GROUND FILTER UNIT (GFU) OPERATOR HANDBOOK

This publication defines operator responsibilities and provides general guidelines for performing GFU operations and maintenance actions. It outlines requirements, defines terms, and provides guidance for preparation and submission of reports pertinent to GFU operations. Specific instructions for each location will be provided in the attachment to this publication. Any deviation from this publication will not be made without the prior approval of HQ.

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Chapter 1

GENERAL

1-1. Terms Defined.

a. Parent Unit. Staff function responsible for the support required for equipment operations at a subordinate unit.

b. Area Technician. Parent Unit individual assigned field maintenance duties on the GFU equipment.

c. Equipment Location (EL). A location where the GFU is operated.

d. Technical Instructions (TI). Depot publications containing technical information necessary to assemble, install, operate, and maintain the GFU. Unless otherwise noted, all references in this publication are to TI 13-GFU-1.

e. Laboratory Label. A 3-digit number assigned to each location for identification purposes. Individual laboratory labels are provided by the Parent Unit.

f. Time. All times referred to in this publication are Universal Coordinated Time (ZULU). All times will be recorded using day, time, month, and year in accordance with the following example: 16/1410Z Mar 86.

1-2. GFU Equipment Malfunctions. Equipment problems will be reported via the Equipment Status Report in accordance with Chapter 4.

1-3. Electrical Reporting During MINIMIZE. Communications crisis conditions are defined as periods of MINIMIZE. During MINIMIZE, continue to submit all electrically transmitted reports that are required by this publication.

1-4. Operator Responsibilities:

a. Operate and maintain the GFU within parameters outlined in applicable directives, TIs, and this regulation.

b. Advise the Parent Unit immediately of any problem areas concerning equipment, supplies, operation, etc., impacting mission capability.

c. Perform all scheduled Preventive Maintenance Routines (PMR) and unscheduled maintenance within local capabilities. The established routine maintenance interval will not be exceeded unless a waiver is first obtained from the Parent Unit.

d. Request technical assistance as required to ensure timely performance of any scheduled or unscheduled maintenance.

e. Ensure all abnormal conditions that could affect sample collection are fully documented, by ZULU date and time, in the Remarks Section of the filter paper envelope and on the CEN Form 50, Log and Data Sheet.

f. Advise the Parent Unit of the name, grade, current duty assignment, and anticipated arrival date of personnel scheduled to replace present GFU operator(s).

g. Inform the Parent Unit when Time Compliance Technical Instruction (TCTI) kits are received. Parent Units are responsible for the accomplishment of each TCTI.

h. Annotate the Remarks Section of the completed Log and Data Sheet if the supply of CEN Forms 50 falls below a 2-month level. The Parent Unit will ensure a resupply of forms is sent to the location.

i. Maintain the supplies, special tools, and support equipment listed in the applicable TIs to effectively perform the required mission.

j. Notify the Parent Unit by message when a 30-day supply of GFU filter papers is reached.

1-5. Maintenance Requirements:

a. Every effort should be expended by equipment operators to complete repairs within their capabilities. Temporary repairs are authorized as soon as a malfunction is discovered to keep outage to a minimum. Temporary repairs which would alter the physical characteristics of the unit to such a degree that it cannot be returned to its original state within 48 hours will not be made unless approved by HQ/LGM.

b. If a condition exists requiring obvious corrective action within the capabilities of the assigned personnel, maintenance may be performed at the local level and the Parent Unit notified by routine message upon its completion.

c. During special interest periods (defined in paragraph 2-2), the equipment must perform with peak efficiency, reliability, and continuity.

(1) Scheduled maintenance (PMR) which will interrupt operations for a period in excess of one hour will be rescheduled.

(2) If symptoms of abnormal operation are observed (unusual noises, oil leakage, etc.), a PRIORITY message describing the symptoms will be sent to the Parent Unit. The Parent Unit will direct maintenance or provide on-site assistance as appropriate.

1-6. Supply of Forms. Center forms prescribed by this regulation will be requisitioned through the Parent Unit or through established procedures.

1-7. Documentation Disposition Instructions. Disposition instructions for all documentation are found in AFR 12-50, Vol II. The following recommendations are made for documentation required by this regulation.

a. CEN Form 50, Log and Data Sheet. Identify on AF Form 80 as Source, Support, or Control Data IAW AFR 12-50, Vol II, Table 11-1.

b. Equipment Status Reports. Identify on AF Form 80 IAW AFR 12-50, Vol II, Table 66-10.

c. Outage Notification. Transitory material.

d. Results Messages. Transitory material.

