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(formerly RRES-MAQ-216)

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## Environmental Programs Directorate

### Standard Operating Procedure

for **AIRNET—MANAGEMENT OF FIELD DATA**

#### APPROVAL SIGNATURES:

<b>Subject Matter Expert:</b>	<b>Organization</b>	<b>Signature</b>	<b>Date</b>
Andrew Green	WES-EDA	Signature on File	4/6/2009
<b>Responsible Line Manager:</b>	<b>Organization</b>	<b>Signature</b>	<b>Date</b>
Craig Eberhart	WES-EDA	Signature on File	4/6/2009

## 1.0 PURPOSE AND SCOPE

This standard operating procedure (SOP) states the responsibilities and describes the electronically recording and storage of field data on palmtop computers and the transfer of the data into the AIRNET database for the Los Alamos National Laboratory (LANL) Waste and Environmental Services Division (WES).

All WES participants shall implement this procedure when electronically recording field data, storing data, and transferring data to the AIRNET database.

## 2.0 BACKGROUND AND PRECAUTIONS

### 2.1 Background

Field data are recorded on Palm®-based computers. The destinations for the data collected are: 1) chain-of-custody forms and 2) the WES databases that contain AIRNET field sampling data.

Field sample and corresponding field data collection are done in loops: Area G, Town, Valley, Upper, White Rock, and Quality Control loops. The data on the Palm computers are grouped to correspond to these loops. For a sample printout to show the data currently being collected, see Attachment 1.

### 2.2 Precautions

None

## 3.0 EQUIPMENT AND TOOLS

None

## 4.0 STEP-BY-STEP PROCESS DESCRIPTION

### 4.1 Field Data Collection

Worker	1.	Prior to departing for the field, ensure the palm computer to be used is charged and previously collected data has been downloaded.
	2.	Ensure that the date and time displayed on the palm computer are correct.
	3.	Record field data, collected according to SOP-5143 and SOP-5144 for a station in the appropriate field on the Palm computer.
	4.	Check data entered for proper entry, and then store the data on the palm computer.
	5.	After each day of field collection is complete, use the Microsoft Access program to download data from the Palm to the desktop computer.
	6.	Upload data files to Palm: <ul style="list-style-type: none"> <li>Immediately after completing the step above, use the Microsoft Access program to upload data from the desktop computer to the Palm computer. You have the opportunity to edit the information that will be uploaded.</li> </ul>

## 4.2 Validating and Verifying the Field Data

Purpose of data evaluation:

All data will be evaluated (see WES SOP 5140) for one of three outcomes: accept, qualify, or reject. For qualified and rejected data, an explanation must be included for the appropriate record in the database. Data entry through the palm top computers and data entered by hand from field notes are verified for accuracy in the steps below.

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| Worker | <ol style="list-style-type: none"> <li>1. Move data to main database: <p style="margin-left: 40px;">After the sample collection period is over and all field data have been entered into the “collected data” table on the desktop computer, use the database program’s menu buttons to move the data to the AIRNET database table for verification and validation.</p> </li> </ol> <hr/> <ol style="list-style-type: none"> <li>2. Check site IDs and print data: <ul style="list-style-type: none"> <li>• Using menu options in the AIRNET database; ensure the master site IDs were entered in the database.</li> </ul> </li> </ol> <hr/> <ol style="list-style-type: none"> <li>3. Make a query: <ul style="list-style-type: none"> <li>• Print out of the field data to be checked.</li> </ul> </li> </ol> <hr/> <ol style="list-style-type: none"> <li>4. Perform validation and verification inspection <ul style="list-style-type: none"> <li>• Use the form in Attachment 1 as a checklist to review each field record on the query printout (see above block). Look at the acceptable ranges and the comments and use best professional judgment to identify any records that should be “qualified” or “rejected.” Provide an explanation for each qualified or rejected record in the database. Some examples of qualification and rejection are given below: <ul style="list-style-type: none"> <li>- If a pump and the timer failed, reject the timer data, filter sample, and silica gel sample.</li> <li>- For a pump failure with timer reading within the range, qualify the filter and silica gel data.</li> <li>- For torn filters and those pulled away from the edge of the support, reject the filter.</li> <li>- For timer failures where the timer reading is estimated, qualify the timer reading.</li> <li>- When breaker is found off and timer recorded run time appropriately, qualify the filter and silica gel samples. If the timer is not functioning, reject the timer data, filter sample, and silica gel sample.</li> <li>- If the station was inoperative at changeout time due to pump or power failure, do not use zero as the final flow rate. Assume final flow was the same as the beginning flow and qualify these data.</li> </ul> </li> <li>• The above examples provide a limited number of example conditions. Inevitably, other data situations will occur. Use the above examples and best professional judgment to qualify or reject other samples and data.</li> </ul> </li> </ol> <hr/> <ol style="list-style-type: none"> <li>5. Stations with dataloggers /telemetry: <ul style="list-style-type: none"> <li>• If there is a question whether a station with a datalogger / telemetry ran, check the 110V indicator in the saved datalogger files (see WES SOP-5152).</li> </ul> </li> </ol> <hr/> |
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6. Hand calculate flows:
- If there are flows that were changed manually by more than 10% during this sampling period, hand calculate flows using the equations below:
  - nominal air volume = timer reading \* (start flow rate + stop flow rate)/2 \* unit conversion
- OR
- nominal filter air volume = 336 (hr) \* [4.0 + 4.0]/2 (ft<sup>3</sup>/min) \* 60 (min/hr) \* 0.028317 (m<sup>3</sup>/ft<sup>3</sup>) = 2283 m<sup>3</sup>
  - nominal silica-gel air volume = 336 (hr) \* [200+200]/2 (cm<sup>3</sup>/min) \* 60 (min/hr) \* 1/1,000,000 (m<sup>3</sup>/cm<sup>3</sup>) = 4.03 m<sup>3</sup>
  - Make a note in the comment field that the volumes were hand-calculated.
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7. Perform additional checks:
- Using menu options in the AIRNET database; perform the checks to compare the distillation volumes against the silica gel weight difference, perform other range checks, and calculate the sample flows.
  - Review the results of these queries and make appropriate qualifications or rejections of the data.
  - When done with the checklist, sign it and place it in the field data validation/verification notebook.

