

WP 12-HP1305

Revision 12

Air Sampling Equipment

Technical Procedure

EFFECTIVE DATE: 01/16/14

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APPROVED FOR USE

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CHANGE HISTORY SUMMARY

REVISION NUMBER	DATE ISSUED	DESCRIPTION OF CHANGES
10	05/31/11	<p>Added 12-HP3500 Att. 4 to list of records generated in Introduction</p> <p>Deleted last precaution bullet regarding Out of Commission tags</p> <p>Added three new precautions: preparing filters in advance, designating a primary skid at Station A, and notifying SEC when back up skid is not available</p> <p>New steps 1.2.9, 1.4.7, and 2.2.3 adding “change filters” as appropriate action</p> <p>Changed order of actions in steps 1.2.11, 1.4.9, and 2.2.5 (switched [A] and [B] in each), added tagging requirements</p> <p>Included tweezers as acceptable tool to use in steps 3.2, 3.9, 4.1, and 4.5</p> <p>Added notes above steps 1.3.6 and 1.4.2 stating the steps are not applicable to Station C</p> <p>Added Attachment 4 – Changing Filter for an External Oversight Group</p> <p>Created new step 3.0 to reference Attachment 4</p>
11	02/19/13	<ul style="list-style-type: none"> • Editorial revision in accordance with MD 1.1.
12	01/16/14	<ul style="list-style-type: none"> • Added “Calibration Due Date” to table entry in attachment 1.

INTRODUCTION ^{1,2,3,4,5,6,7,8,9}

This procedure provides instructions for the operation of air sampling equipment and associated data collection.

Performance of this procedure generates the following record(s), as applicable. Any records generated are handled in accordance with departmental Records Inventory and Disposition Schedules.

- Attachment 1 - Air Sampling Equipment Log Sheet
- Attachment 3 – National Emissions Standards for Hazardous Air Pollutants (NESHAP) Particulate Air Filter Sample Form
- WP 12-HP3500, Attachment 4 – Request for Analysis/Chain-of-Custody Record

REFERENCES			
DOCUMENT NUMBER AND TITLE	BASELINE DOCUMENT	REFERENCED DOCUMENT	KEY STEP
Title 10 <i>Code of Federal Regulations</i> (CFR) Part 835, "Occupational Radiation Protection"	✓		
40 CFR Part 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities"	✓		8
40 CFR Part 191, Subpart A, "Environmental Standards for Management and Storage"	✓		9
NRC No. M0081, <i>WIPP Radiation Monitoring Systems Manual</i> , Vol. 1, Operation and Maintenance	✓		4
Eberline Model Alpha 6/6A, Alpha Air Monitor Technical Manual	✓		2
ITRI Report, Evaluation of the Eberline Alpha 6 Continuous Air Monitor for use in the Waste Isolation Pilot Plant Report of Phase II	✓		3
<i>Toshiba 1200 UPS Technical Manual</i>	✓		5
<i>Tosnic U 1100 UPS Technical Manual</i>	✓		6
Position Papers 00-05 and 01-09	✓		7
WP 12-5, <i>Waste Isolation Pilot Plant Radiation Safety Manual</i>	✓		1
WP 12-HP3500, <i>Airborne Radioactivity</i>		✓	
EA10-2-1-0, <i>Action Request</i>		✓	

EQUIPMENT

Required equipment is listed in each section, as applicable.

PRECAUTIONS AND LIMITATIONS

- Local flow alarm set points may vary from Central Monitoring Room (CMR) set points.
- Only trained and qualified Radiological Control Technicians (RCTs), and Radiological Engineers who have completed the Job Performance Measure (JPM), are authorized to operate radiological equipment. Trainees may operate radiological equipment with a qualified RCT present.
- When performing JPM CFO-119, "Operate an Air Sampler," all knowledge statements must be successfully completed prior to initiating performance requirements portion of the JPM.
- Cognizant Organization Manager (COM)/manager review of all records generated by this procedure satisfies data validation requirements.
- Air sample filters are to be changed according to the following frequencies:
 - At least once per working day for Station A NESHAP fixed air samplers (FASs). Additional filter changes will be conducted as necessary when RCT is available on-site.
 - At least once per working day for FASs that sample underground air.
 - At least once per week (within seven days) for Stations B and C; and all other FASs.
 - As needed to maintain the air sample flow rate within prescribed settings. The flow rates for Station A are to be maintained within prescribed settings by the RCT on-site.
- Air filters may be prepared in advance when gravimetrics is not required.
- Station A is designed for effluent air monitoring. A primary skid must always be designated.
- **IF** Station A skid has to be secured **AND** no back up is available, **THEN** COM will notify Site Environmental Compliance (SEC) or on-call SEC rep.

