USQ # Routine Maintenance

<table>
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<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
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<td>B-0</td>
<td>02/18/2016</td>
<td>Periodic Review</td>
<td>Reword Section 3.3, 4th bullet under 4.1, Steps 5.1.5, 5.1.6, 5.1.8, 5.2.4, 5.2.6, 5.2.10. Add URV &amp; LRV to Section 2.1 Step 3.2.2, Section 4.3; add 4th–6th bullets at 4.2, Add Special Inst. Under Section 5.0. Note prior to 5.1.5, Step 5.3.5 and added Table 1.</td>
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<td>A-0</td>
<td>01/16/2014</td>
<td>New procedure</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibration of the Foxboro Model IGP10-T20D1F-L1T Pressure Transmitters used on the Core Sampling System (CSS).

1.2 Scope

This procedure applies to the following instruments:
- PIT-004, Drill Purge Pressure Transducer
- PIT-005, Sample Change Pressure Transducer
- PIT-006, Shielded Receiver Purge Pressure Transducer.

2.0 INFORMATION

2.1 Terms and Definitions

CSS - Core Sampling System
URV - Upper Range Value
LRV - Lower Range Value

2.2 General Information

1.1.1 Care must be exercised when performing this procedure to avoid introducing hysteresis effects into the test data. M&TE test pressures must be established by continuously raising pressure from low to high without allowing dips (pressure reversals) below previously established pressure.

1.1.2 Plug or cover all open purge air piping fittings when left unattended or exposed to environment (e.g., dust, water, etc.) in order to maintain cleanliness of system internals.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 All safety related hazards and their controls will be identified on a General Hazard Analysis (Site Form A-6005-827) and/or a site specific Job Hazard Analysis (Site Form A-6004-101) based on site specific hazards.

3.1.2 Failure to use protective equipment when working on or near energized systems could result in serious injury. Job specific protective equipment requirements should be addressed during the pre-job brief and be in accordance with TFC-ESHQ-S_IS-C-02.

3.1.3 Energized circuits and leads are connected inside the cabinets. 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.

3.1.4 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 ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.

3.2.2 Radiological area may be Down-Posted based on survey results. Area postings will be adjusted as changing conditions and work activities require.

3.3 Environmental Protection

The Central Shift Office must be notified in the event of a leak or a spill in accordance with TFC-ESHQ-ENV_FS-C-01, Environmental Notification.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

The following supplies will be needed to perform this procedure:

- Digit Digital Multimeter (DMM)/Ammeter
- Calibrated Digital Pressure Indicator
- Tubing and Swagelok fittings
- Pressure Source/Tester with integral readout calibrated to within minimum accuracy of 0.1% of span and capable of 0-100 psig
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- DOE-0336, Hanford Site Lockout/Tagout Procedure
- MI IAP10-T/IGP10-T, Foxboro manual
- DOE–0359, Hanford Site Electrical Safety Program
- H-14-044522 Sh. 30 Rev. 2 CSS Wiring Diagram for Indicator Panel
- H-14-044522 Sh. 24 Rev 2 CSS Wiring Diagram for JBX-008 (partial)
- H-14-109886 Sh. 1 Rev. 1 CSS Electrical Cable Block Diagram
- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.

4.3 Field Preparation

4.3.1 REQUEST Operations to configure system to allow performance of this procedure.
5.0 PROCEDURE

Special Instructions

Due to complexity and limited space on the CSS, connection point(s) given within the procedure and on Figure 1 and Table 1 are suggestions and may be changed due to convenience, ease of access or ALARA concerns. If connection point(s) are changed, document those new locations, terminals, and wire numbers on the comments section of data sheet or work record for future use.

Take care to avoid introducing hysteresis effects into test data. Establish M&TE test pressures by continuously raising pressure from low to high without allowing dips (pressure reversals) below previously established pressure; if otherwise, return to zero pressure and start over.

5.1 Calibration Check of Transmitters

NOTE - This procedure is written to perform the calibration of one transmitter at a time and can be repeated for calibrating the remaining transmitter(s).

5.1.1 HPT PERFORM pre-job contamination and radiation survey of the work area.

5.1.1.1 RECORD RSR number prior to end of shift.

RSR#________________________ DATE _________________

5.1.2 ENSURE there is no pressure on purge air system.

5.1.3 OPEN Purge Gas Enclosure POR264-SAMP-ENCL-005.

5.1.4 PERFORM radiological survey.

NOTE - Removing transmitter cover to gain access to wiring may be extremely difficult due to limited space.

5.1.5 REMOVE the transmitter cover to access wiring,

OR

IF access is limited REFER to Figure 1 and/or Table 1 for M&TE connections at suggested terminal block(s) for each transmitter being tested.

5.1.6 DISCONNECT field wiring from terminal for instrument being tested AND CONNECT DMM in series with lifted lead and terminal (Table 1).
5.1 Calibration Check of Transmitters (Cont.)

5.1.7 **CONTROL** pipe fitting removal/connection areas as Contamination Areas when breaching potentially contaminated systems.

