
</table>

Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 PURPOSE AND SCOPE</td>
<td>3</td>
</tr>
<tr>
<td>1.1 Purpose</td>
<td>3</td>
</tr>
<tr>
<td>1.2 Scope</td>
<td>3</td>
</tr>
<tr>
<td>2.0 INFORMATION</td>
<td>3</td>
</tr>
<tr>
<td>2.1 Terms and Definitions</td>
<td>3</td>
</tr>
<tr>
<td>3.0 PRECAUTIONS AND LIMITATIONS</td>
<td>3</td>
</tr>
<tr>
<td>3.1 Personnel Safety</td>
<td>3</td>
</tr>
<tr>
<td>3.2 Radiation and Contamination Control</td>
<td>4</td>
</tr>
<tr>
<td>3.3 Environmental Compliance</td>
<td>4</td>
</tr>
<tr>
<td>3.4 Limits</td>
<td>4</td>
</tr>
<tr>
<td>4.0 PREREQUISITES</td>
<td>5</td>
</tr>
<tr>
<td>4.1 Special Tools, Equipment and Supplies</td>
<td>5</td>
</tr>
<tr>
<td>4.2 Performance Documents</td>
<td>5</td>
</tr>
<tr>
<td>4.3 Field Preparations</td>
<td>6</td>
</tr>
<tr>
<td>5.0 PROCEDURE</td>
<td>7</td>
</tr>
<tr>
<td>5.1 Check Vertically Installed Element</td>
<td>7</td>
</tr>
<tr>
<td>5.2 Check Horizontally Installed Element</td>
<td>10</td>
</tr>
<tr>
<td>5.3 Restoration</td>
<td>12</td>
</tr>
</tbody>
</table>
Check, Clean, Replace 242-A Evaporator Level Elements

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.4</td>
<td>Acceptance Criteria</td>
<td>12</td>
</tr>
<tr>
<td>5.5</td>
<td>Review</td>
<td>12</td>
</tr>
<tr>
<td>5.6</td>
<td>Records</td>
<td>13</td>
</tr>
</tbody>
</table>
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for checking, cleaning, and/or replacing 242-A Evaporator level Element.

1.2 Scope

This procedure involves checking, cleaning, and/or replacing the following 242-A Evaporator level Element:
- LEL-RW-SUMP (Vertical - Located in the Water Service Building)
- LEL-RC1-1 (Vertical - Located in the Condenser Room 2nd floor)
- LEL-C100-1 (Vertical - Located in the Condenser Room 1st floor)
- LEL-C103-2 (Vertical - Located in the Condenser Room 1st floor)
- LEL-SP-1 (Vertical - Located in the Condenser Room 2C)
- LEL-C103-1 (Horizontal - Located in the Condenser Room 2nd floor).

2.0 INFORMATION

2.1 Terms and Definitions

- LEL  Level Element Low.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Compliance with DOE-0359, Hanford Site Electrical Safety Program is required when working with this procedure.

3.1.2 This procedure is written in a generic manner to allow for its performance in multiple locations. As such, location-specific hazards will not be identified. As necessary, perform a hazard analysis on location-specific hazards in accordance with TFC-ESHQ-SAF_S-C-02.
3.2 **Radiation and Contamination Control**

Work in radiological areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.

When disconnecting, breaching or opening systems or system components that are currently or previously connected to waste tanks or waste transfer systems contamination surveys are required at system breach locations and when accessing previously unexposed areas.

3.3 **Environmental Compliance**

Waste disposal will be in accordance with Waste Planning Checklist and TO-100-052.

Notify Shift Manager and the Environmental point of contact/designee for the 242-A Evaporator should any of the following occur:

- Release of liquid to the Condenser Room secondary containment from work associated with LEL-C100-1 or LEL-SP-1
- Air movement either into or out of the downstream drain piping associated with the work on LEL-C103-2.

3.4 **Limits**

- If performing function test on Element LEL-RC1-1, circuit breaker 26 in PANELBOARD B needs to be on.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies may be needed to perform this procedure:
- Replacement level elements/Assembly
- A container large enough to catch approximately two (2) gallons of water
- Simple Green
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

Piping Drawings:
- LEL-C100-1: H-2-98990 Sheet 1 Zone B-5
- LEL-C103-1: H-2-98993 Sheet 1 Zone C-2
- LEL-C103-2: H-2-98995 Sheet 2 Zone C-4
- LEL-RC1-1: H-2-98993 Sheet 1 Zone C-3
- LEL-SP-1: H-2-98990 Sheet 1 Zone C-5
- LEL-RW-SUMP: H-2-98991 Sheet 1 Zone B-6.

Electrical Drawings:
- H-2-99085 Sheet 3 Zone E-5
- H-2-99085 Sheet 9 Zones C,D,E,F-2
- H-2-99088 Sheet 2 Zones C,D-7,8
- H-2-94866 Sheet 1 Zones F, G-10, 11, 12, 13
- H-2-99041 Sheet 1-6.

NOTE - All waste accumulated from work associated with LEL-C100-1 (TK-C-100 Overflow Trap Level which contains Process Condensate) and LEL-SP-1 (Vessel Vent Seal Pot Level which contains Process Condensate) will be managed as mixed waste.
- WRPS Waste Planning Checklist (site form A-6002-848)
- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.
4.3 Field Preparations

4.3.1 NOTIFY HPT Management an HPT will be needed to assist in performance of this procedure.

4.3.2 NOTIFY Shift Manager an operator will be needed to assist in performance of this procedure.

4.3.3 REQUEST Shift Manager/OE confirm 241-AW primary ventilation system is OPERATIONAL and will be in operation during performance of this procedure.
5.0 PROCEDURE

Special Instructions

If performance of any steps in this procedure is not required for procedure completion, steps not performed are to be marked, “N/A” in appropriate data sheet signoff space, and explained in comments/remarks section of data sheet.

