RESET Ceilometer Installation and Maintenance Terminal Procedure

I. Purpose:

This document describes the Ceilometer Installation and Maintenance Terminal procedure to be performed during installation and each visit of the RESET team (about every 6 months). Since the ceilometer field calibration procedure uses the maintenance terminal, this procedure is needed to perform the calibration described in PRO(CEI)-002.

II. Cautions and Hazards:

- None.

III. Requirements:

- Computer (presently IBM Thinkpad) with Windows 95 and VC-View software).
- Maintenance terminal: Psion 3a handheld computer with communication software and cable (Serial 3 Link).
- CT25K Ceilometer.

IV. Procedure:

A. Ceilometer and Computer Installation Procedure:

1. For ceilometer installation, follow procedure in Vaisala Manual Translation under Installation.
2. To install computer, connect ceilometer computer to RS232 port of data line.
3. Computer should have VC-View and Windows 95 installed, also the auto logon feature must be enabled.
4. Check to make sure that VC-View runs, that data are being written to a temporary directory for ADaM to collect, and that the system restarts automatically when the computer is turned “OFF” and back “ON.”
5. Also, check the date/time settings in the clock panel window to make sure that GMT Monrovia is selected rather than GMT Greenwich (to make sure that daylight savings time is not automatically adjusted).

B. Maintenance Terminal Procedure:

1. Connect the Psion to its cable (this connection is not always firm) and to the male connector of maintenance cable and the maintenance cable to the J4 connector at the bottom of the CEIL.
2. Press the "**ON**" button of the Psion.
3. Press the system "**icon**" button.
4. With the arrow keys, move to the "**icon**" with CT25K.
5. Press "**ENTER**" (ordinarily nothing happens yet).
6. Type "open" and enter (if the connections are good you get "CT:" and then "ceilo>"); ("open is not echoed to the terminal).
7. Repeat step 6 several times if necessary.
8. When "ceilo>" appears type "set message port maintenance" (after "set" typing "enter" gives a menu and the first letter and "enter" gives the next "menu" so you do not have to type out the whole line). If you forget to type "message," a list of baud rates appear; and if you change them, undesired outcomes occur.
9. Type "close."
10. Every 15 seconds two lines, like the one show in **Example 1**, appears. The data fields are described in the manual. The first number shows the number of cloud decks, followed by a zero, if there are no problems. The second five digit number is the base height (in meters if this option is set and it should be).
11. To set the option to meters type "open," press enter; type "set message units meters," press enter; type "close," press enter.
12. To get the message shown in example 2, type "open," enter; "set message type msg2," enter; and "close," enter.
13. Type "open," enter; "set message type status," enter; "close," enter; to check the internal temperatures battery condition, internal voltages, etc. Log these each time the RESET team visits the site and abnormal values given attention, e.g., contact the mentor). One way to do this is to press the "menu" button with the CT25K icon highlighted and select new file and name it "smmddyy" for status month day year).
14. Type "open," enter, "set message port data," enter; "close," enter; to transfer the data to the data terminal.
15. You can now proceed with calibration procedures for the CEIL.

Examples of maintenance terminal displays:

Example 1:
30 01230 12340 23450 FEDCBA98

The last field requires some explanation. It should read 00000100, 00000300, 00000700, or 00000F00 meaning that units are in meters, the internal heater is also on, the fan heater is also on, and the fan is also on (i.e., “F” means that they are all are on), respectively. If the reading is 00400100, this means that the battery power is low (this often happens when just turned on) and the units are in meters. Convert each number in each of the eight fields to binary (4 is 0100 and 1 means ON) and compare to the list of warnings and status interpretations (presently on page 32 of the manual).

Example 2:
30 01230 12340 23450 FEDCBA98
100 N 53 +34 204 146 +2 621 LF7HN1 139
00047F2000000000000000000000000000000000050D010
00000000000000
01600FFFFFFFFFFFFFFFFFFFFFFFFFFFEFEFEFEFEFEFEF
EFEFEFEFDFDFDFDFDFD
03200FFFFFFFFFFFFFFFFFFFFFFFFFFFEFEFEFEFEFEFEF
EFEFEFEFDFDFDFDFDFD
048FDFDFDFDFDFCFCFCFCFCFCFCFCFBFBFBFBFBFBFBFAF
BFAFBFBFAFAFBFAF9FAF9
064FDFDFDFDFDFCFCFCFCFCFCFCFCFBFBFBFBFBFBFBFAF
BFAFBFBFAFAFBFAF9FAF9
080F9FAF9F9F9F9F9F9F9F8F7F8F7F9F8F7F7F8F6F7F7F7F6F6
F7F6F7F6F6F6F6F6
096F9FAF9F9F9F9F9F9F9F8F7F8F7F9F8F7F7F8F6F7F7F7F6F6
F7F6F7F6F6F6F6F6
112F5F5F5F6F5F2F4F5F6F5F5F4F4F4F4F3F4F3F4F5F3F5F4F4
F2F3F3F3F3F4F4F3
128F5F5F5F6F5F2F4F5F6F5F5F4F4F4F4F3F4F3F4F5F3F5F4F4
F2F3F3F3F3F4F4F3
144F2F2EFF1F4F1F2F2F1F3F2F2EFF1EFF0F0EFF1EFF0F1EFF
0F0F2F0EFF0EFEFF0
160F2F2EFF1F4F1F2F2F1F3F2F2EFF1EFF0F0EFF1EFF0F1EFF
0F0F2F0EFF0EFEFF0
176EEF1EFEDEFEEEFEEEEF0EDF0F2EFEDEFEFEFF0EFECEC
ECEEEAF0EDEDECEAEAEA

192EEF1EFEDEFEEEFEEEEF0EDF0F2EFEDEFEFEFF0EFECEC
ECEEEAF0EDEDECEAEAEA
208EEF1EFEDEFEEEFEEEEF0EDF0F2EFEDEFEFEFF0EFECEC
ECEEEAF0EDEDECEAEAEA
224F0ECEFEDF0ECEBEEEDEEE9EAEFF0EEECEAEDECEBEAE
EE7EDEAEAEAEBECEAEAEA
240F0ECEFEDF0ECEBEEEDEEE9EAEFF0EEECEAEDECBEAEE
E7ED00000000000000000

Data Terminal:
The data terminal performs in the same way as the maintenance terminal (however a null modem is required) after RS232 communications software is installed on the data terminal computer. Presently, the computer uses OS2 as the operating system and a communications file written in C to collect the data and send it to the data system.

Communication settings:
1. Baud rate (2400).
2. Number of bits (7)
3. Parity (EVEN).
4. Stopbits (1).

Collect data hourly and ship using DROPSHIPPER to the data system and begin a new file, (this is exactly the same as the procedure for logging the MWR data; refer to the MWR procedures for more details). The files are identified by yymmddhh.tmp and the DROPSHIPPER changes this to yymmddhh.cel.

16. The final configuration for the ceilometer is:
    - “set message units meters”
    - “set message type MSG2”
    - “set message profile type h2_noise ON”
    - “set message angle_cor ON”
    - “set message port data”

V. References:

1. Vaisala Manual Translation, Bill Porch.

VI. Attachments:

None.