PERFORMANCE

1.0 THREE-CHANNEL FAS SKIDS

NOTE

Section 1.0 applies to Three-Channel FAS skids with the following equipment numbers:

- 364-S-101 (Skid A-2)
 - 364-S-103 (Skid A-1)
 - 364-S-104 (Skid A-3)
 - 365-S-100 (Skid B-1)
 - 365-S-102 (Skid B-2)
 - 411-S-105 (Station C)
 - 534-S-114 (Station D)
-

NOTE

All NESHAP and/or designated NESHAP back-up air filter collection data is recorded on attachment 3. All non-NESHAP air filter collection data is recorded on attachment 1.

1.1 Securing Power to Three-Channel FAS Skids at Station A

- 1.1.1 Notify Central Monitoring Room Operator (CMRO) that FAS skid will be secured.
- 1.1.2 Record date, time, and flow reading on applicable attachment.
- 1.1.3 Change air sample filters, as applicable, per section 3.0.
- 1.1.4 Place vacuum pump switch to **OFF** position.
- 1.1.5 Ensure Control Valves are completely closed.
- 1.1.6 Secure uninterruptible power supply (UPS) by performing the following:
 - [A] Press **OFF** buttons (F2 and F3) simultaneously.
 - [B] Turn main power switch located on the back of the UPS to **OFF** position.
- 1.1.7 Open circuit breakers on vacuum pump control panel.

NOTE

Heart interface inverter is located on the base of the skid table under the UPS.

- 1.1.8 Place the heart interface power (inverter) switch to **OFF** position.
- 1.1.9 Complete applicable attachment.
- 1.2 Restoring Power to Three-Channel FAS Skids at Station A
 - 1.2.1 Notify CMRO that FAS skid will be restored.
 - 1.2.2 Place the heart interface power (inverter) switch to **ON** position.
 - 1.2.3 Close circuit breakers on vacuum pump control panel.
 - 1.2.4 Restore UPS by performing the following:
 - [A] Turn main power switch located on the back of the UPS to the **ON** position.
 - [B] If UPS does not start automatically, press **ON** button (F1).
 - 1.2.5 Ensure pump control switch is in PUMP 1 position.
 - 1.2.6 Depress and continue holding low flow reset button, ensuring Control Valve for PUMP 1 has completely opened.
 - 1.2.7 Ensure AUTOMATIC SHUTDOWN SELECTION switch is in:
 - AUTO STOP PRIMARY (for primary skid)
 - OR**
 - AUTO STOP BACK-UP (for secondary skid)

- 1.2.8 **IF** pump does not start,
THEN perform the following:
- [A] Repeat steps 1.2.5 and 1.2.6 with PUMP 2.
 - [B] Notify CMRO and COM.
 - [C] Use EA10-2-1-0 to initiate an Action Request (AR) to correct deficiency.
- 1.2.9 Change air filters, as applicable, per section 3.0.
- 1.2.10 Ensure flow rates and alarm set points are correct in accordance with attachment 2.
- 1.2.11 **IF** FAS skid does not appear to operate properly,
THEN perform the following:
- [A] Notify COM.
 - [B] If directed by COM, secure FAS skid per step 1.1 and tag skid as “Out of Commission” (OOC).
 - [C] Initiate an AR to repair FAS skid.
- 1.2.12 Complete applicable attachment.
- 1.2.13 Notify CMRO that the FAS skid has been restored.
- 1.3 Securing Power to Three-Channel FAS Skids at Station B and Station C
- 1.3.1 Notify CMRO that FAS skid will be secured.
 - 1.3.2 Record date, time, and flow reading on applicable attachment.
 - 1.3.3 Change air filter, as applicable, per section 3.0 or 4.0.
 - 1.3.4 Place pump switch to **OFF** position.
 - 1.3.5 Open circuit breakers on vacuum pump control panel.

NOTE

Step 1.3.6 is not applicable for Station C.

1.3.6 Secure UPS by placing the following switches/breakers to the **OFF** position:

[A] UPS

[B] Inverter breaker

[C] Bypass

1.3.7 Complete applicable attachment.

1.4 Restoring Power to Three-Channel FAS Skids at Station B and Station C

1.4.1 Notify CMRO that FAS skid will be restored.

NOTE

Step 1.4.21.3.6 is not applicable for Station C.

