Inspections and Source Checks of AMS-4 CAMs and Effluent Record Samplers on HMI-Controlled Exhausters

Tank Farm Plant Operating Procedure

USQ # N/A-4

Change history (≤ last 5 Rev-Mods)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
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<tbody>
<tr>
<td>D-6</td>
<td>05/08/2017</td>
<td>Operations Request</td>
<td>Clarified in Section 1.2 that this procedure is worked as part of a work package. Updated the records section and Records Submittal Checklist.</td>
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<tr>
<td>D-5</td>
<td>02/07/2017</td>
<td>Operations Request</td>
<td>Updated equipment name.</td>
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<tr>
<td>D-4</td>
<td>02/02/2017</td>
<td>Operations Request</td>
<td>Updated 3.1.6 electrical information and Table 1.</td>
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<tr>
<td>D-3</td>
<td>08/15/2016</td>
<td>Installation of new equipment</td>
<td>Revise to include POR-126 and POR-127. Add Record Sampler figure. Update HMI terminology. Update Records section.</td>
</tr>
<tr>
<td>D-2</td>
<td>06/09/2016</td>
<td>Comply with writer’s standard update, from corrective action WRPS-PER-2014-0355.9.</td>
<td>Updated the records section to comply with the writers standard.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides specific information regarding Eberline AMS-4 CAM and Record Sampler (RS) installed on POR107, POR126 and POR127 Portable Ventilation HMI Controlled Exhauster.

1.2 Scope

This procedure involves establishing CAM Response Limits, radiation source checks of CAMs, verifying CAM Alarm Set points, verifying flow rates, inspections, sample filter exchange/removal of Beta CAMs, and Record Samplers on HMI-Controlled exhauster.

This procedure is worked as part of a work package.

2.0 INFORMATION

2.1 Terms and Definitions

- ABCASH - Automated Bar Coding of Air Samples
- ASP - Alarm Set Point
- HCU - Handheld Computer Unit
- HMI - Human Machine Interface
- EQID - Equipment Identification (EIN)
- PMID - Preventive Maintenance Identification

2.2 General Information

2.2.1 POR107, POR126, and POR127 each comprises a single train that uses 500 series numbers to identify components (See Figure 1).

2.2.2 The HMI allows access to the LOGIN screen at any time by pressing F3. See Attachment 1 for screen graphics to aid in navigating through the HMI.

2.2.3 HMI and AMS-4 CAM are located in PLC Cabinet VTP-ENCL-110.

2.2.4 AMS-4 and Record Sample Heads are located in Cabinet VTP-ENCL-550.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Respiratory protection is required in conjunction with IHT monitoring when replacing air sample filters at primary exhausters.

3.1.1.1 Minimum required respiratory protection and voluntary upgrade is identified on the RPF associated with this procedure number or as required in the Management Directed RPF.

3.1.1.2 Industrial Hygiene monitoring requirements will be specified in the Industrial Hygiene Sample Plan number IHSP-RETR-C-20.

3.1.2 Industrial Hygiene monitoring requirements will be specified in the Industrial Hygiene Sample Plan (IHSP).

3.1.3 Cold or damp weather conditions could potentially cause condensation to form inside the ventilation system (outside ambient temperature is less than 50°F and the exhauster has been shut down for longer than 30 minutes). When these conditions exist, absorbent materials should be placed around the filter paper connection when changing out filter paper. This will help to ensure liquids do not drip on electrical components/insulating barriers and maintains the electrically safe condition.

3.1.4 If more than expected liquids are encountered or liquids run down onto electrical components/insulating barriers, exit the cabinet. The cabinet must then be reevaluated for electrical hazards.

3.1.5 When liquids are present or handling the absorbent materials, workers need to wear surgeons’ gloves.
3.1 Personnel Safety (Cont.)

3.1.6 Non-electrical worker accessing electrical enclosures must ensure the following:
- The enclosure must have a white label indicating that it has been evaluated
- The work activity within the enclosure does not involve:
  - Reaching around or moving electrical equipment
  - Contacting electrical connectors/connections
  - By-passing protective shielding/barriers.

3.1.6.1 Stop and notify management if these conditions cannot be met, or if discrepancies exist (e.g. conflicting or missing labels, missing or damaged protective barriers).

3.2 Radiation and Contamination Control

3.2.1 When performed without a work package, this procedure is limited to radiological areas and work activities permitted by a radiological work permit.

