

Department of Electrical & Computer Engineering

Airborne Sampling/Sensing of Distal Volcanic Ash

Project Group Meeting #20

Minutes

**Minutes of the weekly meeting 2nd September 2016**

**Present:**

Adrian Weller, Ryan Taylor, Jake Campbell, Mike Shanaher and Parth Thakur

**1. Apologies:**

Maan Alkaisi and Jamie Van de Laar

**2. Minutes from last meeting**

* (refer to Minutes, August 26 2016)

**3. Matters arising**

* Orientation of the UAV when connected to the weather balloon. The team considered hanging the plane of its tail, head and place it horizontally with respect to the ground. Adrian personally preferred the UAV tethered to the nose or the tail, not horizontally. He explained that the horizontal position might not stay horizontal for long and would require control effort for horizontal stability.

**4. Correspondence**

* All are CC’d in emails

**5. Progress Reports:**

* Mike Shanaher
  + Borrowed a 9dB Yagi antenna from Kelvin Bransdale and tested it with the UAV’s anteena.
  + Looked at the radio spectrum, i.e. 915 to 928 Spectrum and 921 to 928 spectrum.
  + Researched rules and regulations relating to radio transmission power and found that 915 to 928 spectrum has a limit of 1W whereas 921 to 928 spectrum has a limit of 4W. Will compare the two in terms of RSSI and noise level to choose the best option.
  + Will do testing at an elevated area.
* Ryan Taylor
  + Testing done on ash capture at right concentration
  + Found ash in chamber. SEM analysis will be done to look at the particle size and concentration.
  + Will look into shrinking the module to better fit into the UAV and different
* Jake Campbell
  + Redesigned the OPC housing, looked at a ash inlet design which allows particles ranging from 1 to 100 microns.
  + The inlet has 360° inlet
  + 0-7ms-1 is the velocity range at which the inlet works best.
  + Can use a servo to close the inlet whenever required.
* Parth Thakur
  + Tested the Electrostatic sensor in the wind tunnel with and without ash. The data collected was analysed by placing a 1st 2nd and 3rd order trend lines. The sensors show a difference with and without ash.
  + Conduct more tests to get a concrete relations between ash and ADC values.

6. **Other business:**

**Meeting ACTION LIST**

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| **ACTION** | **ASSIGNED TO** | **DUE DATE** |
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**Next meeting date: 9th September 2016**