Calibrate Alarm/Interlock Switches

Tank Farm Maintenance Procedure

MAINTENANCE

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>
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<tr>
<td>F-2</td>
<td>06/13/2018</td>
<td>Periodic Review</td>
<td>Inconsequential Change to Update Record Section.</td>
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<td>F-1</td>
<td>10/30/2014</td>
<td>CHAMPS Removal.</td>
<td>CHAMPS removal, new records statement.</td>
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<tr>
<td>F-0</td>
<td>03/31/2014</td>
<td>Periodic Review</td>
<td>Struck Warnings pages 2 and 4, Steps 3.1.1, 5.1.15, Notes prior to Step 5.1.10. Reword Steps 5.1.1, 5.1.6, 5.1.11, 5.1.12, 5.1.14, 5.2.2, 5.2.6 &amp; Record Section. Added Steps 3.1.1, 3.1.2, 5.1.2, 5.1.3, 5.1.13, 5.2.5.</td>
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<td>E-0</td>
<td>12/28/2009</td>
<td>Periodic Review</td>
<td>Add “Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User to Section 4.1.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating alarm/interlock switches.

1.2 Scope

This procedure involves calibrating alarm/interlock switches.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 If working around live circuits, extreme caution should be used. Failure to follow electrical safety practices as outlined in DOE–0359, Hanford Site Electrical Safety Program could result in injury.

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

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.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- DC voltage/current source
- Thermocouple simulator of mV source and TC Tables
- Resistance decade box, or equivalent
- AC voltage/current source
- Signal/Pulse generator
- Digital multimeter, or equivalent
- 11-pin or 20-pin Test Socket
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.
5.0 PROCEDURE

5.1 Calibrate Switches

5.1.1 REQUEST Operations to configure system to allow procedure performance.

NOTE - Calibration may be performed in-place or instrument may be returned to the shop for bench calibration.

5.1.2 IF a lock and tag is required, ENSURE Lockout/Tagout has been performed in accordance with DOE-0336 Hanford Site Lockout/Tagout Procedure.

5.1.3 DON appropriate PPE as discussed in pre-job meeting.

5.1.4 DISCONNECT input to switch.

NOTE - High alarms/interlocks are approached with increasing input. Low alarms/interlock are approached with decreasing input.

5.1.5 CONNECT test equipment.

5.1.6 CONFIRM contact actuation per one of the following:

5.1.6.1 MONITOR interlocked component.

5.1.6.2 CONFIRM alarm is actuating or sounding.

5.1.6.3 CONNECT digital multimeter (DMM) to output of switch by connecting across contacts.

5.1.6.4 CONNECT digital multimeter (DMM) to output of switch by lifting leads and then connecting across contacts at switch or at nearest junction.
5.1 Calibrate Switches (Cont.)

5.1.7 APPLY each test input signal specified by Data Sheet.

5.1.8 RECORD each corresponding output value and/or switch response in As-Found section of Data Sheet.

5.1.9 IF instrument's As-Found output values and/or alarms are out of tolerance range specified by Data Sheet, GO TO Step 5.1.10.

OR

IF instrument's As-Found output values and/or alarms are within tolerance range specified by Data Sheet, RECORD output values in As-Left column AND GO TO Section 5.2, Restoration.

5.1.10 APPLY appropriate signal to switch as specified on Data Sheet.

5.1.11 ADJUST setpoint(s) per Data Sheet.

5.1.12 APPLY signal to switch AND CHECK setpoint adjustment.

5.1.13 IF values are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet AND GO TO Restoration, Section 5.2.

5.1.14 IF values are not within tolerance per Data Sheet, REPEAT Steps 5.1.10 through 5.1.13 up to two (2) times, AND IF unable to bring values into tolerance NOTIFY FWS for resolution.
5.2 Restoration

5.2.1 IF any problems were encountered with calibration, INFORM FWS.

5.2.2 IF not already removed; DISCONNECT AND REMOVE test equipment.

5.2.3 REPLACE leads if lifted.

5.2.4 RETURN switch to service.

5.2.5 IF a lock and tag was installed, ENSURE Lockout/Tagout has been removed in accordance with DOE-0336 Hanford Site Lockout/Tagout Procedure.

5.2.6 RECORD the test equipment information and calibration status on Data Sheet.

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

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

5.3 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.

5.4 Review

5.4.1 INFORM FWS test is complete.

5.4.2 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, as applicable.
5.5 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.