3.2.2 When work is performed in a high contamination, high radiation, or airborne radioactivity area, then an approved work package is required.
3.3 Environmental Compliance

3.3.1 In accordance with WAC-246-247, Washington Department of Health (WDOH) must be notified at least 7 calendar days prior to any planned operational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit. WDOH reserves the right to witness such tests [WAC-246-247-060 (4)].

3.3.2 Tank Farm ventilation systems and exhaust monitoring systems are regulated under Washington State Administrative CODE (WAC) Chapters 173-400, 173-401, 173-460, and 246-247 and applicable Notices of Construction (NOC) issued to assure compliance with these regulations. To make sure reporting requirements are met, all planned and unplanned outages of Tank Farm ventilation systems, abatement control equipment, and exhaust monitoring systems, including portable exhausters, must be immediately reported to Environmental per the Environmental On-Call List in compliance with TFC-ESHQ-ENV-FS-C-01.

3.3.3 This procedure fulfills the requirements of TFC-ESHQ-ENV-STD-03, Air Quality-Radioactive Emissions and TFC-ESHQ-ENV-STD-05, Radioactive Airborne Effluent Sampling.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Calculator
- Beta check source used during CAM calibration
- One brown (CAM) envelope (54-6700-205) and one white (Record) envelope (54-6700-206) for each exchange
- Tweezers for filter handling
- 2-way Portable Radio or Cell Phone
- Portable count rate survey instruments
- Farm access keys
- Small Screwdriver or Nutdriver for cabinet access
- 47mm Versapore 3000 air sample filters for filter exchange
- 47mm Versapore 3000 air sample filter for CAM background checks
- HCU for reading ABCASH bar code labels
- Surgeons’ gloves

4.2 Performance Documents

The following additional documents may be needed to perform this procedure:

- TFC-ESHQ-RP_MON-P-02, Automated Bar Coding of Air Samples
- TFC-ESHQ-ENV-STD-03, Air Quality Radioactive Emissions
- TFC-ESHQ-ENV-STD-05, Radioactive Airborne Effluent Sampling
- PM Data Sheet, CAM Inspection and Source Checklist
4.3 Field Preparation

**Special Instruction**

Maintenance will supply bench calibration PM Data Sheet to obtain Beta efficiency for initial source check. Initial source check PM Data Sheet can be used to obtain Beta efficiency.

**NOTE** - When using ABCASH system, it is not required to record sample information on the sample envelope.

- Steps 4.3.1 through 4.3.3 may be performed in any logical order.

4.3.1 **PRIOR** to performing this procedure on an operating exhauster, **ENSURE** Shift Manager is notified **AND**

**OBTAIN** permission to place stack CAM into and out of BYPASS.

4.3.2 **PRIOR** to going to the field to perform Section 5.2 or 5.3, **ENSURE** required data has been recorded onto PM Data Sheet Block #1 (CAM and Sources information) as follows:

- CAM and Source Information
- EFF Response Limits.

4.3.3 **PRIOR** to going to perform Sections 5.6 or 5.7, **PREPARE** a 47 mm sample filter and sample envelope for each exchange.

4.3.3.1 **RECORD** Date and Electronic Data Processing (EDP) code along outside edge of air sample filter paper.

4.3.3.2 **IF** ABCASH is not used, **INITIATE** logbook entry as to sample storage location.

4.4 Training Requirements

4.4.1 **CHECK** the HPT has completed the following training requirements:

- HPT initial qualification
- TF Orientation Checklist (A-6003-481)
- OJT 356030, Eberline AMS-4 Beta CAM.
5.0 PROCEDURE

NOTE - Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

- The AMS-4 CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet) exist for recording data and information during performance of procedure.

- The AMS-4 Source Checking menu provides the display of efficiency and the efficiency differential for the beta detector channel. This menu does not allow the user to save efficiency information.

5.1 Use and Notifications

5.1.1 IF any item is identified as out-of-specification per referenced requirement(s), or in judgment of HPT an identified condition may render CAM inoperable, NOTIFY Shift Manager (OE or FWS).

5.1.2 IMMEDIATELY NOTIFY Shift Manager of any unplanned exhauster shutdown.
5.2 Initial or Quarterly Source Check of Shutdown Exhauster

NOTE - Steps in this section are based on the exhauster being shutdown, no requirement to place CAM in bypass.

- Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

5.2.1 COMPARE information documented on PM Data Sheet match field conditions:
- CAM serial number off AMS-4 (located inside PLC cabinet)
- CAM calibration due date.

5.2.2 CONFIRM CAM serial number showing on HMI Exhauster AMS-4 screen matches PM Data Sheet. (See Attachment 1 for screen navigation help).

