

## MAGIC WICK SENSOR ISSUE

The manufacturer of the MAGIC CPCs has discovered a problem with some of the wick sensors in the recent batch of MAGIC 250's (serial numbers 134 thru 145). The light emitted from the LED may decrease with usage making the wick appear wetter than it is. If you are experiencing dry wicks this is likely the cause.

The manufacturer is currently running tests to address this issue. In the meantime, please monitor the performance of your instrument: The pulse height was set at the factory to be about 1500mV at low counts (i.e.<1500/cc). (A pulse height value of 1450.51 means that 51% of the pulses are above 1450mV see the manual for more details). As the wick dries the pulse height will decrease. If it falls below 800mV at concentrations under 2000/cc, (manufacturer suggests 1100 mV, but we are pushing it a bit) please do the following:

1. Wet the wick following the procedure in the MAGIC manual. (Section 4, page 22)
2. Run the system for 10 to 15 minutes.
3. Open up a terminal window on the aerosol laptop and type:

```
cpd3.eavesdropper --instrument=Nxx --exclusive<enter>.
```

This will result in a screen with lots of values scrolling by – those numbers are the serial data feed from the MAGIC. See table below to figure out what value of Nxx you should use for your station.

4. Ignore the scrolling numbers in the terminal window and type the following three commands in the terminal window, writing down the values that get spit out after each command.

```
wmin <enter>
```

```
wmax <enter>
```

```
wadc <enter>
```

The numbers will probably be something like 40-90 for `wmin`, 250ish for `wmax` and `wadc` will likely be lower than `wmin`.

5. To account for the degradation of the wick sensor the `wmin` and `wmax` parameter values need to be changed. First change the `wmin` value. Type '`wmin, N <enter>`' where N is the value returned by the command '`wadc`' in step 4. This will set `wmin` to the `wadc` value.
6. Now you need to reduce '`wmax`' by the same proportion that '`wmin`' was reduced. For example if the original values of `wmin`, `wmax` and `wadc` were 80, 240 and 60, respectively, here you would type '`wmax, 180 <enter>`' because  $(60/80)*240=180$  (i.e., the new `wmax` value =  $(wadc/wmin)*wmax$ ).
7. Save the settings using the save setting command type: `svs <enter>`.
8. Once you are done typing commands in the `cpd3eavesdropper` window, type CTRL-C (hit Ctrl key and letter C key at the same time.) This should get the aerosol laptop back to normal data logging.

The manufacturer is recommending wetting the wick about once per month. Doing checking and setting the wick sensor parameters at that interval is likely to be sufficient, although there is no harm in doing it more often.

Please email Betsy ([betsy.andrews@noaa.gov](mailto:betsy.andrews@noaa.gov)) and Erin ([erin.boedicker@noaa.gov](mailto:erin.boedicker@noaa.gov)) with the old and new settings for WMIN, WMAX and WADC. If this is not the first time the wick parameters are adjusted then please also estimate the hours of usage since the last wick parameter adjustment whenever this procedure is done.

#### **Table of MAGIC-250 instrument ID values at each NFAN station**

<b>Station</b>	<b>BND</b>	<b>BOS</b>	<b>BRW</b>	<b>MLO</b>	<b>SPO</b>	<b>SUM</b>
<b>MAGIC ID</b>	N62	N72	N62	N62	N42	n/a

#### **Special instructions for SPO**

If the MAGIC CPC is installed in the DMPS, then it is not connected to the aerosol laptop and the cpd3eavesdropper command will not work. You will need to connect the MAGIC to the aerosol laptop first.

Connecting the MAGIC CPC will require a serial cable. There should be a serial cable in the aerosol supplies boxes or else there may even be an unused serial cable connected to the 8-port serial hub that the other aerosol instruments are connected to.

- (1) Disconnect the DMPS BNC cable and DMPS serial cable from the back of the MAGIC CPC.
- (2) Connect a serial cable to the 8-port serial hub and connect the other end of that serial cable to the MAGIC.
- (3) Look on the blue screen of the aerosol laptop and see if the MAGIC is now talking to the aerosol laptop (the letter D should go from red to yellow and you should be able to open a MAGIC window from the main menu of the aerosol laptop and see MAGIC parameter values instead of 'no comms'.) (You *may* need to restart data acquisition in order for the aerosol laptop to find the MAGIC.)
- (4) Once the aerosol laptop is talking to the MAGIC you can proceed as described above.
- (5) After you are done with this procedure, disconnect the serial cable from the back of the MAGIC
- (6) Reconnect the DMPS BNC and DMPS serial cable to the back of the MAGIC.
- (7) Check the DMPS after ~10-15 minutes to make sure it looks like it is back to normal.