Chapter 2

OPERATING INSTRUCTIONS

2-1. Normal Operations. The equipment will operate continuously. The established time for filter change is 0900 local. The attachment to this regulation gives the scheduled days when filters are to be changed. Equipment operators are authorized to change filters plus or minus 1 hour from the established time. Permanent changes to the established schedule must be specifically authorized by HQ/LGM.

2-2. Special Interest Periods. During specified time periods, HQ may require selected units to change filter papers every 24 hours. Parent Units will be notified by message which will list the time frames and locations affected. Parent Units will in turn notify the affected locations. Every effort will be made to keep the equipment operational during these periods.

2-3. Shutdown Procedures. Any time it is necessary to shut the unit down for filter paper changes, unit maintenance, etc., the following procedures will be followed:

a. Put on plastic gloves.

b. Push the STOP RESET (red) button on the GFU control box.

c. Place the safety guard over the STOP RESET button.

d. Wait until the motor/blower comes to a complete stop.

CAUTION: Do not remove filter screen from transition cone until the motor/blower has completely stopped. Tolerance of the impeller lobes in the blower is critical. Entrance of foreign matter could damage the blower.

e. Flip back the two transition cone clamps.

f. Extract the screen assembly and the exposed filter.

g. Fold the exposed filter paper in half (fuzzy side inward), then fold in half again.

h. Place the filter paper in the original filter envelope and fold in half.

NOTE: Do not staple or tape this envelope.

i. Place completed filter envelope with filter into a ziplock plastic bag. Seal the bag and place into a mailing envelope.

j. See paragraph 3-2 for mailing instructions.

2-4. Start-up Procedures. Upon initial start up or after the unit has been shut down for maintenance or filter paper change:

a. Perform PMR 3-2, TI 13-GFU-6. (Visual Inspection).

b. Turn the blower shaft by hand to ensure it is free.

c. Insert the filter paper for collections as follows:

(1) Flip back the two transition cone clamps.

(2) Extract screen assembly.

(3) Cut open the right-hand side of the envelope as you read the printing and remove the filter paper.

(4) Open screen assembly and center filter paper on the grid.

(5) Insert the screen assembly into the transition cone.

NOTE: When inserting screen assembly into the transition cone, ensure that the fuzzy side of the paper is placed toward the incoming air stream or toward the air inlet end of the unit. The other (coarse) side of the paper has fiber threads running across it.

(6) Close the two transition cone clamps.

(7) Check air inlet and exhaust for obstructions.

(8) Release the safety guard over the STOP RESET button. Push the START (black) button on the GFU control box.

(9) Perform PMR 1-1, TI 13-GFU-6. (Check Relief Valve).

(10) Check Unit for proper operation.

(11) Dispose of plastic gloves. (Not reusable).

(12) Wash hands thoroughly after handling filter paper.

2-5. Operation Under Extreme Conditions:

a. If dust storms or heavy burning occur in the area of the GFU, papers may be changed at 12 or 24 hour intervals (as required) to prevent contaminant buildup on the papers.

b. The GFU should be turned off during severe local storms if, in the opinion of local personnel, the filter paper might become clogged, the vacuum relief valve might open in less than 6 hours of operation, or the unit might sustain damage. After the storm subsides, the blower will be restarted and the paper changed according to the following rules:

(1) If the original paper had a run time of at least 24 hours, change the paper and adjust the date for the next paper change so it has a run time of at least 24 hours but not more than 48 hours.

(2) If the original paper had a run time of less than 24 hours, restart with the same paper and make the next paper change at the normal scheduled time.

(3) If the vacuum relief valve opens, change the paper and schedule the following paper change to give an exposure of between 24 and 48 hours.

c. These procedures are to be used only during extreme conditions and will be fully explained on the inner envelope. Special permission is not required.

Chapter 3

FILTER REQUIREMENTS

3-1. Filter Identification.

a. Unexposed filter papers are supplied in envelopes preprinted as follows:

PAPER NUMBER

START (GMT)

DAY HOUR MIN MON YEAR

CLOCK READING_____

STOP (GMT)

DAY HOUR MIN MON YEAR

CLOCK READING_____

REMARKS:_____

b. Enter the following information in the appropriate places on the inner filter paper envelope:

(1) Paper Number. Enter the Laboratory Label for your location as provided by the Parent Unit.