5.2.3 IF CAM serial number or calibration due date do not agree with in-field information, NOTIFY FWS or OE.

5.2.4 ENSURE power to CAM.

5.2.5 UNTIL CAM is in service, ACKNOWLEDGE/RESET alarms as required (may take approximately 5 minutes).

5.2.6 CHECK CAM is in service by observing the following:
- “READY” Light (Green) is lit
- “MALFUNCTION” Light (Amber) is not lit
- Red Beacon Light is not strobing
- Alarm Bell (or Horn) is not sounding.

5.2.7 IF CAM is not in service, NOTIFY FWS or OE AND PERFORM the following:

5.2.7.1 PROCEED as directed.

5.2.7.2 RECORD directions in comments section of PM Data Sheet.

5.2.8 GO TO Section 5.4.
5.3 Quarterly Source Check of Operating Exhauster

NOTE - Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

5.3.1 OBTAIN Shift Manager permission to place CAM in bypass for Step 5.3.8 OR out of bypass for Step 5.8.1.

5.3.2 COMPARE information documented on PM Data Sheet match field conditions:

- CAM serial number off AMS-4 (located inside PLC cabinet)
- CAM calibration due date.

5.3.3 CONFIRM CAM serial number showing on HMI Exhauster AMS-4 screen matches PM Data Sheet. (See Attachment 1 for screen navigation help)

5.3.4 IF CAM serial number or calibration due date do not agree with in-field information, NOTIFY Shift Manager.

5.3.5 CHECK CAM is in service by observing the following:

- “READY” Light (Green) is lit
- “MALFUNCTION” Light (Amber) is not lit
- Red Beacon Light is not strobing
- Alarm Bell (or Horn) is not sounding.

5.3.6 IF CAM is not in service, IMMEDIATELY NOTIFY Shift Manager.

5.3.7 IF during the performance of this procedure there is an unplanned exhauster shutdown, IMMEDIATELY NOTIFY Shift Manager.
5.3 Quarterly Source Check of Operating Exhauster (Cont.)

5.3.8 WITH permission of Shift Manager in Step 5.3.1, PLACE CAM in BYPASS
(See Attachment 1 for screen navigation help):

5.3.8.1 CLICK Login (F3).

5.3.8.2 ENTER User Name (HPT) and Password (RAX107, RAX126 or RAX127) to login to HMI for the respective Exhauster.

5.3.8.3 ON POR107, POR126 or POR127 System Navigation Screen, CLICK HPT/Environmental Data.

5.3.8.4 ON Exhauster AMS-4 screen, CLICK Toggle CAM Alarms Bypass.

5.3.8.5 CHECK “CAM ALARMS BYPASSED” is displayed in red.

5.3.9 GO TO Section 5.4.
5.4 Initial or Quarterly Source Check

NOTE- Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

5.4.1 PERFORM the following steps on AMS-4 to check CAM setpoints:

NOTE - Buttons should be pressed in a slow, deliberate manner.

5.4.1.1 PRESS [Menu].

5.4.1.2 ENTER password 0000 AND

PRESS [Enter].

5.4.1.3 UNTIL “INSTRUMENT PARAMETERS” appears on screen, PRESS minus [-].

5.4.1.4 PRESS [Enter].

5.4.1.5 UNTIL “BETA EFFICIENCY” appears on screen, PRESS minus [-].

5.4.1.6 CONFIRM CAM Beta Efficiency matches PM Data Sheet.

5.4.1.7 PRESS [Menu].

5.4.1.8 UNTIL “ALARM PARAMETERS” appears on display, PRESS minus [-].

5.4.1.9 PRESS [Enter].

5.4.1.10 PRESS minus [-] key to scroll from one to the next AND

CHECK following setpoints:

- SLOW ALARM INTERVAL set to 60 MIN
- SLOW ALARM SETPOINT set to 300 DPM/FT3
- FAST ALARM INTERVAL set to 60 SEC
- FAST ALARM SETPOINT set to 7000 DPM/FT3
- NET ALARM INTERVAL set to 60 SEC
- NET ALARM SETPOINT set 3000 CPM.
5.4 Initial or Quarterly Source Check (Cont.)

5.4.2 IF any setpoints or intervals are at incorrect settings, IMMEDIATELY NOTIFY Shift Manager (FWS or OE) AND RECORD information in comments field of PM Data Sheet.

Set up for Source Check

5.4.3 PRESS [Menu].
5.4.4 UNTIL “CALIBRATE” appears on screen, PRESS minus [-].
5.4.5 PRESS [Enter].
5.4.6 UNTIL “SOURCE CHECK” appears on screen, PRESS minus [-].
5.4.7 PRESS [Enter] twice to disable all alarm functions.
5.4.8 OPEN sample door.