1.4.2 Restore UPS by placing the following switches/breakers to **ON** position:

[A] UPS

[B] Inverter breaker

[C] Bypass

1.4.3 Ensure vacuum pump control switch is in PUMP 1 position.

1.4.4 Close circuit breakers on vacuum pump control panel.

1.4.5 Press and hold PUMP RESET button until flow stabilizes and pump remains on.

1.4.6 **IF** pump does not start,
THEN perform the following:

[A] Place vacuum pump control switch to PUMP 2 position.

[B] Notify CMRO and COM.

[C] Initiate an AR to correct deficiency.

- 1.4.7 Change filters, as applicable, per section 3.0.
- 1.4.8 Ensure flow rates are correct in accordance with attachment 2.
- 1.4.9 **IF** FAS skid does not appear to operate properly,
THEN perform the following:
 - [A] Notify COM.
 - [B] If directed by COM, secure FAS skid per step 1.3 and tag skid as OOC.
 - [C] Initiate an AR to repair FAS skid.
- 1.4.10 Complete applicable attachment.
- 1.4.11 Notify CMRO that FAS skid has been restored.
- 1.5 Securing Power to Three-Channel FAS Skids at Station D
 - 1.5.1 Notify CMRO that FAS skid will be secured.
 - 1.5.2 Record date, time, and flow reading on applicable attachment.
 - 1.5.3 Change air filter, as applicable, per section 3.0.
 - 1.5.4 Press and hold **OFF** button on vacuum pump control panel until pump stops.
 - 1.5.5 Press and hold **OFF** button on the mini-UPS until the UPS is secured.
 - 1.5.6 Complete applicable attachment.
- 1.6 Restoring Power to Three-Channel FAS Skid at Station D
 - 1.6.1 Notify CMRO that FAS skid will be restored.
 - 1.6.2 Press and hold the mini-UPS button until the UPS is restored.
 - 1.6.3 Press and hold **ON** button on vacuum pump control panel until pump starts.
 - 1.6.4 Change filters, as applicable, per section 3.0.
 - 1.6.5 Ensure flow rates are correct in accordance with attachment 2.

- 1.6.6 **IF** pump does not start,
THEN perform the following:
 - [A] Notify CMRO and COM.
 - [B] Initiate an AR to correct deficiency.
- 1.6.7 Complete applicable attachment.
- 1.6.8 Notify CMRO that the FAS skid has been restored.

2.0 SINGLE FAS UNITS

2.1 Securing Power/Vacuum to Single FAS Units

- 2.1.1 Notify CMRO that FAS will be secured.
- 2.1.2 Record date, time, and flow rate on attachment 1.
- 2.1.3 Change filter, as applicable, per section 4.0.

NOTE

Vacuum is supplied to single FAS units either by a vacuum pump or by supplied plant vacuum.

- 2.1.4 Secure vacuum supply.
- 2.1.5 Complete attachment 1.
- 2.2 Restoring Power/Vacuum to Single FAS Units
 - 2.2.1 Notify CMRO that power/vacuum will be restored to FAS.
 - 2.2.2 Restore vacuum supply.
 - 2.2.3 Change filter, as applicable, per section 4.0.
 - 2.2.4 Set flow rate in accordance with attachment 2.

2.2.5 **IF** FAS skid does not appear to operate properly,
THEN perform the following:

[A] Notify COM.

[B] If directed by COM, secure FAS skid per step 2.1 and tag skid as OOC.

[C] Initiate an AR to repair FAS skid.

2.2.6 Complete attachment 1.

3.0 CHANGING THREE-CHANNEL FIXED AIR SAMPLE FILTERS

NOTE

Representatives from external oversight groups such as the Carlsbad Environmental Monitoring and Research Center (CEMRC) may request that air samples be obtained from Stations A and/or B. After this request is made, COM will coordinate with the external oversight groups to change these filters. The external groups will provide kits containing air sample filters and chain-of-custody forms in a locked box on-site. If a representative from the external group is not available for a filter change, an RCT shall change the filters using these kits. In the event of a low flow during normal operations, all legs on a skid will be changed.

NOTE

All NESHAP and/or designated NESHAP backup air filter collection data is recorded on attachment 3. The RCT will document the transfer of filter samples to the WIPP Laboratories using the attachment in WP 12-HP3500, Request for Analysis/Chain-of-Custody Record.