(2) Start. Enter the day of the month, hour, minute, month, year, and clock (hour meter) reading. ZULU time will be entered.

(3) Stop. Enter the stop time on the envelope in the same format as outlined for the "Start" information.

(4) Remarks. Enter in the Remarks Section any abnormal conditions which occurred during the collection period. i.e., maintenance and PMRs (except PMRs 1-1 and 3-2) performed, power outages, etc.

3-2. Exposed Filter Mailing Procedures. When an exposed filter paper has been removed from the unit and the required information has been recorded on the filter paper envelope, the envelope (containing the exposed filter paper) will be placed in an outer envelope (an 8 X 11 1/2 inch envelope is acceptable when the inner envelope is folded once) and mailed to the address indicated in the Attachment. The inner envelope containing the filter should not be taped, stapled,or sealed in any manner. Exposed filter papers should be mailed individually, as soon as possible after removal from the unit. It is important that the filter papers arrive at the laboratory as rapidly as possible following exposure.

Chapter 4

EQUIPMENT STATUS REPORTING

4-1. GFU Equipment Status Reporting. Equipment malfunctions or suspected malfunctions will be reported via the electrically transmitted Equipment Status Report (ESR). ESRs are divided into three categories - initial, followup, and final - and are explained below. All sections of any ESR will be completed even if negative. All times will be reported in ZULU time as in the following example: 26/1320Z Jun 86.

4-2. Initial Equipment Status Report.

a. Submit an initial ESR when a GFU malfunction results in any of the following conditions:

(1) The time of return to normal operation is unknown.

(2) The time of return to normal operation will exceed 14 hours.

(3) The equipment has been/is suspected of being inoperative for 14 hours or more.

(4) The malfunction precludes the collection of a usable sample for a scheduled sampling period.

b. Submit the initial ESR via priority precedence to the Parent Unit in the following format. Consult the Attachment for message address and classification.

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: GFU EQUIPMENT STATUS REPORT - SITE NUMBER

A. JULIAN DATE/ZULU TIME OF MALFUNCTION

B. TIME IN COMMISSION (TIC) OR ESTIMATED TIME IN COMMISSION (ETIC); SPECIFY TIC OR ETIC.

C. SPECIFIC ITEM OF EQUIPMENT THAT FAILED AND A FULL EXPLANATION OF MALFUNCTION.

D. CONCISE DESCRIPTION OF ALL CORRECTIVE ACTION TAKEN AND/OR PLANNED. IF THE

E. REMARKS (INCLUDE ANY ASSISTANCE REQUIRED).

4-3. Follow-up Equipment Status Report:

a. Use the follow-up ESR to update a continuing equipment problem for which corrective action may be delayed for any number of reasons. In most cases, the Area Technician will submit the follow-up ESR to provide an updated ETIC; to report major changes in the maintenance posture such as parts requisitions, failure of additional equipment, progress in repair efforts, etc.; or to report any pertinent information not available at the time of the initial ESR.

b. When an ETIC cannot be met, submit a follow-up ESR in sufficient time to arrive at the Parent Unit upon or before the ETIC expiration date, explaining the delay and updating the ETIC.

c. Submit the follow-up ESR via routine precedence to the Parent Unit using the following format:

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: GFU FOLLOW-UP REPORT - SITE NUMBER

A. ETIC OR NEW ETIC

B. EXPLANATION OF CORRECTIVE ACTIONS TAKEN SINCE LAST REPORT AND ANY NEW ACTION PLANNED. INCLUDE PROBLEM AREAS ENCOUNTERED.

C. ANY OTHER INFORMATION CONSIDERED IMPORTANT AND NOT INCLUDED IN THE INITIAL ESR.

4-4. Final Equipment Status Report. Upon satisfactory resolution of the equipment problem and within 24 hours of return to normal operation, submit a final ESR via routine precedence to the Parent Unit. Do not send a final report when it would duplicate the initial report, e.g., when the TIC was given in the initial report.