NOTE - Section 5.6 may be performed in parallel with Step 5.4.9.
5.4.9 IF CAM filter installed, REMOVE filter AND PLACE in brown envelope.
5.4.10 INSTALL a clean filter paper.
5.4.11 CLOSE sample door.
5.4.12 PRESS [Enter] to initiate background radiation count (300 seconds).
5.4.13 CONFIRM background counting period is 300 seconds.
5.4.13.1 IF counting period is not 300 seconds, NOTIFY Shift Manager (FWS or OE).
5.4.14 WHEN background radiation count is completed, RECORD Bkg cpm on PM Data Sheet Block #2(CAM Source Check and EFF Verification).
5.4.15 PRESS [Enter].
5.4 Initial or Quarterly Source Check (Cont.)

**Source Check**

5.4.16 **OPEN** sample door

5.4.17 **REMOVE** clean filter paper.

5.4.18 **INSTALL** check source.

5.4.19 **CLOSE** sample door

5.4.20 **PRESS** [Enter] to initiate source check.

**NOTE** - Data in Step 5.4.21 represents the instruments current system efficiency and efficiency differential.

5.4.21 **WHEN** source check complete, **RECORD** efficiency (EFF) and efficiency differential (EFF DIFF) on PM Data Sheet Block #2 (CAM Source Check and EFF Verification).

5.4.22 **ENSURE** EFF is within the EFF Response Limits recorded in Block 1 of PM Data Sheet and **CIRCLE** the appropriate PASS / FAIL on Block #2 of PM Data Sheet.

5.4.23 **IF** EFF is within response limits, **GO TO** Section 5.5.

**Source Re-Check**

**NOTE** - Because of potential failure due to counting statistics or human error, a second source check may be needed with the same source.

5.4.24 **IF** EFF of first source check is not within response limits, **PERFORM** the following:

5.4.24.1 **OPEN** sample door.

5.4.24.2 **REMOVE** check source.

5.4.24.3 **INSTALL** clean filter.

5.4.24.4 **CLOSE** sample door.

5.4.24.5 **PRESS** [Menu].

5.4.24.6 **PRESS** [Enter] three (3) times to initiate background radiation count.
5.4 Initial or Quarterly Source Check (Cont.)

5.4.24.7 WHEN background radiation count is completed, RECORD Bkg cpm on PM Data Sheet Block #2 (CAM Source Check and EFF Verification).

5.4.24.8 PRESS [Enter].

5.4.24.9 OPEN sample door.

5.4.24.10 REMOVE clean filter paper.

5.4.24.11 INSTALL check source.

5.4.24.12 CLOSE sample door.

5.4.24.13 PRESS [Enter] to initiate source check.

5.4.24.14 WHEN source check complete, RECORD Efficiency (EFF) and efficiency differential (EFF DIFF) on PM Data Sheet Block #2 (CAM Source Check and EFF Verification).

5.4.24.15 ENSURE EFF is within the EFF Response Limits recorded in Block # 1 of PM Data Sheet and CIRCLE the appropriate PASS / FAIL on Block # 2 of PM Data Sheet.

5.4.25 IF EFF is within response limits, GO TO Section 5.5.

5.4.26 IF EFF on second check is not within response limits, PERFORM the following:

5.4.26.1 RECORD source check failure on PM Data Sheet Block #4 (Systems Status).

5.4.26.2 NOTIFY Shift Manager (FWS or OE).

5.4.26.3 GO TO Section 5.5.
5.5 Restore CAM to Service

NOTE- Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

5.5.1 OPEN sample door.

5.5.2 REMOVE check source.

5.5.3 INSPECT O-Rings (see Figure 2).

5.5.4 INSTALL original sample filter OR
INSTALL a new sample filter per Section 5.6.

5.5.5 CLOSE sample door.

5.5.6 PRESS [Menu] on AMS-4 three (3) times slowly to put system back in service.

5.5.6.1 IF system does not return to service, NOTIFY Shift Manager (FWS or OE) to request Maintenance reset CAM.

5.5.7 UNTIL CAM is in service, ACKNOWLEDGE/RESET alarms as required (may take approximately 5 minutes).

5.5.8 CHECK CAM is in service by observing the following:
• “READY” Light (Green) is lit
• “MALFUNCTION” Light (Amber) is not lit
• Red Beacon Light is not strobing
• Alarm Bell (or Horn) is not sounding.