3.1 **IF** changing a filter for an external oversight group,
THEN perform filter change in accordance with attachment 4.

3.2 Obtain the following equipment:

- Versopore filter
- Filter container
- Forceps/tweezers

NOTE

In the following step, if a filter is collected more than once a day, the time of collection should be added to the sample identification number.

- 3.3 Assign a unique sample identification number to the filter by putting the FAS number and the current date on the back of the filter.
- 3.4 **IF** a filter requires gravimetrics analysis,
THEN GO TO WP 12-HP3500, and perform the Gravimetrics section.
- 3.5 Notify CMRO prior to changing filters.
- 3.6 If filter samples are non-NESHAP, record information on attachment 1.
- 3.7 If filter samples are NESHAP, record information on attachment 3.
- 3.8 Turn ball valve to **OFF** position, if applicable.

CAUTION

Effluent FAS filters are not to be changed if there is no vacuum supply, unless a ball valve is installed for that purpose.

- 3.9 Using forceps or tweezers, remove loaded filter, place it in a container, taking care not to disturb particle collection area, and keep the loaded side facing up until final disposition.
- 3.10 Install a clean filter.
- 3.11 Turn ball valve to **ON** position, if applicable.
- 3.12 Ensure flow rate is within specified limits of attachment 2.
- 3.13 **IF** flow cannot be corrected,
THEN perform the following:
 - Notify COM.
 - Notify CMRO, if applicable.
 - Secure FAS skid.

- Tag equipment OOC.
 - Initiate an AR.
- 3.14 Complete applicable attachments.
- 3.15 Submit completed Attachments to COM for review and approval.
- 3.16 COM, review, approve, and submit completed attachment 1 to Records Coordinator for filing and disposition.
- 3.17 COM, review, approve, and submit completed attachment 3 to SEC.
- 3.18 RCT, **IF** NESHAP and non-NESHAP filter samples require gross alpha/beta analysis,
THEN complete a Request for Analysis/Chain-of-Custody record and submit with the filter(s) in labeled container(s) to the WIPP Laboratories in accordance with WP 12-HP3500.

4.0 CHANGING FIXED AND PORTABLE AIR SAMPLE FILTERS

NOTE

Portable air samplers (PASs) used in place of fixed air samplers will use the same flow rate and filter change method as the fixed air samplers they are replacing.

- 4.1 Obtain the following equipment:
- Versapore filter
 - Labeled filter container
 - Forceps/tweezers
-

NOTE

In the following step, if a filter is collected more than once a day, the time of collection should be added to the sample identification number.

- 4.2 Assign a unique sample identification number to the filter by putting the FAS number and the current date on the back of the filter.
- 4.3 **IF** a filter requires gravimetrics analysis,
THEN GO TO WP 12-HP3500, and perform the Gravimetrics section.

- 4.4 Prior to changing the filter at FAS 157 (Station C), perform the following:
- Notify the CMRO
 - Record date, time, and flow on attachment 1
- 4.5 Using forceps or tweezers, remove loaded filter, place it in a container, taking care not to disturb particle collection area, and keep the loaded side facing up until final disposition.
- 4.6 Install a clean filter.
- 4.7 Ensure the flow rate is within specified limits of attachment 2.
- 4.8 **IF** the flow rate cannot be corrected, **THEN** perform the following:
- Notify CMRO, if applicable.
 - Notify COM.
 - Secure FAS/PAS.
 - Tag equipment OOC.
 - Initiate an AR.
- 4.9 Complete attachment 1.
- 4.10 Submit completed attachment(s) to COM for review and approval.
- 4.11 COM, review and approve completed attachment and submit to Records Coordinator for filing and disposition.
- 4.12 RCT, **IF** FAS filter(s) requires analysis, **THEN** complete a Request for Analysis/Chain-of-Custody record and submit with the filter(s) in labeled container(s) to the WIPP Laboratories in accordance with WP 12-HP3500.

