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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for functional checking of the Resistance Temperature Devices (RTD) mounted on Primary Ventilation Skids, and Repair/replace of failed RTD components.

1.2 Scope

This functional check applies to RTDs installed to monitor temperature on HVAC Primary Ventilation Skids for the following:

- 241-AN HVAC Exhauster Train A and Train B
- 241-AW HVAC Exhauster Train A and Train B
- 241-AP-HVAC Exhauster Train A and Train B
- HVAC Exhauster POR107, POR126 and POR127
- Repair and Replacement of failed RTD components.

2.0 INFORMATION

2.1 Terms and Definitions

- RTD - Resistance Temperature Device
- HMI - Human Machine Interface
- BOM - Bill of Material.

2.2 General Information

2.2.1 AN, AP and AW HVAC Exhausters have both [A-Train] and [B-Train]. POR107, POR126 and POR127 equipment identification numbers (EINs) are identical to AN/AW Exhauster [A-Train].

2.2.2 AN/AW/AP A and B train use the 300/400 series number system (e.g. TE-373/473).
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Gloves, Leather or equivalent are required when removing the RTD probe from the glycol tank. Propylene Glycol GHS-SDS and/or MSDS number is #044653.

3.1.2 Contact Industrial Hygiene for appropriate sample plan.

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

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

3.3 Environmental Compliance

3.3.1 Tank farm ventilation systems and exhaust monitoring systems are regulated under Washington State Administrative Code (WAC) chapters 173-400, 173-401, and 246-247 and applicable Notices of Construction (NOC issued to ensure compliance with these regulations. To ensure reporting requirements are met, all planned and unplanned outages of or problems with tank farm ventilation and exhaust monitoring systems, including portable exhausters, and filters must be immediately reported to Environmental per the On-Call List in compliance with TFC-ESHQ-ENV-FS-C-01.

3.3.2 Pre- and post-job surveys (smears) shall be taken.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:
- Temperature probe, or equivalent temperature measurement device
- Digital Multi Meter (DMM)
- Replacement RTD
- Plastic sheath, or equivalent for temperature probe.

4.2 Performance Documents

The following documents may be required during the performance of this procedure:
- H-14-020101, AN241 Primary Ventilation System P & ID
- H-14-020102, AW241 Primary Ventilation System P & ID
- H-14-020103, AP241 Primary Ventilation System P&ID
- H-14-08928 SH 1 POR107 Primary Ventilation System P&ID
- H-14-108926 Sh 1 Exhauster train POR126 P & ID
- H-14-108927 Sh 1Exhauster train POR127 P & ID
- GHS-SDS and/or MSDS #044653
- Bill of Materials (B.O.M.).

4.3 Field Preparation

4.3.1 IF performing work on the Filter Bank RTD’s (5.1) ENSURE the exhaust train to be tested has been shut down for at least 24 hours

OR

RECORD consecutive temperature readings 30 minutes apart AND

CHECK temperature readings are within ± 3°F.
5.0 PROCEDURE

NOTE - Section 5.1 through Section 5.4 may be performed sequentially or individually as directed by FWS.

IHT Monitoring required when breaching filter train.

Special Instructions

If performance of any step(s) in this procedure is/are not required for procedure completion, mark N/A for steps not performed in appropriate Data Sheet signoff space and explain in Comments/Remarks section of Data Sheet.

5.1 Functional Check of Filter Train RTDs

5.1.1 IF exhauster has been off for less than 24 hours, CHECK that RTD readings on the HMI have stabilized by performing the following:

5.1.1.1 TAKE AND RECORD consecutive temperature readings 30 minutes apart AND CHECK temperature readings are within ±3°F.

5.1.2 REMOVE cap from nipple at outlet transition close to TE-360/460 AND USE TE-360 for POR107.

NOTE - Steps 5.1.3 and 5.1.4 should be performed simultaneously or as close together as possible to prevent temperature differentials due to time lag.

5.1.3 INSERT M&TE temperature probe into nipple to obtain temperature reading from inside filter train AND RECORD the M&TE temperature on Data Sheet.

5.1.4 RECORD the As-Found HMI RTD temperature readings of TE-353/453, TE-355/455 and TE-360/460 on Data Sheet,
5.1 Functional Check of Filter Train RTDs (Cont.)