5.5.9 UNTIL “Instrument Status Normal” is displayed on screen, PRESS (9) or [ - ].

5.5.10 COMPLETE CAM Inspection, Ventilation Stack Inspection, and Record Sample Inspection per PM Data Sheet Block #3 (Inspection Criteria) AND RECORD any discrepancies on CAM/Record Sampler Inspection and Source Checklist.
5.5 Restore CAM to Service (Cont.)

NOTE - Gauge PI-554 is located in VTP-ENCL-550.
- If exhauster is shutdown, there is no vacuum pump running.

5.5.11 CHECK CAM vacuum at PI-554 is \( \leq \) 11 in. Hg.

5.5.11.1 IF CAM vacuum at PI-554 is greater than 11 in. Hg, NOTIFY Shift Manager (FWS or OE).

5.5.12 IF exhauster is operational, RECORD system status on PM Data Sheet Block # 4 (System Status) AND

GO TO Section 5.8.

5.5.13 ON a shutdown exhauster, RECORD system status on PM Data Sheet Block # 4 (System Status).

NOTE - If CAM source checks passed then exhauster is ready for startup.

5.5.13.1 IF CAM source checks or inspections failed, ensure the exhauster remains shutdown AND

NOTIFY FWS or OE.

5.5.13.2 PROCEED to Step 5.8.4.
5.6 Exchange CAM Filter

NOTE - Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

- Report any discrepancies in sample system to FWS.

5.6.1 CONFIRM air sample filters are exchanged within the time frames indicated in Table 2.

NOTE - If exhauster is shutdown, no requirement to place CAM in BYPASS.

5.6.2 IF exhauster is shutdown, PROCEED to Step 5.6.5.

5.6.3 IF not performing this section in parallel with Section 5.3, CONTACT Shift Manager AND

OBTAIN permission to proceed with air sample exchange at designated stack and place CAM in Bypass for Step 5.6.4 and out of Bypass for Step 5.8.1.

5.6.4 IF not performing this section in parallel with Section 5.3, PLACE CAM in BYPASS as follows (See Attachment 1 for screen navigation help):

5.6.4.1 CLICK Login (F3).

5.6.4.2 ENTER User Name (HPT) and Password (RAX107, RAX126 or RAX127) to login to HMI for the respective Exhauster.

5.6.4.3 ON System Navigation Screen, CLICK HPT/Environmental Data.

5.6.4.4 ON Exhauster AMS-4 screen, CLICK Toggle CAM Alarms Bypass.

5.6.4.5 CHECK “CAM ALARMS BYPASSED” is displayed in red.
5.6 Exchange CAM Filter (Cont.)

NOTE - If exhauster is shutdown, there is no vacuum pump running.
- Gauge PI-554 is located in VTP-ENCL-550.

5.6.5 RECORD required sample “OFF DATA” listed below on brown sample envelope or ABCASH HCU (See Attachment 1 for screen navigation help):
- Date
- Time
- From HMI, Exhauster AMS-4 screen, “CAM Sample Flow” is recorded as “Rotometer” on ABCASH HCU and/or “Flow Rate” on brown sample envelope
- From HMI, Exhauster Totalized Parameters screen, “CAM Sampler” – “Total Flow” – “Lifetime” is recorded as “Gas Meter” on ABCASH HCU and/or “Gas Meter/Flow Totalizer” on brown sample envelope
- CAM vacuum (PI-554).

5.6.6 OPEN sample door.

5.6.7 REMOVE filter AND PLACE in brown sample envelope.

5.6.8 INSTALL new sample filter AND CLOSE sample door.

5.6.9 AFTER “READY” Green Light is lit, ACKNOWLEDGE/RESET alarms as required (may take up to 5 minutes).
5.6 Exchange CAM Filter (Cont.)

NOTE - If exhauster is shutdown, there is no vacuum pump running.
- Gauge PI-554 is located in VTP-ENCL-550.

5.6.10 **RECORD** sample “On Data” listed below on brown sample envelope or in ABCASH HCU (See Attachment 1 for screen navigation help):
- Date
- Time
- From HMI, Exhauster AMS-4 screen, “CAM Sample Flow” is recorded as “Rotometer” on ABCASH HCU and/or “Flow Rate” on brown sample envelope
- From HMI, Exhauster Totalized Parameters screen, “CAM Sampler” – “Total Flow” – “Lifetime” is recorded as “Gas Meter” on ABCASH HCU and/or “Gas Meter/Flow Totalizer” on brown sample envelope
- CAM vacuum (PI-554).

5.6.11 **IF** exhauster is shutdown, **PROCEED** to Step 5.8.6.

