

July Status report
Maple Leaf Particle Detector

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1 Activities

Many preparations had to be made for upcoming integration to the HASP platform. Firstly, the team tested all five boards against each other and choose a flight board, based on high temperature, low temperature, and response time performance. Secondly, the team finished the remaining machining of the steel enclosure. Next, the mounting plate was drilled to mount the payload (daughter serial port attached, EDAC modified as specified in PSIP, drill holes as outlined in the PSIP). The payload was then shipped to CSBF on Monday July 25th.

The team carried out three weather balloon launches, whose primary purpose was to test the electronic components of the UA-HAB particle detector in conditions similar to HASP flight conditions. This provided additional temperature and pressure testing for the payload. One of the UA-HAB weather balloon launches was done in conjunction with the UofA ISSET Space Academy. The ISSET Space Academy is a week long hands on camp for students (campers) in grades 7-9 interested in space exploration. The UA-HAB team explained the procedures and equipment used to launch a weather balloon to the campers. Furthermore, on launch day the campers assisted the UA-HAB group in launching the weather balloon.

2 Design / Development Issues

During the testing, it was discovered that three capacitors' capacitance was much higher than needed, hence giving all of our boards a longer dead time than the team was comfortable with. This dead time was around 10s for the first two boards, who have lower value resistors than the final three boards due to digikey's supplies at the time of ordering those parts, and closer to 20s for the final three boards. On boards 3-5, the $3.3\mu\text{F}$ capacitors were replaced with 10nF, giving these boards a dead time of 0.1s, allowing quicker/faster determination of count rates in the Maple Leaf Detector. The same could be done for boards 1-2 (by replacing $2.2\mu\text{F}$ with 22nF for a similar response time), however board 3 was already chosen for flight, with board 4 as its backup (neither board showed difficulties, thermal or otherwise), and so due to the time constraint boards 1 & 2 were not altered.

3 Milestones

Milestone	Date of Completion
Successfully Launched 3 weather balloons to test payload	June 26th, July 5th, July 14th
All boards were thermally tested	July 11th
Identified poor dead time on all boards, fixed boards 3-5	July 11th
Chose Flight Board (See Activities)	July 22nd
Adapted Mounting Plate to our Payload (see Activities)	July 23rd
Encapsulated Geiger Tubes & Board 3, 4	July 23rd
Completed Machining of Enclosure	July 24th
Shipped Payload to CSBF	July 25th

Table 1: Completed (July) Milestones

Milestone	Date of Completion
Successfully integrate payload to HASP platform	August 1-5
Payload survives HASP testing procedure	August 1-5

Table 2: Upcoming (August) Milestones

4 Personnel

One of our team members committed to working for the Institute for Space Science, Exploration, and Technology (ISSET)'s space academy and was hence unavailable entirely for the first two weeks of the month, and unavailable sporadically leading up to and throughout the month. However, the UA-HAB team had everything under control. Nothing further to report.