August 29, 2014

To: Dr. T. Gregory Guzik - HASP Project Director
From: Seth Frick – Team Lead
RE: HASP Monthly Status Report

1. Activities

Attended HASP payload integration in Palestine, Texas. Some debugging was required to get the payload up and running at integration (see the Issues Encountered section for more details).

Monitored 2014 flight operations remotely. Verified from the downlink that the payload remained functional throughout the entire flight, and that the IMU and detector systems were producing good data. The GPS performance was marginal, however (see the Issues section).

Received the payload in the mail after flight operations. Visual inspection and testing has been done to confirm that all payload components are still intact and functional.

Began analyzing flight data.

2. Issues Encountered

A few issues were found and corrected at integration. First, the flight computer would stop running after a short period of time (about 30 minutes) during long-duration tests. This was due to the flight software mounting the incorrect memory space for data logging (a small partition of the boot memory was mounted instead of the SD card which contained adequate free space). Second, the flight software did not interface properly with the GPS receiver, which caused further issues when the software attempted to updated the flight computer's system clock from the GPS time. This was corrected by first checking if the time reported by the GPS was valid before updating the system clock. Finally, a minor bug in the software handling of photon event interrupts caused the kernel to crash on the flight computer, bricking the entire payload. This issue caused our payload to fail the thermal vacuum tests; however, the bug was found and corrected after the second test, and the payload functioned correctly for the entire duration of the flight.

Although the payload remained functional throughout the entire flight and the IMU and detector systems produced good data, the GPS performance was spotty. It is believed that this was due to the software interfacing with the receiver not being fully corrected, and instead only being modified enough to prevent further issues with the flight computer. Further data analysis is needed to verify this.

3. Milestones Achieved

Completed 2014 payload integration and flight certification.

Completed 2014 flight operations.

4. Current Student Team

Name	Gender	Ethnicity	Race	Student Status	Responsibilities
Seth Frick	M	Non-hispanic	Caucasian	Graduate 2nd year	Team lead, detector systems and photon energy measurement, GPS and IMU operation
Andrew Mahon	M	Non-hispanic	Caucasian	Undergraduate Senior	Detector systems, hardware configuration, and structure fabrication
Haley Rorvick	F	Non-hispanic	Caucasian	Undergraduate Senior	Structure design and fabrication, hardware configuration
Josiah DeLange	M	Non-hispanic	Caucasian	Undergraduate Senior	Flight computer and power systems, flight software
Alec Forsman	M	Non-hispanic	Caucasian	Undergraduate Senior	Flight computer and power systems, flight software
Seth Merrifield	M	Non-hispanic	Caucasian	Undergraduate Senior	Thermal monitoring and protection.
John Jackson	M	Non-hispanic	Caucasian	Undergraduate Senior	Detector energy measurement and testing