FROM: LOCATION

TO: PARENT UNIT

APPROPRIATE CLASSIFICATION

SUBJ: GFU FINAL REPORT - SITE NUMBER

A. TIC

B. EXPLANATION OF ACTIONS TAKEN TO CORRECT THE PROBLEM.

C. ANY OTHER INFORMATION CONSIDERED IMPORTANT AND NOT INCLUDED IN PREVIOUS REPORTS.

4-5. Outage Notification. Submit an outage notification message to the Parent Unit, info HQ, by routine precedence when equipment downtime in excess of 14 hours is anticipated for scheduled maintenance, power outages, severe weather, etc. Allow sufficient time for HQ response. Outage will not normally be taken prior to receipt of authorization. ESRs will be submitted when the outage occurs for periods exceeding 14 hours.

FROM: LOCATION

TO: PARENT UNIT

INFO: HQ

APPROPRIATE CLASSIFICATION

SUBJ: GFU OUTAGE NOTIFICATION - SITE NUMBER

ESTIMATE EQUIPMENT OUTAGE FROM (DATE AND ZULU TIME) TO (DATE AND ZULU TIME) FOR (REASON FOR OUTAGE).

Chapter 5

CENTER FORM 50

5-1. CEN Form 50, Log and Data Sheet. The CEN Form 50 must be completed accurately and legibly and should fully explain the events surrounding sample collection. A work copy will be maintained to record up to seven filter exposures. When the last filter change has been recorded, perform an inventory of filter papers, review the form for accuracy, reproduce one copy, and mail it to your Parent Unit for review, quality control and filing. The work copy should be maintained on hand (see Figure 5-1 for example of completed CEN Form 50; ensure all entries are legible). If the CEN Form 50 is not preprinted with inventory blocks, these entries will be handwritten or typed at the bottom of the remarks section.

a. Laboratory Label. Enter the Laboratory Label for your location as provided by the Parent Unit.

b. From. Enter the day, month, and year the first filter on this form was inserted.

c. To. Enter the day, month, and year the last filter on this form was extracted.

d. ZULU Dates and Times. Enter the ZULU date and time when the filter was inserted and the ZULU date and time when filter was extracted for each filter paper used during the period of the form.

e. Exposure Time. Enter the total exposure time of the filter. This time is determined by subtracting the "Start" time from the "Stop" time.

f. Clock Readings. Enter the "Start" and "Stop" clock readings as taken from the unit elapsed time meter when the filter is inserted and extracted.

g. Date Mailed. Enter the date the exposed filter paper was mailed to the laboratory.

h. Remarks. This section will include, but is not limited to, reasons for any outage, run lengths in excess of scheduled times, and all maintenance performed.

i. Date of Inventory. Enter the date the inventory is accomplished.

j. Number of Unused Boxes. Enter the number of unopened boxes on hand.

k. Number of Loose Papers. Enter the number of loose filters on hand from opened boxes.

OFFICIAL

SUMMARY OF CHANGES
Deleted paragraph on historical record from Chapter 1. Simplified equipment status reporting procedures. Requires Equipment Locations to report only to their Parent Unit. Deleted all references to Annex.

LOG AND DATA SHEET

LABORATORY LABEL	PERIOD	
	FROM	TO
800	1 March 1986	17 March 1986

ZULU DATES AND TIMES		EXPOSURE TIME	CLOCK READINGS		DATE MAILED
FILTER INSERTED	FILTER EXTRACTED	HOURS	START	STOP	
1/1400Z Mar	3/1402Z Mar	48.1	2637.7	2685.8	3 March 1986
3/1404Z Mar	5/1400Z Mar	47.9	2685.8	2733.7	5 March 1986
5/1401Z Mar	8/1400Z Mar	72.0	2733.7	2805.7	8 March 1986
8/1402Z Mar	10/1401Z Mar	48.1	2805.7	2853.8	10 March 1986
10/1405Z Mar	12/1400Z Mar	47.9	2853.8	2900.7	12 March 1986
12/1401Z Mar	15/1359Z Mar	48.0	2900.7	2948.7	15 March 1986
15/1401Z Mar	17/1400Z Mar	47.5	2948.7	2996.2	17 March 1986

REMARKS:

16/1930Z - 16/2000Z Mar: Commercial power outage.

DATE OF INVENTORY:	NUMBER OF UNUSED BOXES:	NUMBER OF LOOSE PAPERS:
17 March 1986	2	23

CEN FORM JUL 83 50

PREVIOUS EDITIONS ARE OBSOLETE.

Figure 5-1. CEN Form 50, Log and Data Sheet