5.1.5 **CHECK** HMI RTD readings are within tolerance of M&TE temperature reading per Data Sheet.

5.1.6 **IF** HMI RTD values are not within tolerance, **NARROW DOWN** source of potential problem per Section 5.4.

5.1.7 **REMOVE** M&TE.

5.1.8 **REINSTALL** cap on nipple at outlet transition.

5.1.9 **IF** HMI RTD values are within tolerance, **GO TO** Section 5.5.
5.2 Functional Check of Glycol Tank RTD

5.2.1 OPEN glycol tank fill cap (next to level transmitter).

5.2.2 POSITION a plastic sheath over the M&TE temperature probe.

5.2.3 INSERT M&TE temperature probe into glycol tank.

NOTE - Steps 5.2.4 and 5.2.5 should be performed simultaneously or as close together as possible to prevent temperature differentials due to time lag.

5.2.4 RECORD the M&TE temperature on Data Sheet.

5.2.5 RECORD the As-Found HMI RTD temperature on Data Sheet for TE-373/473.

5.2.6 CHECK As-Found glycol tank HMI RTD temperature is within tolerance of M&TE temperature reading per Data Sheet.

5.2.7 IF HMI RTD values are not within tolerance, NARROW DOWN source of potential problem per Section 5.4, as required.

5.2.8 REMOVE M&TE AND

RESTORE glycol tank configuration.

5.2.9 CLOSE glycol fill cap.

5.2.10 IF HMI RTD values are within tolerance, GO TO Section 5.5.
5.3 Functional Check of Glycol Heater RTD

NOTE - Steps 5.3.1 and 5.3.2 should be performed simultaneously or as close together as possible to prevent temperature differentials due to time lag.

5.3.1 INSERT M&TE temperature probe as close as possible to TE-372/472 to obtain temperature reading from heater AND

RECORD the M&TE temperature on Data Sheet.

5.3.2 RECORD the As-Found HMI RTD temperature readings TE-372/472 on Data Sheet,

5.3.3 CHECK HMI RTD reading is within tolerance of M&TE temperature reading per Data Sheet.

5.3.4 IF HMI RTD value is not within tolerance, NARROW DOWN source of potential problem per Section 5.4.

5.3.5 REMOVE M&TE.

5.3.6 IF HMI RTD value is within tolerance, GO TO Section 5.5.
5.4 Follow On System Testing

5.4.1 DISCONNECT RTD wiring to take resistance reading.

5.4.2 CONNECT DMM to RTD.

NOTE - The RTD resistance value from the DMM may be rounded off to the nearest reading on Table 1.

5.4.3 RECORD the following on Data Sheet for applicable RTD(s):

- RTD temperature element number(s)
- RTD resistance value taken from DMM
- Table 1 temperature value associated with that resistance.

5.4.4 CHECK temperature is within tolerance, as specified on Data Sheet.

5.4.5 IF temperature is not within specified tolerance, NOTIFY Engineering that the RTD element, wiring and/or PLC may be faulty.

5.4.6 IF faulty component is identified;

- 5.4.6.1 CONTINUE with other RTD under test.
- 5.4.6.2 OBTAIN BOM, as necessary.
- 5.4.6.3 REPAIR/REPLACE component(s), as necessary.
- 5.4.6.4 RE-PERFORM function test on repaired/replaced RTD under test.

5.4.7 CONTINUE on with rest of RTD elements under test.
5.5 Restoration

5.5.1 IF any problems were encountered with functional check, INFORM FWS.

5.5.2 DISCONNECT AND REMOVE Test Equipment as necessary.

5.5.3 RECORD the Test Equipment information and calibration status on Data Sheet.

5.5.4 CHECK equipment system restoration by observing indications are consistent with expected conditions.

5.5.5 NOTIFY Operations that testing is complete and system may be returned to desired configuration.

5.6 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.

5.7 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 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.

5.7.3 IDENTIFY serial numbers of any replaced RTD(s) on Data Sheet.

5.7.4 ATTACH all vendor records for replacement RTD(s) to Work Package.

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.
## Exhauster HVAC RTD Functional Check

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