September 26, 2014

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

1. Activities

Continued analyzing flight data from the GPS, IMU, and detector systems.

Established contact with Dr. Kevin Hurley of UC Berkeley, who has offered to provide information on gamma-ray burst (GRB) events that took place during the HASP flight which may have been observable from the payload's location. This information would be obtained from various spacecraft equipped with gamma-ray detectors.

Began additional lab tests with the detectors for energy calibration. Contacts are being established in our physics department to inquire about testing with additional radioactive sources.

Presented the HAXDT research and flight data on a poster at the Great Midwestern Regional Space Grant Meeting in Des Moines, Iowa.

2. Issues Encountered

After further analysis of the GPS data from our payload, it appears that the performance issues may have been hardware related, rather than in the software interfacing with the flight computer. The GPS receiver may be flown in the next month or two on a weather balloon launch with another student team.

All of the timestamps generated for data logged by the flight computer were taken from the computer's system clock. Since the system clock was based on a cheap, unstable oscillator onboard the flight computer, the flight software was designed to correct the clock once per second with the reference time from the GPS. However, since the GPS receiver did not function throughout the entire flight, the timestamps on our data from most of the flight are inaccurate (relative to UTC). To correct for this, a filtered clock model will be developed which will take into account both the known time when the GPS was functional, and the ambient payload temperature (which is likely the greatest factor in the oscillator accuracy).

3. Milestones Achieved

None—flight data processing still in progress.

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