MAINTENANCE OF AIRNET FLOW CONTROL PANELS

Purpose

This Meteorology and Air Quality Group (MAQ) procedure describes the process for cleaning, repairing, and adjusting the flow meter control panels used in the AIRNET sampling stations.

Scope

This procedure applies to the personnel assigned to perform repairs or adjustments to the flow meter control panels used in the AIRNET sampling stations.

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Signatures

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Approved by: Dave Fuehne, Rad-NESHAP Team Leader	Date: 11/09/05
Approved by: Digitally signed by Terrance L Morgan serialNumber=082197 + cn=Terrance L Morgan, ou=People, ou=Los Alamos National Laboratory, ou=Department of Energy, o=U.S. Government, c=US Date: 2005.11.30 11:16:54 -07'00' Reason: I am approving this document Location: White Rock Terry Morgan, QA Officer	Date: 11/09/05
Work authorized by: Dianne Wilburn, Acting MAQ Group Leader	Date: 11/09/05

General information about this procedure

Attachments

This procedure has no attachments.

History of revision

This table lists the revision history and effective dates of this procedure.

Revision	Date	Description of Changes
0	8/26/98	New document.
1	1/25/99	Added caution about hearing damage and rule for running pumps outside building at start of work day.
2	3/9/00	Added HCP as Attachment 1 and changed risks in HCP.
3	7/30/01	Added step about installation of air filter and changed required test time after rebuild.
4	8/19/02	Changed steps on use of new flow meters.
5	11/21/05	Quick-change revision to replace attachment HCP with HR.

Who requires training to this procedure?

The following personnel require training before implementing this procedure:

- individuals assigned to perform maintenance or repairs on AIRNET flow control panels

Training method

The training method for this procedure is **mentored** training by a previously-trained individual and is documented in accordance with the procedure for training (MAQ-024).

References

The following documents are referenced in this procedure:

- MAQ-024, “Personnel Training”
- MAQ-205, “Calibration of Air Sampling Stations”

Note

Actions specified within this procedure, unless preceded with “should” or “may,” are to be considered mandatory guidance (i.e., “shall”).

Cleaning and repairing control panels

Background

Flow control panels from the AIRNET stations are usually replaced completely when there are problems with a panel. These removed panels must be cleaned and repaired as described in this procedure.

Tools and equipment

Collect the following tools and equipment:

- needle nose pliers
- screwdriver
- adjustable (crescent) wrench
- pipe thread compound
- drill with cutting bit
- Dow Corning high vacuum grease
- paper towels
- spray cleaner (e.g., Fantastic®)

Steps to clean and reassemble the control panels

To clean and reassemble the control panels, perform the following steps:

Step	Action
1	In the hood, **with the sash lowered below face level**, blow out control panel with compressed air. Wipe down and clean with paper towels and cleaner.
2	Disconnect all hoses and blow through each with compressed air.
3	Replace any hoses as needed and reconnect with removed hose clamps. (Use hoses from NAPA stock number H1937.)
4	If a Dwyer flow meter is present, replace it with Matheson flow meter. To fit Matheson meters, it is necessary to enlarge opening with drill and cutting bit.
5	Remove the flow meter for the filter flow.
6	Replace pressure sensor 0.5" H_2O (activation vacuum) with 3" H_2O. When hooking up sensor, make sure vacuum hose is on "low" side (it's clearly labeled). Make sure wires are connected correctly (timer will not function if wires are crossed).
7	If stainless steel control valve is installed, replace with Matheson control valve.
8	Clean out control valve to silica gel side by taking valve apart using an adjustable wrench. Clean with spray cleaner. Lubricate o-ring with vacuum grease. Reassemble valve.

Steps continued on next page.

Cleaning and repairing control panels, continued

Step	Action
9	Remove large hex nut and inner spring from back of control panel.
10	Inspect O-ring and replace if cracked or nicked.
11	Use needle nose pliers to remove black carbon plug. Clean with spray cleaner. Lubricate with vacuum grease.
12	Inspect inside of opening for debris or dirt. Blow out with compressed air if necessary.
13	Reassemble by installing black carbon plug and spring and large hex nut.
14	Install air filter assembly (if not already installed) in the hose from the silica gel.
15	Test and calibrate the control panel: Hook up the panel to appropriate filter and silica gel sample holders. Connect a pump and calibrate the flow through the sampler holders according to MAQ-205. Run the test for at least 10 minutes, then recheck the calibration. **CAUTION**: Operating the vacuum pumps inside the Cave for long periods may cause permanent hearing damage. Conduct long-term pump tests outdoors. Pumps may be operated inside the building **only for a maximum of two minutes** during work hours **OR** overnight. At the start of each work day, turn off any operating pumps and reconnect them outside the building, if needed.
16	Mark or label the panel to indicate it has been cleaned and calibrated. Put refurbished panels in storage cabinet for future use as repair replacements.