Attachment 2 – FAS Flow Rates and Alarm Set Points

FAS Type	Low Air Flow Alarm Set Point	Acceptable Air Flow Rate	High Flow Alarm Set Point
Single FAS Units	0.9 cfm	0.9 - 1.1 cfm	1.1 cfm
FASs on the following skids: 364-S-101 (Skid A-2) 364-S-103 (Skid A-1) 364-S-104 (Skid A-3) 365-S-100 (Skid B-1) 365-S-102 (Skid B-2) 534-S-114 (Skid D-1)	1.8 cfm	1.8 - 2.2 cfm	2.2 cfm
411-S-105 (FAS 157)	0.2 cfm	0.2 to 1.8 cfm	1.8 cfm

Attachment 3 – NESHAP Particulate Air Filter Sample Form

LOCATION: _____
 START DATE: _____
 AIR SAMPLE FILTER NUMBER: _____

FILTER CHANGE DATA					
START			STOP		
DATE	TIME	FLOW	DATE	TIME	FLOW
Interruptions In Flow? No ___ Yes ___			Run Time (Min):		
Filter Status at Station "A" Only: Primary / Secondary			Volume: ft³		
RCT: _____ / _____			RCT: _____ / _____		
Printed Name		Signature	Printed Name		Signature

DESICCATION/GRAVIMETRICS							
CLEAN FILTER DESICCATION				CLEAN FILTER WEIGHT			
DATE	TIME	WEIGHT	mg/m ³	DATE	TIME	WEIGHT	mg/m ³
RCT: _____ / _____				RCT: _____ / _____			
Printed Name		Signature		Printed Name		Signature	
Loaded Filter Weight (ASAP after filter change)				Loaded Filter Weight (After 24 hr desiccation)			
Net Filter Weight: _____				Net Filter Weight: _____			
RCT: _____ / _____				RCT: _____ / _____			
Printed Name		Signature		Printed Name		Signature	

COMMENTS:

Attachment 4 – Changing Filter for an External Oversight Group

NOTE

Latex, plastic, or rubber gloves should be worn when exchanging and handling filters.

Removing a Loaded Filter from the Sampler

1. Verify that an empty petri dish with a pre-assigned Sample Identification (SID) is present in the plastic pouch of the CEMRC/New Mexico Environmental Department (NMED) FAS sampling kit if a sample is currently running.
2. Verify that the 'SID,' 'Initial Weight,' and 'Sample Collection Start Data' sections have been completed on the *FAS Sample Collection and Chain of Custody Form* for the sample that is currently running.
3. Verify that the SID on the form from step 2 above matches the one on the empty petri dish from step 1 above.
4. Complete the 'Sample Collection Stop Data' section of the *FAS Sample Collection and Chain of Custody Form* including:
 - Recording the stop date and local time the filter is removed from the sampler.
 - Recording the stop flow-rate.
 - Printing and signing your name.
 - Recording your organization.
 - Recording any site, equipment, or environmental irregularities, conditions adverse to quality, or other non-routine events (e.g. low flow, securing of skid, power outages) in the "comments" section of the *FAS Sample Collection and Chain of Custody Form*.
5. Close the sampler ball valve approximately 80%.
 - This will allow a small amount of flow to keep the filter on the coupling and not allow the filter to fall off when the coupling is opened.
 - If the skid is secured (off), ensure the ball valve is closed 100% to prevent the filter from being sucked up the exhaust stack.
6. Unscrew the coupling containing the filter.
7. Using plastic forceps, remove the loaded filter from the coupling and place it in the appropriate empty petri dish.
8. Place the lid on the petri dish and pack it for transport.

Attachment 4 – Changing Filter for an External Oversight Group

Placing an Unloaded Filter onto the Sampler

1. Locate the next available unloaded filter and its associated *FAS Sample Collection and Chain of Custody Form* in the CEMRC/NMED FAS sampling kit.
 - The *FAS Sample Collection and Chain of Custody Forms* are placed in numerical order by SID number in a three-ring binder.
2. Using plastic forceps, place the unloaded filter onto the sampler support-screen.
 - Make sure the filter is centered on the support screen of the coupling using the forceps to move the filter, if necessary.
3. Reassemble the sampler coupling and open the ball valve completely.
4. Complete the ‘Sample Collection Start Data’ section of the *FAS Sample Collection and Chain of Custody Form* from step 1 above including:
 - Recording the start date and time the filter was placed on the sampler.
 - Recording the start flow rate.
 - Circling the appropriate sampling skid and its status (primary or backup).
 - Recording any site, equipment, and environmental irregularities, conditions adverse to quality, or other non-routine events in the “comments” section of the *FAS Sample Collection and Chain of Custody Form*.
 - Printing and signing your name.
 - Recording your organization.
5. Return the completed *FAS Sample Collection and Chain of Custody Form* and empty petri dish to the CEMRC FAS sampling kit.
6. Repeat all steps in this attachment for the backup skid.