NOTE - Gauge PI-554 is located in VTP-ENCL-550.

5.6.12 **IF** exhauster is operational, **PERFORM** the following:

5.6.12.1 **CHECK** CAM vacuum at PI-554 is \(\leq\) 11 in. Hg.

5.6.12.2 **IF** CAM vacuum at PI-554 is greater than 11 in. Hg:
  a. **ENSURE** CAM filter is properly installed.
  b. **IF** unable to properly install CAM filter, **NOTIFY** Shift Manager (FWS or OE).

5.6.12.3 **GO TO** Section 5.8.
5.7 Exchange Record Sampler Air Sample Filter

NOTE - Sections 5.1 through 5.7 may be performed simultaneously, in parallel or any logical order, however steps in those sections must be performed sequentially unless otherwise noted in this procedure.

5.7.1 CONFIRM air sample filters are exchanged within the time frames indicated in Table 2.

5.7.2 IF not performing this section in parallel with another section, CONTACT Shift Manager AND OBTAIN permission to proceed with air sample exchange at designated stack.

NOTE - If exhauster is shutdown, there is no vacuum pump running.

- Gauge PI-554 is located in VTP-ENCL-550.

5.7.3 RECORD sample “Off Data” listed below on white sample envelope or in ABCASH HCU:

- Date
- Time
- From HMI, Exhauster AMS-4 screen, “Record Sampler Flow” is recorded as “Rotometer” on ABCASH HCU and/or “Flow Rate” on white sample envelope
- For ABCASH HCU, “555” for “Timer” (actual value calculated at a later time from run log)
- From HMI, Exhauster Totalized Parameters screen, “Record Sample” – “Total Flow” – “Lifetime” is recorded as “Gas Meter” on ABCASH HCU and/or “Gas Meter/Flow Totalizer” on white sample envelope
- From HMI, Exhauster Totalized Parameters screen, “Stack Flow” – “Total Flow” – “Lifetime” is recorded as “Stack” on ABCASH HCU and/or back of white sample envelope
- Record Sampler vacuum (PI-553).

5.7.4 REMOVE record sample filter.

5.7.5 IF record sample filter is wet or damaged, NOTIFY Shift Manager/OE or FWS.
5.7 Exchange Record Sampler Air Sample Filter (Cont.)

5.7.6 INSERT record sample filter into white sample envelope AND
DO NOT REMOVE from white sample envelope once inserted.

5.7.7 INSTALL new sample filter in sample holder AND
RE-ASSEMBLE.

NOTE - If exhauster is shutdown, there is no vacuum pump running.
- Gauge PI-554 is located in VTP-ENCL-550.

5.7.8 RECORD the record sample “On Data” listed below on white sample envelope or in ABCASH HCU:

- Date
- Time
- From HMI, Exhauster AMS-4 screen, “Record Sample Flow” is recorded as “Rotometer” on ABCASH HCU and/or “Flow Rate” on white sample envelope
- From HMI, Exhauster Totalized Parameters screen, “Record Sampler Flow” – “Total Flow” – “Lifetime” is recorded as “Gas Meter” on ABCASH HCU and/or Gas Meter/Flow Totalizer on white sample envelope
- From HMI, Exhauster Totalized Parameters screen, “Stack Flow” – “Total Flow” – “Lifetime” is recorded as “Stack” on ABCASH HCU and/or back of white sample envelope
- Record Sampler vacuum (PI-553).

5.7.9 IF exhauster is shutdown, PROCEED to Step 5.8.6.

5.7.10 IF exhauster is running, ENSURE Sample Airflow is correct per Table 1.

5.7.10.1 IF Sample Airflow is not correct, NOTIFY Shift Manager/OE or FWS.
5.7 Exchange Record Sampler Air Sample Filter (Cont.)

NOTE - Gauge PI-553 is located in VTP-ENCL-550.

5.7.11 IF exhauster is operational, PERFORM the following:

5.7.11.1 CHECK Record Sampler vacuum at PI-553 is $\leq$ 11 in. Hg.

5.7.11.2 IF vacuum at PI-553 is greater than 11 in. Hg:

a. ENSURE Record filter is properly installed.

b. IF unable to properly install Record filter, NOTIFY Shift Manager/OE or FWS.

5.7.12 PROCEED to Step 5.8.4.
5.8 Restoration

NOTE - This section may be performed in parallel with Sections 5.9 and 5.10.