5.1 Check Vertically Installed Element

5.1.1 CONFIRM Alarms listed on Data Sheet.

5.1.2 SET UP work area for removal of level element and to contain any liquid encountered while removing the element.

5.1.3 DISCONNECT electrical wiring from level element.

5.1.3.1 CONFIRM Alarms listed on Data Sheet.

5.1.3.2 IF alarm does not indicate Level Lo, NOTIFY FWS for further direction.

5.1.4 TEST alarm relay by momentarily shorting relay leads, CONFIRM alarm clears.

5.1.4.1 CONFIRM Alarms listed on Data Sheet.

5.1.4.2 IF alarm does not indicate Normal, NOTIFY FWS for further direction.
5.1 Check Vertically Installed Element (Cont.)

5.1.5 DRY AND WIPE element as it is being removed.

5.1.5.1 IF element is missing, LOCATE AND RE-INSTALL element.

5.1.5.2 CLEAN level element.

5.1.6 RE-INSTALL the level element.

5.1.7 RECONNECT wiring to level element.

5.1.7.1 IF level element is in ALARM, ADD approximately one (1) gallon of water AND CONFIRM step on Data Sheet.

5.1.7.2 CONFIRM Alarms listed on Data Sheet.

5.1.7.3 IF level element is still in Alarm, REPLACE Element AND GO TO Step 5.1.8.
5.1 Check Vertically Installed Element (Cont.)

5.1.8 IF level element is inoperable, REPLACE with new level element assembly as follows:

5.1.8.1 DISCONNECT electrical wiring from level element.

5.1.8.2 DRY AND WIPE element as it is being removed.

5.1.8.3 CONFIRM action taken on Data Sheet after new level element/assembly is installed.

5.1.8.4 RECONNECT wiring to level element.

5.1.8.5 IF level Element is in Alarm, ADD approximately one (1) gallon of water AND CONFIRM step on Data Sheet.

5.1.8.6 CONFIRM Alarms listed on Data Sheet.

5.1.8.7 CONFIRM Action taken on Data Sheet.

5.1.9 GO TO Section 5.3.
5.2 Check Horizontally Installed Element

5.2.1 REVIEW Data Sheet to identify Alarm Condition.

5.2.2 SET UP work area for removal of level element and to contain any liquid encountered while removing the Element.

5.2.3 DISCONNECT electrical wiring from level element.

5.2.3.1 CONFIRM Alarms listed on Data Sheet.

5.2.3.2 IF alarm does not clear, NOTIFY FWS for further direction.

5.2.4 TEST alarm relay by momentarily shorting relay leads, CONFIRM alarm clears.

5.2.4.1 CONFIRM Alarms listed on Data Sheet.

5.2.4.2 IF alarm does not clear, NOTIFY FWS for further direction.

5.2.5 LOOSEN level element AND

ALLOW water to drain.

5.2.6 WIPE AND DRY level element while it is being removed.

5.2.6.1 IF element is missing, LOCATE AND RE-INSTALL element.

5.2.6.2 CLEAN Level Element.

5.2.7 REINSTALL level element.

5.2.8 RECONNECT wiring to level element.

5.2.9 ADD water to seal loop at funnel.

5.2.10 CONFIRM Alarms on Data Sheet.

5.2.11 IF Level Element needs to be replaced, GO TO 5.2.12.
5.2 Check Horizontally Installed (Cont.)

5.2.12 IF level element is inoperable, REPLACE with new level element as follows:

5.2.12.1 DISCONNECT electrical wiring from level element.
5.2.12.2 LOOSEN level element.
5.2.12.3 ALLOW water to drain.
5.2.12.4 WIPE AND DRY level element as it is being removed.
5.2.12.5 CONFIRM action taken on Data Sheet after new level element/assembly is installed.
5.2.12.6 CONNECT wiring to new level element.
5.2.12.7 ADD water to seal loop at funnel.
5.2.12.8 CONFIRM alarms listed on Data Sheet.
5.2.12.9 CONFIRM Action taken on Data Sheet.

5.2.13 GO TO Section 5.3.
5.3 Restoration

5.3.1 **ENSURE** circuit breaker 26 in PANELBOARD B is OFF.

5.3.2 **IF** any problems were encountered, **INFORM** FWS.

5.3.3 **CHECK** equipment restoration by observing indications are consistent with expected conditions.

5.3.4 **NOTIFY** Operations testing is complete and system may be returned to desired configuration.

NOTE - All waste accumulated from work associated with LEL-C100-1 (TK-C-100 Overflow Trap Level which contains Process Condensate) and LEL-SP-1 (Vessel Vent Seal Pot Level which contains Process Condensate) will be managed as mixed waste.

5.3.5 **ENSURE** the job site has been house kept and all waste has been placed in the proper containers.

5.4 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and each element is functioning normally. (i.e. No element is in alarm when installed in the system and the system contains liquid covering the element.)

5.5 Review

5.5.1 **INFORM** FWS test is complete.

5.5.2 **FWS REVIEW AND ENSURE** the following:

- Completed Data Sheets meet the acceptance criteria
- Comments sections are filled out appropriately
- Work requests needed as a result of this procedure are identified and generated
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet.
5.6 Records

The performance of this procedure generates no records. However, PM Data Sheets associated with the procedure, are records and are maintained in the work package as record material.

The record custodian identified in the company-level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.