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1.0 PURPOSE

1.1 Purpose

To provide instructions for replacing Endress-Hauser FMR-240 Level Transmitters.

1.2 Scope

This procedure applies to Endress-Hauser FMR-240 Level Transmitters with Foundation Fieldbus communication protocol, in AN Farm and AW Farm Demister seal pots. They communicate to MCS (Monitoring & Control System) and AN and AW Primary Ventilation PLCs via Fieldbus communication protocol.

The procedure covers replacement of transmitters.

2.0 INFORMATION

None.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Radiation and Contamination Control

3.1.1 Follow radiological work planning process(s) contained in TFC-ESHQ-RP_RWP-C-03, ALARA Work Planning.

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

3.2 Environmental Compliance

3.2.1 Environmental requirements for work conducted on potentially contaminated ventilation systems shall be accomplished in accordance with the following:

3.2.1.1 Radiological controls and monitoring shall be in accordance with the latest revision of HNF-5183.

3.2.1.2 When work is performed in or when work will result in a high contamination, high radiation, or an airborne radioactivity area, an approved work package or technical procedure must be developed which is reviewed by Radiological Control per the ALARA work planning procedure TFC-ESHQ-RP_RWP-C-03.

3.2.1.3 When this procedure is worked in radiological areas, an approved radiological work permit (RWP) is required. If radiological conditions or work performed falls outside the scope of the RWP, all work activities must be discontinued until a new or revised RWP has been issued in accordance with TFC-ESHQ-RP_RWP-C-03.

3.2.1.4 Pre- and post-job surveys (smears) shall be taken.

3.3 Limits

ALARACT 16, Tank Farm ALARACT Demonstration For Work on Potentially Contaminated Ventilation System Components.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:
- HMI Exhauster Engineering level password, from Engineering
- Replacement transmitter.

4.2 Performance Documents

The following documents may be needed to perform this procedure:
- Endress-Hauser Level Transmitter Manual
- B.O.M. (Bill of Materials)
- TFC-ESHQ-RP_RWP-C-02, Attachment A.
### 4.3 Field Preparation

**4.3.1** **OBTAIN** Shift Manager approval to perform this procedure.

Shift Manager/OE: __________________________ / __________________________ / ____________

Signature Print (first & last) Date

**4.3.2** **IF** system will be shutdown or modified, **VERIFY** Shift Manager/OE has been informed of planned maintenance and possible impact on MPS waste transfer equipment and there are no ongoing waste transfers associated with this equipment.

Shift Manager/OE: __________________________ / __________________________ / ____________

Signature Print (first & last) Date

**4.3.3** **IF** system will be shutdown or modified, **VERIFY** Shift Manager has been notified of possible expected alarms which may be caused by performance of this procedure.

Shift Manager/OE: __________________________ / __________________________ / ____________

Signature Print (first & last) Date
5.0 PROCEDURE

Special Instructions

If equipment is found out of service, notify Shift Manager and OE immediately.

NOTE - Sections may be performed as required, or at discretion of FLM.

5.1 Transmitter Replacement

5.1.1 DISCONNECT AND REMOVE old transmitter.

5.1.2 INSTALL AND CONNECT new transmitter.

5.1.3 FILL seal pot per Section 5.2.

Local Setup

5.1.4 OPEN front of transmitter.

NOTE - Display is attached to 18 inch cable. See Figure 1 for basic transmitter operation.

5.1.5 PULL out local transmitter display.

5.1.6 ENERGIZE new transmitter.

5.1.7 SELECT “English” as language.

5.1.8 SELECT “Inches” as distance unit.

5.1.9 AFTER display shows measured current value, PRESS button “E” to bring up group selection menu.

5.1.10 SELECT basic setup.

5.1.11 SELECT Liquid for media type.

5.1.12 SELECT “bypass” for tank shape.

5.1.13 SELECT “>10” for medium property.

5.1.14 SELECT “calm surface” for process condition.
5.1 Transmitter Replacement (Cont.)

NOTE - Difference is due to slightly different mounting positions.

5.1.15 SELECT 84.5 for empty calibration.

5.1.16 SELECT 15.0 for full calibration.

5.1.17 SELECT 2.07 for pipe diameter.

NOTE - A distance measurement will be displayed, which will either be too small, match seal pot level (OK), too large, or unknown.

5.1.18 CHECK displayed distance is within tolerance given on Data Sheet.

5.1.19 IF displayed distance is too large or unknown, RESET instrument to factory defaults.

5.1.19.1 ENTER diagnostic (OA).

5.1.19.2 ENTER the number “33333”.

5.1.19.3 GO TO Main Menu.

5.1.19.4 ENTER “Extended Calib.”

5.1.19.5 SELECT “Cust. Tank Map”.

5.1.19.6 SELECT RESET AND

   GO TO step 5.1.4 to restart setup.

NOTE - If distance is OK, instrument will map interferences to current measurement. If distance is too small, instrument is picking up echoes from bypass pipe.

5.1.20 IF displayed distance matches known overflow level (step 5.1.18), SELECT [distance = ok] AND

   GO TO menu step 00.
5.1 Transmitter Replacement (Cont.)

5.1.21 IF displayed distance is too small, SELECT [dist. too small].

5.1.21.1 PRESS [E] to accept suggested mapping range.


5.1.21.3 GO TO step 5.1.18.

5.1.22 IF accurate distance display cannot be achieved, NOTIFY Engineering AND PROCEED as directed.

5.1.22.1 RECORD Engineers direction in work instruction section of work package.
5.2 Seal Pot Filling

NOTE - De-Entrainer seal pot is filled from A-Train or B-Train seal pot overflow.