5.8.1 WITH permission of Shift Manager per 5.3.1 or 5.6.3, PERFORM the following steps to remove Stack CAM Bypass (See Attachment 1 for screen navigation help):

5.8.1.1 ON HMI Exhauster AMS-4 screen, CLICK “Toggle CAM Alarms Bypass”.

5.8.1.2 CONFIRM CAM ALARM ENABLED is green.

5.8.2 PRESS F4 to logout of HMI.

5.8.3 NOTIFY Shift Manager Stack CAM Bypass has been removed.

5.8.4 RECORD all identified deficiencies on applicable PM Data Sheet.

5.8.5 IF performing initial or periodic source check, COMPLETE actions of 5.9 and 5.10.

5.8.6 IF performing Air Sample Exchange, PERFORM the following:

5.8.6.1 IF ABCASH system is not used, INITIATE logbook entry as to sample storage location.

5.8.6.2 TRANSFER data to ABCASH Database.

5.8.6.3 DELIVER samples to approved facility sample storage area.
5.9 Acceptance Criteria

NOTE - This section may be performed in parallel with Sections 5.9 and 5.10.

5.9.1 CIRCLE discrepancies in red on applicable form.

5.9.2 CHECK sections performed have been completed and systems/components performed as specified.

5.9.3 COMPLETE AND SIGN CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet).

5.9.4 FORWARD completed CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet) to Radiological Control First Line Manager for review.

5.10 Review

NOTE - This section may be performed in parallel with Sections 5.9 and 5.10.

Radiological Control First Line Manager

5.10.1 REVIEW AND EVALUATE CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet).

5.10.2 SIGN AND DATE CAM/Record Sampler Inspection and Source Checklist.

5.10.3 FORWARD CAM/Record Sampler Inspection and Source Checklist to the Shift Manager.

Shift Manager

5.10.4 REVIEW AND EVALUATE CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet).

5.10.5 SIGN AND DATE CAM/Record Sampler Inspection and Source Checklist.

HPT

5.10.6 ENSURE original CAM/Record Sampler Inspection and Source Checklist (PM Data Sheet) is insertion into completed work package.
5.11 Records

NOTE - Some data contained in this procedure needs to be saved and filed as required by Dangerous Waste Regulations of the Washington Administrative Code (WAC) 173-303-380 “Facility Record Keeping.”

- In-Process record material items CAM Inspection and Source Check (PM Data Sheet) are maintained by applicable RadCon lead HPT until reviewed and submitted to Operations.

- Records associated with this procedure are maintained in the Work Package as record material.

5.11.1 PERFORM the following for records identified within this procedure.

5.11.1.1 On the Records Submittal Checklist, RECORD the number of times the record was generated in applicable column

OR

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

5.11.1.2 ATTACH the completed records to the Records Submittal Checklist AND

SIGN Records Submittal Checklist indicating the package is complete.

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.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM Data Sheet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAM Inspection and Source Checklist</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Signature                  Print (First and Last Name)    Date
**Inspections and Source Checks of AMS-4 CAMs and Effluent Record Samplers on HMI-Controlled Exhausters**

**Table 1 – Flow Rates and Alarm Set Points**

<table>
<thead>
<tr>
<th>EDP Code</th>
<th>Stack Number</th>
<th>Exhaust Stack Location /Name</th>
<th>EQID</th>
<th>Sample Type</th>
<th>Source Check PMID</th>
<th>Flow Rate*</th>
<th>A.S.P. CPM***</th>
</tr>
</thead>
<tbody>
<tr>
<td>E104</td>
<td>296-P-107</td>
<td>241-C POR107</td>
<td>POR107-VTP-FLT-553</td>
<td>RS</td>
<td>WT-107183</td>
<td>**Stack Flow/1000</td>
<td>N/A</td>
</tr>
<tr>
<td>E105</td>
<td>296-P-107</td>
<td>241-C POR107</td>
<td>POR107-VTP-RE-554A/VTP-RT-554</td>
<td>AMS-4 β CAM</td>
<td>WT-107183</td>
<td>0.85-1.15 scfm</td>
<td>3000</td>
</tr>
<tr>
<td>E100</td>
<td>296-P-49</td>
<td>241-AX POR126</td>
<td>POR126-VTP-FLT-553</td>
<td>RS</td>
<td>WT-105213</td>
<td>**Stack Flow/1000</td>
<td>N/A</td>
</tr>
<tr>
<td>E101</td>
<td>296-P-49</td>
<td>241-AX POR126</td>
<td>POR126-VTP-RE-554A/VTP-RT-554</td>
<td>AMS-4 β CAM</td>
<td>WT-105213</td>
<td>0.85-1.15 scfm</td>
<td>3000</td>
</tr>
<tr>
<td>E102</td>
<td>296-P-50</td>
<td>241-AX POR127</td>
<td>POR127-VTP-FLT-553</td>
<td>RS</td>
<td>WT-105217</td>
<td>**Stack Flow/1000</td>
<td>N/A</td>
</tr>
<tr>
<td>E103</td>
<td>296-P-50</td>
<td>241-AX POR127</td>
<td>POR127-VTP-RE-554A/VTP-RT-554</td>
<td>AMS-4 β CAM</td>
<td>WT-105217</td>
<td>0.85-1.15 scfm</td>
<td>3000</td>
</tr>
</tbody>
</table>

