# Calibrate Hersey Indicators and Alarm, Large and Small Pneumatic Gauges

## Tank Farm Maintenance Procedure

**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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<tbody>
<tr>
<td>F-0</td>
<td>02/03/2016</td>
<td>Periodic Review</td>
<td>No Changes Made</td>
</tr>
<tr>
<td>E-2</td>
<td>11/19/2014</td>
<td>CHAMPS Removal</td>
<td>Removed reference to CHAMPS, updated records statements and removed next periodic review date.</td>
</tr>
<tr>
<td>E-1</td>
<td>02/04/2013</td>
<td>DOE Standard</td>
<td>Replaced references to document TFC-ESHQ-S-STD-03, Electrical Safety with DOE-0359, Hanford Site Electrical Safety Program.</td>
</tr>
<tr>
<td>E-0</td>
<td>01/14/2013</td>
<td>Periodic Review</td>
<td>Removed redundant or unneeded steps, removed vague phrases, added clarification to steps as necessary, and removed unclear acronyms from use.</td>
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Calibrate Hersey Indicators and Alarm, Large and Small Pneumatic Gauges

1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating the Hersey Indicators, Alarm(s) and Large and Small Pneumatic Gauges.

1.2 Scope

This procedure involves Hersey Indicators and Alarm Large and Small Pneumatic Gauges.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

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

3.1.2 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 serious injury or death.

3.2 Radiation and Contamination Control

Work in radiological areas will be performed using a radiation work permit following review by Radiological Control per 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:

- Volt/Ohm Meter
- Digital Manometer, or equivalent
- Window cleaner and rags.
5.0 PROCEDURE

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

- If the instrument is located in a radiologically controlled area, contamination surveys by HPT are required.

- 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 Calibrate Pneumatic Gauges

5.1.1 REMOVE the equipment from service.

5.1.2 CONNECT test equipment to instrument.

NOTE - Contact operation can be confirmed by either using the alarm or connecting Digital Multimeter or equivalent across contacts of the switch, by either connecting directly across contacts or lifting leads then connecting across contacts at switch or nearest junction.

5.1.3 APPLY test inputs specified by the Data Sheet AND RECORD output values in the As-Found section of the Data Sheet.

5.1.4 IF instrument As-Found values are within tolerance specified by the Data Sheet, PERFORM the following:

5.1.4.1 RECORD As-Found values in the As-Left column.

5.1.4.2 GO TO Section 5.4.

5.1.5 IF instrument As-Found values are not within tolerance specified by Data Sheet, GO TO Section 5.2 and/or Section 5.3.
5.2 Calibration

5.2.1 DISCONNECT test equipment.

Zero Adjustment

5.2.2 IF pointer is above or below the mark, PERFORM the following:

5.2.2.1 SLIGHTLY LOOSEN the red headed screw at the bottom of instrument mechanism.

5.2.2.2 IF pointer is below the first mark, LIGHTLY TAP the brass plate directly under the screw head with screw driver blade on the Right hand side,

OR

IF pointer is above the first mark, LIGHTLY TAP the brass plate directly under the screw head with screw driver blade on the Left hand side.

5.2.2.3 TIGHTEN red headed screw.

5.2.3 RECONNECT test equipment.

5.2.4 APPLY inputs per Data Sheet AND

CHECK output values for tolerance.

5.2.5 IF values are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet AND

GO TO Section 5.3 to set alarm/interlocks,

OR

GO TO Restoration, Section 5.4.

5.2.6 IF values are not within tolerance per Data Sheet, REPEAT Steps 5.2.1 through 5.2.5 until values are within tolerance,

OR

IF values cannot be brought into tolerance, NOTIFY FWS AND

STOP WORK until further directed.
5.3 Alarm/Interlock Switch Setting

NOTE - 
- This section is performed only as required.
- The switch may be in the same case as the gauge or may have its own case and be located remotely from the gauge.
- Contact operation can be confirmed by either using the alarm or connecting Digital Multimeter, or equivalent across contacts of the switch, by either connecting directly across contacts or lifting leads then connecting across contacts at switch or nearest junction.

5.3.1 CONNECT test equipment to the gauge.

5.3.2 SET input to the specified value per Data Sheet.

Calibration Adjustment Using Nut on Bellows

5.3.3 IF alarm switch has adjustment nut on bellows, PERFORM the following sub steps:

5.3.3.1 ADJUST nut to obtain specified setting.

5.3.3.2 IF value is within tolerance per Data Sheet, RECORD As-Left value on Data Sheet AND GO TO Restoration, Section 5.4.

5.3.3.3 IF value is not within tolerance per Data Sheet, REPEAT Steps 5.3.2 through 5.3.3.2 until values are within tolerance OR

IF value cannot be brought into tolerance, NOTIFY FWS for resolution AND STOP WORK until further directed.
5.3 Alarm/Interlock Switch Setting (Cont.)

**Calibration Adjustment Using Mounting Block**

5.3.4 **IF** alarm switch does not have adjustment nut on bellows, **PERFORM** the following sub steps:

**NOTE** - To prevent the mounting block (Figure 1) from moving too freely, do not loosen the screw more than $\frac{1}{4}$ turn.

5.3.4.1 **SLIGHTLY LOOSEN** screw A (Figure 1).

5.3.4.2 **IF** adjusting the switch for a lower setting, **LIGHTLY TAP** the mounting block to the left.

5.3.4.3 **IF** adjusting the switch for a higher setting, **LIGHTLY TAP** the mounting block to the right.

5.3.4.4 **CAREFULLY TIGHTEN** screw A to lock the mounting alarm condition at the specified value per Data Sheet.

5.3.4.5 **CHECK** output value for tolerance.

5.3.4.6 **IF** value is within tolerance per Data Sheet, **RECORD** As-Left value on Data Sheet **AND**

**GO TO** Restoration, Section 5.4.

5.3.4.7 **IF** value is not within tolerance per Data Sheet, **REPEAT** Steps 5.3.4.1 through 5.3.4.6 until values are within tolerance

**OR**

**IF** values cannot be brought into tolerance, **NOTIFY** FWS for resolution **AND**

**STOP WORK** until further directed.
Calibrate Hersey Indicators and Alarm, Large and Small Pneumatic Gauges

5.4 Restoration

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

5.4.2 IF not already removed, DISCONNECT AND REMOVE Test Equipment.

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

5.4.4 IF not already documented, RECORD the Test Equipment information and calibration status on Data Sheet.

5.4.5 REPORT deficiencies, or cause of early failure to FWS/Lead for corrective action.

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

5.5 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.

5.6 Review

5.6.1 INFORM FWS test is complete.

5.6.2 FWS REVIEW AND CONFIRM 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.
5.7 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.
Figure 1 - B622-1 Alarm Switch

Tap here to raise level setting
Screw A
Mounting Block
Tap here to lower level setting