5.2.1 REQUEST HPT to perform pre-job survey of fill valve area (alaract 16).

5.2.2 ENSURE appropriate overflow valve, identified below, is OPEN.

<table>
<thead>
<tr>
<th>AN Farm</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhauster Train</td>
<td>EIN</td>
</tr>
<tr>
<td>A-Train</td>
<td>AN241-VTP-V-381</td>
</tr>
<tr>
<td>B-Train</td>
<td>AN241-VTP-V-481</td>
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<table>
<thead>
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<tr>
<td>Exhauster Train</td>
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</tr>
<tr>
<td>B-Train</td>
<td>AW241-VTP-V-481</td>
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</tbody>
</table>

5.2.3 REMOVE plug from appropriate fill valve identified below.

<table>
<thead>
<tr>
<th>AN Farm</th>
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<tbody>
<tr>
<td>Exhauster Train</td>
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<td>A-Train</td>
<td>AN241-VTP-V-380</td>
</tr>
<tr>
<td>B-Train</td>
<td>AN241-VTP-V-480</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>AW Farm</th>
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<tr>
<td>Exhauster Train</td>
<td>EIN</td>
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<tr>
<td>A-Train</td>
<td>AW241-VTP-V-380</td>
</tr>
<tr>
<td>B-Train</td>
<td>AW241-VTP-V-480</td>
</tr>
</tbody>
</table>

5.2.4 ATTACH funnel or fill hose to fill valve.

5.2.5 OPEN fill valve identified in Step 5.2.3.

5.2.6 SLOWLY ADD water to seal pot.

5.2.6.1 ADD at least six (6) gallons to ensure seal pot is filled to overflow point.
5.2 Seal Pot Filling (Cont.)

NOTE - Exhauster Seal pots are connected to de-entrainer seal pot. At approximately 52% level, exhaustor seal pot will spill over into de-entrainer seal pot. At this point, further level increase in skid seal pot is not possible (without closing overflow valve). Further filling will increase De-Entrainer seal pot level.

5.2.7 WHEN seal pot level does not increase further, STOP adding water,

OR

CONTINUE filling to increase De-entrainer seal pot level LI-170.

5.2.8 CLOSE appropriate fill valve opened in Step 5.2.5.

5.2.9 REMOVE funnel or fill hose.

5.2.10 REINSTALL seal pot plug in fill valve identified from Step 5.2.3.

5.2.11 REQUEST HPT to perform post-job survey of fill valve area (ALARACT 16).
5.3 Restoration

5.3.1 **ENSURE** all test equipment is disconnected and removed.

5.3.2 **VALVE-IN** transmitter **AND**

**RETURN** to service.

5.3.3 **CONFIRM** all alarms associated with level transmitter have cleared.

5.3.4 **FORWARD** copy of Device ID to Engineering to update Component Index Form.

5.3.5 **INFORM** Shift Manager and FWS test is complete and exhauster may be returned to operation as desired.

5.3.6 **RECORD** in COMMENTS/REMARKS section of Work Package, work request number(s) of any work documents generated as a result of this procedure, if applicable.

5.3.7 **REPORT** all discrepancies to OE immediately upon completion of this procedure **AND**

**RECORD** in comment section of Work Package.
5.4 Records

5.4.1 PERFORM the following for records identified within this procedure.

5.4.2 RECORD the number of times the record was generated in applicable column,

OR

PLACE a check mark (√) in the N/A column.

5.4.3 SUBMIT the package to the Central Shift Office.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of Times Completed</th>
<th>N/A (√)</th>
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<td>Step 4.3.2</td>
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<td>Step 4.3.3</td>
<td></td>
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<tr>
<td>5.4 Records</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 5.4.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.4.4 FWS/OE/Shift Manager SEND the completed records to the Central Shift Office for records retention.

__________________/ ____________________/ ______________
Signature Print (first & last) Date
Shift manager / OE

The record custodian identified in the company level Record Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
**Figure 1 – Basic Operation**

**Micropilot M – Brief operating instructions**

- **Group selection**
  - 00 basic setup
    - 000 measured value
    - 001 safety settings
    - 004 linearisation
    - 005 extended calibr

- **Output (HART, FF)**
  - 006 profibus param. (PA)
  - 007 display
    - 0092 language
  - 051 recording curve
    - 0601 plot settings
      - 061 envel. curve
        - incl. FAC
        - incl. cust. map
      - 0613 single curve
        - cyclic
    - 0602 pipe diameter
      - 0603 medium cond.
      - 0604 process cond.
      - 0605 empty calibr.
      - 0606 full calibr.
    - 0088 dist./meas value
      - only for bypass + stilling well
      - D and L are displayed (see sketch)
    - 051 check distance
      - 052 range of mapping
      - confirm suggestion or specify range

- **System parameter**
  - 0604 input E (see sketch)
  - 0605 input F (see sketch)
  - 0606 only for bypass + stilling well
  - 0607 dist./meas value
    - for bypass + stilling well
  - 0608 dist./meas value
    - for bypass + stilling well
  - 0609 dist./meas value
    - for bypass + stilling well

- **Diagnostics**
  - 0600 present error
  - 0601 previous error
  - 0604 unlock parameter
    - = 100: unlocked
    - ≠ 100: locked
    - = 2457: unlocked
    - ≠ 2457: locked

- **Contrast:**
  - 0000 E ++ or E + -000
  - measured value

- **Flange**
  - reference point of measurement

- **Threaded connection**
  - reference point of measurement

<table>
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<th>Rev/Mod</th>
<th>Release Date</th>
<th>Page</th>
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