Tank Farm Maintenance Procedure

USQ Not Required – ETF is a <Hazard Category 3 Radiological Facility

CHANGE HISTORY (≤ LAST 5 REV-MODS )

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<th>Rev-Mod</th>
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<td>A-3</td>
<td>10/24/2018</td>
<td>Radcon Requirement</td>
<td>Added Radiation and Contamination Control, Added new Figure(s), Added Attachment.</td>
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<td>A-2</td>
<td>07/25/2017</td>
<td>Maintenance request</td>
<td>Add Water Trap device information to Section 4.1. Add to Performance Documents 4.2. Add multiple steps to Section 5.1. Update Records Section to comply with writer’s standard. Add Attachment 1. Add figure 2.</td>
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<tr>
<td>A-1</td>
<td>07/21/2016</td>
<td>Correct Use Type</td>
<td>Change from continuous use to reference use per document owner’s direction.</td>
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<tr>
<td>A-0</td>
<td>09/03/2015</td>
<td>Converting to WRPS Format</td>
<td>New Procedure; Supersedes ETF-PRO-MN-51417 (EL18038)</td>
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Omega® Model PX880 and PX881 Electronic Pressure Transmitters

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a safe, uniform method for calibration of Omega® Model PX880 and PX881 pressure transmitters.

1.2 Scope

Procedure instructions include steps for setting up, checking tolerances, and calibrating the Omega Model PX880 and PX881 pressure transmitters.

2.0 INFORMATION

None.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Radiation and Contamination Control

3.1.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESH-RP_RWP-C-03.

3.1.2 The opening of any system or component within a Radiological Area requires presence of a Health Physics Technician to verify contamination control.

3.1.3 When disconnecting, breaching, or opening systems or system components that are currently or previously connected to waste tanks or waste transfer systems:

- Follow the RWP for radiological control requirements
- Pre-job and post-job surveys are required
- Follow Calibration Instructions (Attachment 2)

3.2 Environmental Compliance

3.2.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

NOTE - Measuring and Test Equipment used to collect acceptance criteria data during performance of this procedure shall meet the following requirements:
- Be within its current calibration cycle as evidenced by an affixed calibration label
- Be capable of desired range
- Accuracy is equal to or greater than M&TE tolerance specified on PM/S data sheet or is at least four times greater than specified device tolerance.

- If during the use of this procedure any of the following components are deemed necessary for replacement a BOM must be added to the work package and the necessary items identified for replacement.

The following supplies may be needed to perform this procedure:
- Pressure source, adjustable for range of transmitter
- Gauge to read pressure source
- CMD range 0 to 20 mA
- Water trap device Figure 2
- PX880-015GI
- PX880-300GI
- PX800-030GI
- PX880-100GI
- PX880-1KGI
- PX881-030GI
- PX881-300GI.

4.2 Performance Documents

The following documents may be needed to perform this procedure:
- Vender information: VI-1373-015-A-901, PX880 and PX881 Electronic Pressure Transmitters Manual M1427/0492 (LEF CVI number)
- Radiological survey plan
- Waste planning checklist
- Pressure M&TE vendor manual.
5.0 PROCEDURE

5.1 Initial Setup and Calibration Check

5.1.1 IF performing this procedure on a system that has the potential for free liquids or moisture to enter the Pressure M&TE, USE a water trap device.

5.1.1.1 ENSURE the Water Trap is installed in a vertical position to operate correctly Figure 2.

5.1.1.2 IF liquids or moisture gets into the Water Trap or Pressure M&TE REFER to Attachment 1

5.1.1.3 IF performing this procedure on a system that is potentially contaminated, FOLLOW Calibration Instructions (Attachment 2)

5.1.2 ISOLATE transmitter from process line.

NOTE - Figure 1 depicts the calibration setup.

5.1.3 REMOVE high side pressure input AND

CONNECT pressure source to high side of transmitter.

5.1.4 CONNECT CMD in series with output wires,

OR

CONNECT to test connectors.

5.1.5 VARY input per PM/S data sheet AND

RECORD as-found values on data sheet.
5.1 Initial Setup and Calibration Check (Cont.)

5.1.6 IF as-found values are not within specified tolerance per PM/S data sheet, 
PERFORM calibration in accordance with Section 5.2, 

OR 

IF as-found values are within specified tolerance, but deemed marginal, and 
onimization is desired, GO TO Section 5.2, 

5.1.7 IF as-found values are within tolerance per PM/S data sheet, and need no 
adjustments, RECORD as-found data in as-left column AND 

GO TO Section 5.3, Restoration.
Special Instruction

Failure mode, repair performed, and parts replaced should be documented on calibration Data Sheet.

