Valtek® Beta™ Positioner

Tank Farm Maintenance Procedure

Effluent Treatment Facility

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

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides a safe, uniform method for calibration of Valtek® Beta™ positioners with I/P 2000 series module.

1.2 Scope

This procedure provides instructions for calibrating the Valtek Beta positioners with I/P 2000 series module.

2.0 INFORMATION

2.1 Terms and Definitions

- CRO – Control Room Operator
- I/P – Current/Pressure
- MPC - Minimum Pressure Cutoff.

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.

3.2 Attachment 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 Materials

NOTE - M&TE 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.

The following supplies may be needed to perform this procedure:

- CMD
- Current source capable of producing 0 to 20 mA
- Pressure gauge, 0 to 30 psig
- Water trap device Figure 2.

4.2 Performance Documents

The following document may be needed to perform this procedure:

- Manufacturer’s manual, CVI V-135-005-901, B/M 12-15, Valtek Model Beta Valve Positioner
- Radiological survey plan
- Waste planning checklist
- Pressure M&TE vendor manual.
5.0 PROCEDURE

5.1 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 MT&E, 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 MT&E REFER to Attachment 1.

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

5.1.3 Attachment 2 REQUEST CRO position valve per PM/S data sheet.

5.1.4 RECORD valve position indicator position in as-found section of PM/S data sheet.

5.1.5 IF as-found values are not within specified tolerance per data sheet, GO TO Section 5.2,

OR

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

OR

IF as-found values are within specified tolerance, RECORD as-found values in as-left column of data sheet AND

GO TO Section 5.5, Restoration.
5.2 I/P Module Calibration

5.2.1 **ENSURE** I/P module to 30 to 150 psig supply pressure.

5.2.2 **CONNECT** test gauge for 3 to 15 psi (see Figure 1).

5.2.3 **REMOVE** I/P module housing cover.

5.2.4 **TURN** MPC pot twenty (20) turns counter-clockwise or until it makes a clicking noise.

5.2.5 **CONNECT** mA source to input.

5.2.6 **APPLY** 4 mA to input.

5.2.7 **ADJUST** Zero for a 3.0 psig output.

5.2.8 **APPLY** 20 mA to input.

5.2.9 **ADJUST** Span for a 15.0 psig output.

5.2.10 **REPEAT** Steps 5.2.6 through 5.2.9 until no further adjustments are needed.
5.3 Valve Positioner Calibration

5.3.1 APPLY minimum input to valve positioner per PM/S data sheet.

5.3.2 ADJUST Zero adjust knob until valve begins to stroke.

5.3.3 LOOSEN range adjust lock knob approximately ⅛ of a turn.

5.3.4 APPLY maximum input to valve positioner per PM/S data sheet.

5.3.5 ADJUST range adjust knob with a Phillips screwdriver or by hand so valve is at full stroke.

5.3.6 APPLY minimum input to valve positioner per PM/S data sheet AND CHECK Zero adjustment.

5.3.7 REPEAT Steps 5.3.1 through 5.3.6 until Zero/Span adjustments are optimized.

5.3.8 TIGHTEN range adjust lock knob.

5.3.9 APPLY minimum input to valve positioner per PM/S data sheet.

5.3.10 RECORD as-left data on PM/S data sheet.

5.3.11 APPLY maximum input to valve positioner per PM/S data sheet.

5.3.12 RECORD as-left data on PM/S data sheet.
5.4 Minimum Pressure Cutoff Adjustment

NOTE - The MPC feature allows the user to set the positioner so when the input signal falls below a user adjustable current, the pressure output falls rapidly to approximately 1.7 psi, causing the valve to close. This feature is used when the service requires a tight shutoff or to prevent throttling near the valve seat.

- Section 5.4 is to be accomplished as part of the calibration if indicated on the PM/S data sheet.

5.4.1 APPLY input mA signal per data sheet for desired MPC.

5.4.2 TURN MPC pot clockwise until output pressure drops off.

5.4.3 INCREASE input signal then decrease through desired shutoff signal level.

5.4.4 ADJUST MPC pot for proper shutoff level.

5.4.5 REPEAT Steps 5.4.3 and 5.4.4 until no further adjustment is required.

5.5 Restoration

5.5.1 RESTORE to as-found conditions.

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

5.5.3 ENSURE alarms are reset or cleared.

5.6 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).
5.7 Review

5.7.1 INFORM FWS test is complete.

5.7.2 (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.

5.8 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.
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. Remove Pressure M&TE from field.
5. Return to a RMA.
6. Disassemble the Water Trap.
7. Allow trap to dry overnight.
8. Survey disassembled trap components in accordance with Radcon survey plan.
9. If the Water Trap can be released return it to tool crib.
10. 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.
Attachment 1 - Water Trap/Pressure M&TE (Cont.)

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.
Attachment 2 – Calibration Instructions

Positive pressure calibrations:

Note: Vent Valve assembly is required on all positive pressure calibrations to ensure M&TE is not contaminated by venting potential process air back through M&TE.
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 XXX

Negative pressure calibrations:

Note: use of surrogate filter is required for negative pressure calibrations to ensure M&TE is not contaminated by pulling process air into M&TE 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 M&TE 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 - Valve Positioner Calibration Setup
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

TRANSMITTER

M+TE

FILTER

FILTER

IV

VV
Figure 4 – Positive Pressure Connection