### 4.3 Records Management

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| Worker | 1. Maintains and submits records and/or documents generated to the Records Processing Facility according to EP-DIR-SOP-4004, Records Transmittal and Retrieval Process, AIRNET Project Leader or directly to the AIRNET files. |
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### 5.0 DEFINITIONS

N/A

### 6.0 PROCESS FLOW CHART

N/A

### 7.0 ATTACHMENTS

Attachment 1 AIRNET Field Data Validation and Verification Inspection (1 page)

**8.0 REVISION HISTORY**

Revision No. <i>[Enter current revision number, beginning with Rev.0]</i>	Effective Date <i>[DCC inserts effective date for revision]</i>	Description of Changes <i>[List specific changes made since the previous revision]</i>
0	4/16/96	New document.
1	9/10/98	Time deadline for records submission added to "Records" chapter, added numerous detailed steps for transferring data into the database; added chapter and attachment on validation of data.
2	11/4/99	Changes to some steps, update of attachment.
3	7/26/00	Changed the method for calculating end flow and clarified some steps for uploading data.
4	11/1/00	Clarified a few steps for uploading data; added steps to record field comments before uploading.
5	6/13/01	Added steps to create the future Lotus spreadsheet templates to load onto the palmtops.
6	11/01/01	Revised to reflect use of Palm data collection computers.
7	12/10/02	Quick-change revision to add item to list for V&V inspections.
0	4/7/2009	New document number and reformatted for WES division. Formerly RRES-MAQ-216.

**ATTACHMENT 1****SOP-5149-1****AIRNET Field Data Validation and Verification Inspection**

Records Use only



AIRNET Sample Group #: \_\_\_\_\_

Data Element Inspected	Complete in Access Field Sampling database	Agreement between Field Data record and database entry	Within expected range <i>or</i> <i>qualified</i>	Expected range
Chain-of-Custody Form done for all filters	NA	NA	Y - N	6 sampling loops
Chain-of-Custody Form done for all silica gels	NA	NA	Y - N	6 sampling loops
<b>FIELD DATA READY FOR V&amp;V Table</b>				
AIRNET Sample ID number	Y - N - NA	Y - N - NA	Y - N - NA	YYmmdd.nn
Location # = AIRNET ID after decimal point?	Y - N - NA	Y - N - NA	Y - N - NA	01 - 99
Timer reading	Y - N - NA	Y - N - NA	Y - N - NA	100 - 500*
Filter Start Flow	Y - N - NA	Y - N - NA	Y - N - NA	3.6 - 4.4
Filter Stop Flow	Y - N - NA	Y - N - NA	Y - N - NA	1.0 - 6.0*
Gel Start Flow	Y - N - NA	Y - N - NA	Y - N - NA	180 - 220
Gel Stop Flow	Y - N - NA	Y - N - NA	Y - N - NA	20 - 250
Comment	Y - N - NA	Y - N - NA	NA	---
Gel Initial Weight	Y - N - NA	Y - N - NA	Y - N - NA	600 - 800
Gel Final Weight	Y - N - NA	Y - N - NA	Y - N - NA	600 - 800
Master Site Numbers	Y - N	NA	Y - N - NA	100 - 350
Data Qualifiers in use	Y - N	NA	NA	Blank (for A), Q, or R
Hand calculated volumes?	Y - N - NA			
Filter and m <sup>3</sup> corrected, calculated, and entered for bi-weekly volumes	Y - N - NA	NA	NA	
Dates and Times	Y - N - NA	Y - N - NA	NA	
Field logbook entries in database?	Y - N - NA	Y - N - NA	NA	
<b>FIELD DATA TRACKING Table</b>				
Sample Group Number	Y - N			
Verified by:				
Signature _____	Name (print) _____	Date _____		