Calibrate Zero and Span Adjustable Instruments with Pressure, Current, Voltage, Resistance (Inputs/outputs)

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>
</tr>
</thead>
<tbody>
<tr>
<td>F-1</td>
<td>10/02/2017</td>
<td>Inconsequential change from Periodic Review</td>
<td>Update Records Section to comply with writer’s standard.</td>
</tr>
<tr>
<td>F-0</td>
<td>10/01/2014</td>
<td>Periodic Review</td>
<td>Minor changes to conform to Writer’s Standard.</td>
</tr>
<tr>
<td>E-1</td>
<td>01/24/2013</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>
</tbody>
</table>

Table of Contents

1.0 PURPOSE AND SCOPE ............................................................................................................. 2
   1.1 Purpose ............................................................................................................................ 2
   1.2 Scope ............................................................................................................................... 2

2.0 INFORMATION ...................................................................................................................... 2

3.0 PRECAUTIONS AND LIMITATIONS .................................................................................. 2
   3.1 Personnel Safety ............................................................................................................... 2
   3.2 Radiation and Contamination Control ........................................................................... 2

4.0 PREREQUISITES ................................................................................................................ 3
   4.1 Special Tools, Equipment, and Supplies ........................................................................ 3
   4.2 Field Preparation ............................................................................................................. 3

5.0 PROCEDURE ....................................................................................................................... 4
   5.1 Perform Calibration ......................................................................................................... 4
   5.2 Restoration ...................................................................................................................... 6
   5.3 Acceptance Criteria ....................................................................................................... 6
   5.4 Review ............................................................................................................................ 6
   5.5 Records .......................................................................................................................... 7
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating ZERO and SPAN adjustable instruments.

1.2 Scope

This procedure involves calibrating ZERO and SPAN adjustable instruments.

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 serious injury.

3.1.2 If a lock and tag is required during the performance of this procedure, comply with the 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 tools may be needed to perform this procedure:

NOTE - All test equipment must have a range and accuracy equal or greater than the requirements listed on the Data Sheet.

- Test manometer
- Milliamp meter 0-20 mA DC
- Test gauge
- Current source
- Digital multimeter
- Resistance box.

4.2 Field Preparation

OBTAIN release from the Shift Manager prior to calibration of installed equipment/instrumentation.
5.0 PROCEDURE

5.1 Perform Calibration

NOTE - Shop calibration may require a dummy load of 1000 ohms on outputs of current instruments.
- Some instruments will require at 24 to 32 VDC power supply for shop calibration.
- This procedure may be used for field or shop calibrations.

5.1.1 ENSURE that any controllers in process loop are in the manual mode of control.

5.1.2 ISOLATE instrument from process line/loop.

5.1.3 CONNECT test equipment to input of instrument.

5.1.4 CONNECT test equipment in series or parallel, as required, with output loop.

5.1.5 ADJUST input for calibration points per the Data Sheet.

5.1.6 RECORD output readings for each point in the As-Found section of the Data Sheet.

5.1.7 IF instrument is within tolerance listed on the Data Sheet, RECORD As-Left values on Data Sheet AND GO TO Restoration 5.2.

5.1.8 ADJUST input for low point of calibrated range per the Data Sheet.

5.1.9 ADJUST ZERO adjustment for output per the Data Sheet.

5.1.10 ADJUST input for high point of calibrated range per the Data Sheet.

5.1.11 ADJUST SPAN adjustment for output per the Data Sheet.
5.1 Perform Calibration (Cont.)

5.1.12 APPLY test inputs specified on Data Sheet AND CHECK output values for tolerance.

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 AND replacement parts are not required, REPEAT Steps 5.1.8 through 5.1.13.

5.1.1 IF values are not within tolerance per Data Sheet AND replacement parts are required, INFORM the following:
   - FWS
   - Planning (For BOM and new Data Sheets)

5.1.1.1 ACQUIRE new parts from Material Coordinator.

5.1.1.2 RE-PERFORM Section 5.1.
5.2 Restoration

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

5.2.2 RECORD Test Equipment information and calibration status on Data Sheet.

5.2.3 DISCONNECT AND REMOVE Test Equipment as necessary.

5.2.4 RESTORE any controllers adjusted to the manual mode of control in step 5.1.1 are returned to their original mode of operations.

5.2.5 CHECK equipment system restoration by observing indications are consistent with expected conditions.

5.2.6 CHECK for leaks.

5.2.7 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 identified record custodian is responsible for record management in accordance with TFC-BSM-IRM_DC-C-02 or other applicable requirements.