

Department of Electrical & Computer Engineering

Airborne Sampling/Sensing of Distal Volcanic Ash

Project Group Meeting #18

Minutes

**Minutes of the weekly meeting 19 August 2016**

**Present:**

Maan Alkaisi, Adrian Weller, Jamie Van de Laar, Jake Campbell, Parth Thakur, Mike Shanaher, Ryan Taylor

**1. Apologies:**

**-**

**2. Minutes from last meeting**

* (refer to Minutes, August 12 2016)

**3. Matters arising**

* No matters arising other than usual individual progress.

**4. Correspondence**

* All are CC’d in emails

**5. Progress Reports:**

* Ryan Taylor
  + Have cyclone capture system designs to test but need to get wind tunnel up and running. Have tried alternative power supplies but may need to resort to using LiPo batteries.
  + Reconsidering the use of carbon SEM tape for sampling but providing a heat source to make viable.
  + Will get some carbon SEM tape from within UC to test.
  + Need to consider heat source and how to transfer heat.
* Mike Shanaher
  + Continued to work on real-time graphing in Mission Planner. Found code to modify but it didn’t work.
  + Posted to developers forum to find the solution. Now have real-time graphing of ash data.
  + Now needs to work on program that gets data from the Raspberry Pi to the Pixhawk then merge that code with the sensor interface to complete the telemetry system.
* Jamie Van de Laar
  + Presented results from some sensor testing.
  + Suggested that the OPC-N2 seems to give the most consistent measurements.
  + Identified need to conduct more tests that focus on removing variables. Eg. Long time to remove larger particles, clean air tests for noise floor etc.
  + Now needs to talk to George (UC Geology) to measure flow rates.
* Jake Campbell
  + Investigated modelling heat and power consumption through the system.
  + On the order of 400W heat loss with only 200W generation at 10 degree internal temperature, -20 degree external temperature. Equilibrium occurs at 0 degree internal temperature.
  + Needs to refine model to include other things such a heat source location and internal air/plastic thermal insulators.
  + Will look into using software coupled with SolidWorks models to get the best estimation of heat loss and internal temperatures.
* Parth Thakur
  + Has a real-time graph of analog sensor data. This is useful for testing and debugging the sensor hardware.
  + Tested without ash and has stable “zero” reading.
  + Tested qualitatively by sprinkling some ash on the plates and successfully detected the presence of ash.
  + Focussing on getting the wind tunnel running so can test quantitatively.

6. **Other business:**

* Maan:
  + Identified need to focus on what can be presented at inspections as far as design, development and testing is concerned.
* Adrian:
  + Still no reply from CAA, possibly not relevant for the remainder of this project from our perspective. Test flights may be performed by DTA at a later date.
  + DTA do not require the wind tunnel motor programmer. We can keep it until the end of the project.

**Meeting ACTION LIST**

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| **ACTION** | **ASSIGNED TO** | **DUE DATE** |
| Complete presentation paragraph | All students | 26/08 |
| Confirm inspection location | All students | Inspection |
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**Next meeting date: 26th August 2016, 10.30am**