March 28, 2014

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

1. Activities

Made all necessary modifications and additions to the Lockheed Martin detector board to enable the second channel, installed new Amptek ICs on the second channel, and successfully tested the second detector channel.

Designed, built, and tested two-channel version of pulse height analysis circuitry to determine photon energy levels from two detectors simultaneously. The circuitry includes a logic network to distinguish between potentially coincident events and events occurring on each individual detector.

Completed fabrication of structural components needed for the second detector.

Ordered, received, and began development with new flight computer platform.

Worked on finalizing structural design, including mounting systems for camera, detectors, and all electrical hardware.

Began design and layout of power supply and electrical hardware interfacing circuitry.

2. Issues Encountered

Upon enabling the second channel of the detector board, we initially found that the channel exhibited an exceptional amount of noise. The problem was ultimately resolved by resizing a capacitor and cutting an unnecessary trace on the board.

The data from initial background runs with a single detector seemed suspect, likely due to light leakage and electrical shorts on the photodiode leads—both stemming from subpar detector assembly. The issue was corrected by reassembling the detector in a more robust configuration.

3. Milestones Achieved

Completed all work relating to the detector front board.

4. Current Student Team

Name	Gender	Ethnicity	Race	Student Status	Responsibilities
Seth Frick	M	Non-hispanic	Caucasian	Graduate 1st year	Team lead, detector systems and photon energy measurement, GPS and IMU operation
Andrew Mahon	M	Non-hispanic	Caucasian	Undergraduate Junior	Detector systems, hardware configuration, and structure fabrication
Haley Rorvick	F	Non-hispanic	Caucasian	Undergraduate Junior	Structure design and fabrication, hardware configuration
Josiah DeLange	M	Non-hispanic	Caucasian	Undergraduate Junior	Flight computer and power systems, flight software
Alec Forsman	M	Non-hispanic	Caucasian	Undergraduate Junior	Flight computer and power systems, flight software
Seth Merrifield	M	Non-hispanic	Caucasian	Undergraduate Junior	Thermal monitoring and protection.
John Jackson	M	Non-hispanic	Caucasian	Undergraduate Junior	Detector energy measurement and testing