Calibrate and Functional Test Pressure Switches in 241-AP Farm

Tank Farm Maintenance Procedure 241-AP

USQ # GCX-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>
</tr>
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<tr>
<td>E-5</td>
<td>04/25/2017</td>
<td>Periodic Review</td>
<td>Inconsequential Change. Record Section Update.</td>
</tr>
<tr>
<td>E-4</td>
<td>05/19/2016</td>
<td>Maintenance Request</td>
<td>Inconsequential Change</td>
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<tr>
<td>E-2</td>
<td>10/27/2015</td>
<td>Maintenance Request</td>
<td>Maintenance request the following changes: Changed procedure from continuous to Reference. Added Steps 5.1.3, 5.2.2, 5.2.3.2, 5.2.6, 5.2.7, 5.2.10. Reword Steps 5.1.6, 5.1.18, 5.2.1, 5.2.3, 5.2.3.1, 5.2.7, 5.2.7.1. Struck Last 2 bullets under 3.2.2 and Steps 5.1.6, &amp; 5.1.7.</td>
</tr>
<tr>
<td>E-1</td>
<td>11/20/2014</td>
<td>CHAMPS Removal</td>
<td>Removed reference to CHAMPS, updated records statements and removed next periodic review date.</td>
</tr>
<tr>
<td>E-0</td>
<td>03/31/2014</td>
<td>Periodic Review</td>
<td>Struck Warning at 3.1 and Warning box at Step 5.1.10. Add comply with DOE-0359 at Step 5.1.9. Reword Steps 5.1.143, 5.2.3, 5.2.6, 5.2.8, 5.3.2, 5.3.3.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a safe uniform method of calibrating and functional testing the annulus exhaust pressure switches in 241-AP Farm.

1.2 Scope

This procedure applies to calibrating and functional testing pressure switches in 241-AP Farm.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Comply with DOE–0359, Hanford Site Electrical Safety Program when connecting and disconnecting from terminal strips, or working in the vicinity of energized electrical circuits.

3.1.2 If a lock and tag is required during the performance of this procedure, comply with DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.2 Radiation and Contamination Control

3.2.1 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.

3.2.2 The opening of any system or component within a Radiological Area requires presence of a Health Physics Technician to verify contamination control.

3.2.3 When disconnecting, breaching or opening systems or system components that are currently or previously connected to waste tanks or waste transfer systems:
  • Follow approved RWP for radiological control requirements per Work Order Location.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies may be needed to perform this procedure:

- Digital Manometer, or equivalent
- Digital or analog Multimeter (DMM)
- Vacuum or pressure source.

4.2 Performance Documents

The following documents will be required during the performance of this procedure:

- TO-060-341, “Operate 241-AP Tank Farm Annulus Exhauster System”

4.3 Field Preparation

4.3.1 CHECK Operation assistance has been established for manipulating exhausters.
Calibrate and Functional Test Pressure Switches in 241-AP Farm

5.0 PROCEDURE

NOTE - The subsections within 5.1 and 5.2 can be worked independently, concurrently, or in parallel with other sections as directed by the FWS with those directions recorded on work record or Comments Section of Data Sheet.

5.1 Calibrate Pressure Switches

5.1.1 NOTIFY TMACS and Evaporator that alarms may be received during the performance of this procedure.

5.1.2 PLACE exhaust system in configuration specified by the Shift Manager/FWS, per TO-060-341 for testing non running train.

5.1.3 REMOVE pressure switch from service.

NOTE - High pressure alarms are approached with increasing pressure. Low pressure alarms are approached with decreasing pressure. High vacuum alarms are approached with increasing vacuum. Low vacuum alarms are approached with decreasing vacuum.

5.1.4 CONNECT test equipment to non-running exhauster as specified by Data Sheet to appropriate inlet of pressure switch under test.
5.1 Calibrate Pressure Switches (Cont.)

5.1.5 **COMPLY** with DOE–0359, Hanford Site Electrical Safety Program when connecting and disconnecting from terminal strips, or working in the vicinity of energized electrical circuits.

5.1.6 **CONFIRM** contact actuation by one of the following methods:
- **USE** the alarm
- **CONNECT** Multimeter across contacts of pressure switch
- **LIFT** leads **AND** **CONNECT** Multimeter across contacts at switch
- **LIFT** leads at nearest junction **AND** **CONNECT** Multimeter across contacts.

5.1.7 **APPLY** each test input signal specified by Data Sheet **AND** **RECORD** each corresponding output value **AND/OR** switch response in As-Found section of Data Sheet.

