Calibrate Temperature Switch

Tank Farm Maintenance Procedure

MAINTENANCE

USQ # GCX-2

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating temperature switches.

1.2 Scope

This procedure applies to temperature switches and the systems in which they are installed.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 All safety related hazards and their controls will be reviewed as a part of the pre-job safety meeting.

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

- Dri-Block Calibrator
- PPE for operation of Dri-Block Calibrator
- Digital Multimeter.

4.2 **Field Preparation**

4.2.1 **ENSURE** Operations has configured system to allow performance of this procedure.

4.2.2 **PERFORM** lockout/tagout and overlocking requirements in accordance with DOE-0336, Hanford Site Lockout/Tagout Procedure.
5.0 **PROCEDURE**

5.1 **Obtain As-Found Values**

5.1.1 *IF* any step is not required for procedure completion, **RECORD** “N/A” in the applicable space(s) on the Data Sheet or Work Record **AND**

**DOCUMENT** explanation in the Data Sheet’s Comments/Remarks section.

5.1.2 *IF* temperature element must be removed to obtain as-found values, **PERFORM** the following:

5.1.2.1 *IF* rotating equipment is involved, **ENSURE** all rotating equipment is shutdown **AND**

**ENSURE** applicable lockout/tagout and overlocking requirements have been satisfied per DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.1.2.2 *IF* potential for radiological contamination exists, **ENSURE** equipment survey prior to removal of equipment or component from its installed location.

5.1.2.3 **REMOVE** temperature element.

5.1.2.4 **INSPECT** capillary tube and temperature bulb.

5.1.2.5 **ENSURE** temperature bulb is clean **AND**

**RECORD** any deficiencies found in COMMENTS/REMARKS section of Data Sheet.
5.1 **Obtain As-Found Values (Cont.)**

NOTE: - Objects removed from dri-block calibrator may be extremely hot. Failure to exercise caution may result in personnel injury or equipment damage.

5.1.2.6 IF using dri-block calibrator, ENSURE no flammable liquids, flammable gases, or combustibles are in the area AND DON leather gloves.

5.1.2.7 INSTALL temperature bulb into dri-block calibrator.

5.1.2.8 IF space is available, INSTALL calibrated test thermometer or temperature indicating device into dri-block calibrator.

NOTE - Switch temperature operation point may be confirmed by use of digital multimeter, interlock, or annunciator as applicable.

- Alarm Set-point value(s) may be taken concurrently while taking temperature input values.

5.1.3 APPLY test inputs specified by Data Sheet or work instructions AND MONITOR temperature as it nears Setpoint.

5.1.4 RECORD value in as-found section of Data Sheet or Work Package.

5.1.5 IF instrument as-found values are within the tolerance range specified by the Data Sheet, and no adjustments are desired, RECORD as-found values in as-left column AND GO TO Section 5.3.

5.1.6 IF instrument as-found values are out of tolerance as specified by Data Sheet or Work Package AND IF adjustments are required, GO TO Section 5.2.
5.2 Calibrate Temperature Switch

5.2.1 APPLY test inputs specified by Data Sheet or work instructions AND
MONITOR temperature as it nears Setpoint.

5.2.2 ADJUST switch/controller indicator to operate at setpoint per Data Sheet or work instructions.

5.2.3 ADJUST switch/controller zero to operate at setpoint per Data Sheet or work instructions.

5.2.4 IF setpoint(s) are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet or work instructions AND
GO TO Restoration, Section 5.3.

5.2.5 IF setpoint(s) are not within tolerance per Data Sheet or work instructions, REPEAT Steps 5.2.1 through 5.2.4 until setpoint value(s) are within tolerance

OR

IF setpoint value(s) cannot be brought into tolerance, NOTIFY FWS for resolution AND

STOP WORK until further directed.
5.3 Restoration

NOTE: - Objects removed from dri block calibrator may be extremely hot. Failure to exercise caution may result in personnel injury or equipment damage.

5.3.1 IF using dri-block calibrator, DON Leather Gloves.

5.3.2 IF temperature element was removed, REPLACE temperature element to normal location.

5.3.3 IF Lockout/Tagout was installed, REMOVE in accordance with DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.3.4 DISCONNECT AND REMOVE Test Equipment.

RETURN equipment to original configuration.

5.3.5 CLEAR OR RESET actuated alarms.

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

5.3.7 RECORD all inspection activities and/or deficiencies on Data Sheet or Work Record.

5.3.8 INFORM Operations that calibration is complete and system may be returned to desired configuration.
5.4 Acceptance Criteria

Acceptance Criteria has been met when As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.5 Review

5.5.1 INFORM FWS test is complete.

5.5.2 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.

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.