

# Flights Summer 2015 Flight Engineer Checklist - Updated 2015/07/13

## Before Flight

Set phone/watch to current GMT time.

Have digital camera.

**Have USB sticks and PCMCIA card.**

Have note books with check list.

Have CCN Counter pads and water bottle.

**Remove CPC Butanol Bottle.**

Set Nevzorov control box to the correct settings for the chosen hotwire temperatures (match the stickers).

## Before Engine Start:

Make sure memory card is in the Applanix Unit.

Make sure PCMCIA card is in the M300.

Make sure all rack power controls are on assigned inverters (especially 2<sup>nd</sup> rack)

Wet and install CCN pads

## After Engine Start:

Push all AC breakers (5 breakers)

M300 Power – On

Applanix Power – On

Turn on CCN counter

TDL and Back-Right Rack Power Bar – On

Run timesync.awk script on M300 computer terminal window – ‘timesync.awk’

**Push in all DC instrument and anti-ice breakers**

Start M300 software – type ‘m300’ or ‘go’ into a terminal window

Data File Check (Check that data is being saved to hard disk).

Bring up M300 Status Window (Use F1 to select). Note data <filename>.

Bring up terminal window, ‘cd /2014/m300data’, ls -l <filename>. **Note size.**

Ensure a file being written to (F1 screen) and that its size is not zero.

Tell Pilots: Ready to Taxi

M300 F3 Status Checks

Check static pressure. **Note value.**

Check air temperature. **Note value.**

Check dew point temperature. **Note value.**

Check CDP. **Note reference voltage (~ 5.0 volts).**

Check CPC, note average concentration, ‘No CPC Data Interval’ (1), and flow rate (~1 Lpm).

Check TDL Laser Hygrometer. **Note dew point temp and flow rate (~ 8.5 Lpm)**

Check PCASP. **Note total counts and laser voltage (> 5 volts)**

Check the 2-DC. **Note the End Element voltages (> 0.5 volts)**

Check the Applanix. **Note latitude and longitude**

Check the CPC flow meter. **Note volume flow rate**

Check Goodrich Ice Detector. **Note MSO Frequency and Operational State**

Check Serial Data Screen. **Note data acquisition status**

## After Takeoff:

King Probe power switch and Heater switch– On

Nevzorov Power and Heaters – On

Note voltage values for King probe signal and slave (slave volt ~ 5 volts)

Note voltage values for all 8 Nevzorov connectors (>0.0 volts)

**Before Landing:**

King Probe – Of  
 Nevzorov – Power and Heaters Off

**After Landing:**

M300 Data System  
 Quit M300 Software File/Exit (**Do not save when asked**).  
 Turn M300 off  
 Applanix – Off  
 CCN Counter - Off  
 DC power breakers – Out  
 TDL and TDL pump - Off  
 Check all computers are off  
 2DS, and HVPS3  
 Pull all AC breakers

**After Flight:**

Copy M300 flight data onto PCMCIA card (/dos/c directory).  
 Remove M300 and Applanix PCMCIA card from airplane.

Command	Description	Command	Description
Alt F1	Hide Window	CTL F1	PCASP Pump
F1	Control Window	CTL F2	Pitot Selection
F2	Profiles	CTL F7	Map Zoom In
F3	Text Display	CTL F8	Map Zoom Out
F4	Strip Charts 1	CTL F9	Map Center
F5	Strip Charts 2	CTL F10	Clear Map
F6	Spectrum Plots	CTL F11	Previous Desktop
F7	Flight Track	CTL F12	Next Desktop
F8	Combine Spectrum	CTL ALT F1	Shutdown
F9	2D Images	CTL ALT F5	Quit
F10	Help Screen		
F11	Main Screen		
F12	M300 Logger		

KVM Switch #	Computer
2	HVPS-3
3	2D-S
4	Main M300
5	Secondary M300

Manually Update M300 time: quit M300 software and adjust time (su && date HHMM.SS && rtc –s hw && exit), restart m300 software  
 Set Time Code Generator Time Zone (UTC): in M300 terminal window type: ‘serread /dev/ser10 -8 –n –b 19200 && s+000’

## HVPS-3 and 2D-S Systems

### After Engine Start:

Wait for KVM switch to power on (Make sure blue light is vertical on KVM switch)

HVPS-3 Computer – On

2D-S Computer (2<sup>nd</sup> Rack Switch) - On

Wait for M300 computer to fully boot

### HVPS-3:

Time\_Diff\_UND.bat script (Compare with the M300). **Note difference.**

If  $t > 2$  sec, re-run Sync\_Time\_UND.bat script.

If Sync\_Time\_UND.bat is not working, set time manually.

Double click HVPS software icon on desktop (Spec2d.exe)

Turn HVPS power switch on face of computer to ON

In HVPS software, Click on red triangle 'Record' button. **Note file name.**

Check getting TAS from M300 computer. **Note TAS**

Check diode voltages ( $1.5 < \text{diode voltage} < 4.0$  V)

**Check mask settings** (current mask should be set to '1-FFFF' and the bar next to the mask name should be all black) Change mask name to '1-FFFF' and hit 'Modify' to change the mask.

### 2D-S:

Run Time\_Diff\_UND.bat script (Compare time with the M300). **Note difference.**

If  $t > 2$  sec, re-run Sync\_Time\_UND.bat script.

If Sync\_Time\_UND.bat is not working, set time manually.

Turn on 2D-S power, Click on red triangle 'Record' button. **Note file name.**

Check TAS is being sent from M300 computer. **Note TAS**

Check diode voltages ( $1.5 < \text{diode voltage} < 4.0$  V)

**Check mask settings** (current mask should be set to '1-FFFF' and the bar next to the mask name should be all black) Change mask name to '1-FFFF' and hit 'Modify' to change the mask.

Check Right Outboard switch is set to **Inverter 4** (2DS heaters)

### During Flight:

Check particle display to ensure there are particles with in cloud. Set mask differently if necessary.

### After Landing:

#### HVPS-3

Hit "Stop" button (Red circle w/ 'X' in middle)

Click "File", then "Exit"

Shut down probe and computer

#### 2D-S

Hit "Stop" button (Red circle w/ 'X' in middle)

Click "File", then "Exit"

Shut down probe and computer

Set 2<sup>nd</sup> Rack, 1<sup>st</sup> Switch (Bottom Powerstrip) to **0**

### After Flight:

Copy HVPS-3 and 2D-S data onto flash drive.

## Post-Flight Data Processing and Upload

### M300 Data System

Upload M300 \*.sea data file to UND server and run process\_all\_utc.  
Upload and process the 2DS and HVPS data

### OID (Gen 4-3 and 4-2)

Upload to UTC site, <https://m1.grdns.com/livelinek/livelinek?func=ll&objid=4524651>

User Name: delene@aero.und.edu

- \*.goo.gz file
- \*.serial.goodrich.raw
- \*.serial.goodrich\_lw.raw
- \*.serial.goodrich\_single.raw
- \*.serial.goodrich\_lw\_single.raw
- \*.2dc.spec.raw.gz
- \*.conc.cdp.1Hz.gz
- \*.serial.arinc.raw.gz
- \*.2DS\_H.conc.raw

All the above Citation files are provided in an UTC\_YYYYMMDD.tar file.