5.1.8 **IF** instrument's As-Found output values are out of tolerance range specified by Data Sheet, **GO TO** Step 5.1.9,

**OR**

**IF** instrument’s As-Found output values are within tolerance but deemed marginal, (i.e. approaching specified upper or lower limit) at craftsman’s discretion, **GO TO** Step 5.1.9,

**OR**

**IF** instrument’s As-Found output values are within tolerance range specified by Data Sheet, **RECORD** output values in As-Left column **AND**

**GO TO** Step 5.1.14.
5.1 Calibrate Pressure Switches (Cont.)

**Special Instructions**

Adjustments for Steps 5.1.9 through 5.1.11, should be made as near as reasonably achievable to specified output value listed on Data Sheet.

Approach trip point from above desired pressure for low settings, and from below desired pressure for high settings.

5.1.9 **APPLY** appropriate pressure or vacuum signal to pressure switch as specified on Data Sheet.

5.1.10 **ADJUST** set-point.

5.1.11 **APPLY** pressure or vacuum signal per Data Sheet to pressure switch to check set-point adjustment.

5.1.12 **IF** set-point is within tolerance per Data Sheet, **RECORD** As-Left value on Data Sheet **AND GO TO** Step 5.1.14.

5.1.13 **IF** values are not within tolerance per Data Sheet, **REPEAT** Steps 5.1.9 through 5.1.12 until values are within tolerance **OR**

**IF** unable to bring values into tolerance **NOTIFY** FWS/OE for resolution.

5.1.14 **DISCONNECT AND REMOVE** all test equipment.

5.1.15 **RETURN** switch to service.

5.1.16 **IF** another pressure switch is to be tested, **GO TO** Step 5.1.3.
5.2 Functional Test Pressure Switches

Functional Test of A Train

5.2.1 IF functional testing B Train, GO TO Step 5.2.11.

5.2.2 ENSURE A Train is running per TO-060-341.

5.2.3 CHECK Alarm #25 (VTA-XA-760) on HVAC Panel in 241-AP-271 building is not lit and audible alarm is not in alarm.

5.2.4 CHECK red light is lit on AP241-VTA-HTR-003.

NOTE - Step 5.2.5 will cause the exhaust fans to shut down.

5.2.5 CLOSE valve AP241-VTA-V-704 (A-Train) to activate pressure switch AP241-VTA-PDS-760 (A-Train) AND CONFIRM the results per PM Data Sheets.

5.2.6 RECORD results on A Train Data Sheet.

5.2.7 OPEN (A-Train) valve AP241-VTA-V-704 to its original position.

5.2.8 PLACE exhaust system in configuration specified by the Shift Manager/FWS per TO-060-341.

5.2.9 CHECK alarm #25 (VTA-XA-760) on HVAC Panel in 241-AP-271 building is not lit and audible alarm is not in alarm.

5.2.10 IF all calibrations and function test are complete then GO TO Step 5.3.1.
5.2 Functional Test Pressure Switches (Cont.)

**Functional Test of B Train**

5.2.11 **IF** Train B requires Calibration prior to performing Functional Test, **GO TO** Step 5.1.2.

5.2.12 **ENSURE** B Train is running per TO-060-341.

5.2.13 **CHECK** alarm #25 (VTA-XA-760) on HVAC Panel in 241-AP-271 building is not lit and audible alarm is not in alarm.

5.2.14 **CHECK** red light is lit on AP241-VTA-HTR-004.

**NOTE** - Step 5.2.15 will cause the exhaust B train fans to shut down.

5.2.15 **CLOSE** valve AP241-VTA-V-804 (B-train) to activate pressure switch AP241-VTA-PDS-860 (B-train) **AND CONFIRM** results per Data Sheets.

5.2.16 **RECORD** results on B Train data sheet

5.2.17 **OPEN** valve AP241-VTA-V-804 (B-train) to its original position.

5.2.18 **PLACE** exhaust system in configuration specified by the Shift Manager/FWS, per TO-060-341.

5.2.19 **CHECK** alarm #25 (VTA-XA-760) on HVAC Panel in 241-AP-271 building is not lit and audible alarm is not in alarm.

5.2.20 **IF** all calibrations and function testing are complete then **GO TO** step 5.3.1.
5.3  **Restoration**

5.3.1  **IF** any problems were encountered with calibration, **INFORM** FWS.

5.3.2  **DISCONNECT AND REMOVE** Test Equipment.

5.3.3  **RECORD** the Test Equipment information and calibration status on Data Sheet.

5.3.4  **CONFIRM** equipment system restoration by observing indications are consistent with expected conditions.

5.3.5  **IF** not already done, **NOTIFY** FWS testing is complete.

5.3.6  **NOTIFY** TMACS and Evaporator that testing is complete.

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

5.4  **Acceptance Criteria**

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.5  **Review**

5.5.1  **INFORM** FWS calibration 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 initiated
   - 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, as applicable.

5.6  **Records**

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

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.