5.1.7.1 **USE** drape and damp rag for contamination control when performing breaches of potentially contaminated systems.

5.1.7.2 **DISPOSE** of used drapes and damp rags per TO-100-052.

5.1.8 **CONNECT** M&TE to pressure transmitter being tested per Figure 1.

5.1.9 **REMOVE** cover from transmitter display.

5.1.10 **USING** pressure source **PERFORM** 5-point calibration check per Data Sheet **AND**

**RECORD** corresponding mA output and readout values in As-Found section of Data Sheet.

5.1.11 **IF** As-Found values are not within specified tolerance per Data Sheet, **GO TO** Section 5.2 Calibrate Transmitters, **OR**

**IF** As-Found values are within specified tolerance, but deemed marginal, and optimization is desired, **GO TO** Section 5.2 Calibrate Transmitters, **OR**

**IF** As-Found values are within specified tolerance, **RECORD** As-Found values in As-Left column of Data Sheet **AND**

**GO TO** Section 5.3 Restoration.
5.2 Calibrate Transmitters

5.2.1 IF at any time while performing the calibration of the transmitter an entry is entered in error, USE the cancel feature, by performing the following:

5.2.1.1 PRESS NEXT button until “CANCEL” is displayed.

5.2.1.2 PRESS ENTER button, to return the transmitter to its starting configuration AND

REPEAT Section 5.2.

5.2.2 PRESS NEXT button until display reads “CALIB” (Calibrate) AND

PRESS ENTER button.

5.2.3 PRESS NEXT button until “CAL LRV” (Calibrate Low Range Value) is displayed.

5.2.4 USING the pressure source, APPLY lower range value specified on Data Sheet AND

PRESS ENTER button.

5.2.5 WHEN “LRV DONE” is displayed, PRESS NEXT button until “CAL URV” (Calibrate upper range value) is displayed.

5.2.6 USING the pressure source, APPLY upper range value specified on Data Sheet AND

PRESS ENTER button.

5.2.7 WHEN “URV done” is displayed, PRESS NEXT button until “SAVE” is displayed AND

PRESS ENTER button.

5.2.8 PRESS NEXT button until “VIEW DB” (View database) is displayed.

5.2.9 PRESS ENTER button twice, this will display the configured pressure indication.
5.2 Calibrate Transmitters (Cont.)

5.2.10 **USING** pressure source **RE-PERFORM** 5-point calibration check per Data Sheet.

5.2.11 **IF** output values are within tolerance per Data Sheet, **RECORD** values in As-Left section of Data Sheet **AND**

**GO TO** Section 5.3 Restoration.

5.2.12 **IF** values are not within tolerance per Data Sheet, **REPEAT** Section 5.2 until values are within tolerance

**OR**

**IF** values cannot be brought into tolerance **STOP WORK AND**

**NOTIFY** FWS for resolution.
5.3 Restoration

5.3.1 CONTROL pipe fitting removal/re-connection areas as radiological survey results require when breaching potentially contaminated systems.

5.3.1.1 USE drape and damp rag when performing breaches of potentially contaminated systems.

5.3.1.2 DISPOSE of used drapes and damp rags per TO-100-052.

5.3.2 DISCONNECT/REMOVE Test Equipment.

5.3.3 RE-CONNECT all wiring and pipe fittings previously disconnected.

5.3.4 CLOSE Purge Gas Enclosure POR-264-SAMP-ENCL-005.

5.3.5 IF Purge Gas Instrument Junction Box JBX-008, was opened for testing, CLOSE Gas Instrument Junction Box JBX-008.

5.3.6 ENSURE equipment system restoration by observing indications are consistent with expected conditions.

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

5.3.8 HPT PERFORM post-job contamination and radiation survey of the work area.

5.3.8.1 RECORD RSR number prior to end of shift.

RSR#________________________ DATE _________________

5.3.9 ENSURE Test Equipment information and calibration status are recorded on Data Sheet.

5.3.10 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 test is complete.

5.5.2 FWS REVIEW AND ENSURE the following:

- Completed Data Sheet(s) 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(s).

5.6 Records

The following records are generated during the performance of this procedure. PM Data Sheets associated with the procedure, are records and are maintained in the work package as record material.

5.6.1 SUBMIT the completed records/work package to the supervisor for record retention.

- Steps 5.1.1.1 and 5.3.8.1.

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 – M&TE Layout for PIT-004, 005 and 006
## Table 1 - DMM Connections for PIT-004, 005 and 006 mA Output

<table>
<thead>
<tr>
<th>TRANSMITTER</th>
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<tr>
<td>PIT-004</td>
<td>JBX-008</td>
<td>Positive Term. #12 – wire (PIT004-1C)</td>
</tr>
<tr>
<td>PIT-005</td>
<td>(Purge Gas Instrument Junction Box)</td>
<td>Positive Term. #16 – wire (PIT005-1H)</td>
</tr>
<tr>
<td>PIT-006</td>
<td></td>
<td>Positive Term. #21 – wire (PIT006-1C)</td>
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