5.2 Calibration

5.2.1 APPLY minimum input per PM/S data sheet AND ADJUST Zero.

5.2.2 APPLY maximum input per PM/S data sheet AND ADJUST Span.

5.2.3 REPEAT Steps 5.2.1 and 5.2.2 until both values are within tolerance.

NOTE - Turndown pot is a course Span adjustment.

5.2.4 IF Span required differs from previous Span by more than 10%, ADJUST turndown pot prior to Span.

5.2.5 VARY input per PM/S data sheet AND RECORD as-left values on data sheet.

5.2.6 IF values are not within tolerance per Data Sheet, NOTIFY FWS.

5.2.6.1 CONTACT Planning for BOM.

5.2.6.2 REQUEST planning to print new Data Sheet(s).

5.2.6.3 ACQUIRE new part(s) from material coordinator.

5.2.6.4 INSTALL new parts.

5.2.6.5 REPEAT Section 5.2.
5.3 Restoration

5.3.1 **RESTORE** to as-found conditions.

5.3.2 **INFORM SOM** test is complete and instrument/equipment/system may be returned to service.

5.4 Acceptance Criteria

Acceptance criteria has been met when steps in this procedure have been satisfactorily performed and results are recorded on the data sheet(s).

5.5 Review

5.5.1 **INFORM** FWS test is complete.

5.5.2 (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.

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.
Omega® Model PX880 and PX881 Electronic Pressure Transmitters

Attachment 1 - Water Trap/Pressure M&TE

Water Trap with Potentially Contaminated Liquid

1. If potentially contaminated liquid gets into Water Trap, Suspend the work.
2. Notify the FWS.
3. When provided approval from the FWS proceed as follows.
4. Return to a RMA.
5. Disassemble the Water Trap.
6. Allow trap to dry overnight.
7. Survey disassembled trap components in accordance with Radcon survey plan.
8. If the Water Trap can be released return it to tool crib.
9. If the Water Trap cannot be released, dispose of it per waste planning checklist.

Water Trap with Clean Liquid (NOT Contaminated)

1. If clean liquid gets into Water Trap, disassemble the Water Trap.
2. Allow Water Trap to dry overnight.
3. Re-assemble the Water Trap.
4. Return the Water Trap to the tool crib.
M&TE with Potentially Contaminated Liquid

1. If potentially contaminated liquid gets past water trap and inside Pressure M&TE, Suspend the work.

2. Notify FWS.

3. Wait for further directions.

M&TE with Clean Liquid (NOT Contaminated)

1. If clean liquid gets past the water trap disassemble and dry out Pressure M&TE per manufactures direction.

2. Return the M&TE to the tool crib.

3. Request the M&TE to be returned to NIST calibration lab for recalibration.
Positive pressure calibrations:

Note: Vent Valve assembly is required on all positive pressure calibrations to ensure MT&E is not contaminated by venting potential process air back through MT&E.
Install vent valve assembly Per Figure 4
Ensure IV is open and VV is closed
Proceed with calibration per work package
➢ Whenever venting is required during calibration steps, vent stored pressure as follows.

NOTE – Valve IV can remain open when reading is required via M&TE.

Ensure IV valve is closed
Ensure VV valve is opened
Repeat sequence as necessary to complete the calibration.
After all steps are completed for the calibration, perform RCT survey release plan PO-RSP-2018-001

Negative pressure calibrations:

Note: use of surrogate filter is required for negative pressure calibrations to ensure MT&E is not contaminated by pulling process air into MT&E while drawing Vacuum.
Negative calibrations should be performed as follows.
Ensure surrogate filter holder has media installed.
Connect filter in-line per Figure 3
Ensure IV is open.
Pull a representative vacuum into MT&E through filter
Ensure IV is closed.
Vent through VV
RCT to perform survey of the media.
IF no contamination found remove surrogate filter holder/manifold and proceed with calibration.
Figure 1 - Calibration Setup
Figure 2 - How the Trap Works

1. Gas/Air enters through the top slot which goes into the chamber.
2. Dirt and Moisture particles are collected in the chamber, which is visible through the clear transparent glass window.
3. Then Gas/Dry Air goes into the centre slot where it enters the instrument.
Figure 3 – Negative Pressure Connection
Figure 4 – Positive Pressure Connection

![Diagram showing positive pressure connection with M+TE, IV, and VV valves connected to a transmitter.](image-url)