* POR-107, POR126 and POR127 Portable Exhauster CAM and Record Sampler are controlled by HMI and Flow Control Valves and are not adjustable. Alarm will activate when flow is out of range.

** Stack flow may be obtained from the Exhauster “Process Details” screen (See Attachment 1). Expected Record Sampler Flow Rate = [(Stack Flow) ÷ 1000] (must be within ±15% of Indicated (AS-Found value) Record Sampler Flow Rate).

*** IF the Stack CAM alarm setpoint is ever found above 10,000 cpm, IMMEDIATELY NOTIFY Shift Manager.
### Table 2 - Filter Change Intervals

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum</th>
<th>Normal</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>POR-107</td>
<td>168 hours (7 days) *</td>
<td>504 hours (21 days) **</td>
<td>N/A</td>
</tr>
<tr>
<td>POR-126</td>
<td>168 hours (7 days) *</td>
<td>504 hours (21 days) **</td>
<td>N/A</td>
</tr>
<tr>
<td>POR-127</td>
<td>168 hours (7 days) *</td>
<td>504 hours (21 days) **</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Contact Environmental if filter exchange is required within less than minimum required hours of service.

** Time frames in excess of the Normal Exchange period are not of concern as long as the sample vacuum is less than 12 inches.

**NOTE** - Record Sampler and CAM Filter paper is replaced routinely. If vacuum increases (≥11 in.Hg.), filter is assumed plugged and needs replaced.
Inspections and Source Checks of AMS-4 CAMs and Effluent Record Samplers on HMI-Controlled Exhausters

Figure 1 - POR107 Sampling System

NOTE – Equipment EIN preceded by POR107-VTP- or POR107A-VTP- unless otherwise noted.
Figure 2 - AMS-4 CAM O-Ring Location

This is an example of where O-rings are located. Each system may vary slightly in appearance.
Figure 3 – Record Sampler Holder

- Hose Barb Adapter
- Collar
- Cap
- O-Ring
- Filter Media
- Support Screen
- Underdrain Screen
- Base
- Hose Barb Adapter
[1] **CLICK** on System Start Page to get to system navigation screen as shown.

[2] **CLICK** on Login (F3).

[2.1] **ENTER** user name “HPT”

[2.2] **ENTER** password

  - RAX107 for POR107
  - RAX126 for POR126
  - RAX127 for POR127.

[3] **CLICK** HPT/Environmental Data Screen for Exhauster AMS4 Screen.
Attachment 1 - HMI Screen Navigation (Cont.)

Exhauster AMS-4 Screen

NOTE - This screen can be accessed by clicking System Start Page to go to Main Navigation screen then clicking on HPT/Environmental to get to Exhauster AMS-4 screen.

[4] **OBTAIN** the following from this screen;
- CAM Serial Number
- CAM Sample Flow
- Record Sample Flow
- CAM IN BYPASS in RED on this screen when engaged.

[5] **CLICK** Totalizer Reset to get the Exhauster Totalized Parameters screen.

NOTE - “Toggle CAM Alarms Bypass” button is only visible on this screen when logged in.

[6] **CLICK** “Toggle CAM Alarms Bypass” button to place CAM in bypass (permission required from Shift Manager).
NOTE - This screen can be accessed at any time through “Exhauster Process Details” button.


[8] OBTAIN “Stack Flow” from this screen.
Attachment 1 - HMI Screen Navigation (Cont.)

**Exhauster Totalized Parameters Screen**

NOTE - This screen can be accessed by clicking “Totalizer Resets” from “Exhauster AMS-4 screen.

[9] **OBTAIN** the following from the Exhauster Totalized Parameters screen:
- Stack Flow Total Flow - Runtime
- Record Sampler Total Flow - Runtime
- Record Sampler Total Runtime - Runtime
- CAM Sampler Total Flow – Runtime

[10] **CLICK** “Back” to go to the previous screen.