Records resulting from this procedure

Records There are no records generated as a result of this procedure.

HAZARD REVIEW FOR MAINTENANCE OF AIRNET FLOW CONTROL PANELS

Work tasks/Steps	**Hazards, Concerns, and Potential accidents; Likelihood/ Severity**	**Controls, Preventive Measures** *(e.g., safety equipment, administrative controls, etc.)*	**Hazard Level** *from IMP 300-00-00 Hazard Grading Matrix*
Use compressed air to clean hoses and components according to steps in this procedure.	blowing compressed air into eyes, ears, or mouth. Dust particles may get into eyes from compressed air. improbable / moderate = minimal	The usual care and common sense in the use of hand tools and the use of compressed air will suffice for protection. Hand tools used in this procedure are simple and small. Compressed air nozzle is also a relatively small size and cannot easily cause harm. Air compressor is properly shielded and installed in a room away from work area. Air hose has been equipped with a "safety nozzle." Use of the compressed air will be inside a hood with a sash that can be lowered below eye level to prevent dirt and particles from getting into eyes.	Low
Use hand tools as needed to assemble and disassemble the panels, according to steps in this procedure.	Use of hand tools: Minor scrapes or pinches from slippage of screwdrivers or pliers. occasional / moderate = low	The usual care and common sense in the use of hand tools and the use of compressed air will suffice for protection. Hand tools used in this procedure are simple and small.	Low

Work tasks/Steps	**Hazards, Concerns, and Potential accidents; Likelihood/ Severity**	**Controls, Preventive Measures** *(e.g., safety equipment, administrative controls, etc.)*	**Hazard Level** *from IMP 300-00-00 Hazard Grading Matrix*
Operate panels on an AIRNET pump to test them, according to steps in this procedure.	Potential hearing damage from operation of pumps inside building. occasional / moderate = low	Potential hearing damage: ESH-5 measured noise levels and found them to be below the level that requires hearing protection. Even though there is no acute hazard, there is a possible chronic hazard. Potential hearing damage from operation of pumps inside building is mitigated by administrative control which allows operation of pumps indoors for a maximum of two minutes. All long-term pump tests will be performed outdoors. Pumps may be operated indoors overnight, but must be turned off or moved outdoors at the beginning of each following work day. As an alternative, the acoustic-lined box may be placed over the pumps, but do not leave the pump running for long periods inside the box.	Low

Wastes or residual materials resulting from process

None.

Emergency actions to take in event of control failure

For all injuries, provide first aid and see that injured person is taken to Occupational Medicine (only if immediate medical attention is not required) or the nearest hospital. Notify supervisor and group office as soon as possible.

Meteorology and Air Quality Group

PROCEDURE TRAVELER

This form is from MAQ-022

Part 1 (completed by any group employee)

Procedure number: MAQ 229 Revision: 4→5

Procedure title: Maintenance of AIRNET Flow Control Panels

Action Requested: ☐ New procedure ☐ Major revision of existing procedure ☐ Deletion of existing procedure

Description of and reason for action: ☑ Quick-change revision of existing procedure (parts 3 and 5 N/A)

Convert HCP to HR.

Signature	Name (print)	Date
Terry Morgan	T. Morgan	10/20/05

Part 2 (completed by appropriate manager)

I agree with the action requested: ☐ Yes ☐ No If No, enter reasons below.

If Yes, assigned preparer: Jake Martinez. Affected teams, programs, groups, or individuals required to review this procedure and others who should review it (see procedure page 5):

Required reviewers: Optional reviewers:

Signature	Name (print)	Date
Craig Eberhart	Craig Eberhart	11/9/2005

Part 3 (completed by preparer or other qualified safety reviewer)

I have evaluated, according to MAQ-035 and LIR300-00-01, the risks inherent in performing this procedure and have documented them on the Hazard Control Plan form, or referred to a plan that covers this type of work.

Preparer	Name (print)	Date
Jake Martinez	Jake	11/8/05

Draft prepared and sent for formal review on: _____. Comments resolved on: 11/8/05. After comments have been resolved with each reviewer, obtain signatures of the reviewers in part 5.

Part 4 (signed by safety officer or group leader)

I agree that the appropriate safety-related activities and appropriate risk level were identified during the hazard evaluation:

Safety officer or group leader	Name (print)	Date
Dianne Wilbern	Dianne Wilbern	11/9/05

Part 5 (signed by required reviewers: NA for quick-change revisions)

I attest that all my comments and concerns have been satisfactorily discussed, resolved, and/or incorporated into the final version of the procedure.

Signature	Name (print)	Date
Alice Baumann	Alice Baumann	11/8/05

Preparer: After all reviewers have signed above section, submit this form with copy of draft and final procedure to records coordinator.