OLite Progress Report

March 29, 2010

Team Activities

Progress by Subsystem

- Mechanical – The Mechanical subsystem has developed the flight version of the structural design and will soon begin final fabrication. The current design meets all mechanical requirements set forth by LSU. Electrical pass-throughs 'overhang' the keep-out areas of the interface plate, but are kept approximately 0.5 inches above the plate surface and are not at the same location as the interface plate connectors. Thermal testing is in progress, and a drop test is planned to qualitatively test the structure at 10-g minimum impacts.

- Power Subsystem – Regulation and distribution boards have been received and are undergoing preliminary testing. Preliminary results show that they are working as expected.

- CDH Subsystem – The software drivers for the magnetometer and camera has been rewritten for better reliability. The flight software and all the available sensors has completed the first stage of testing where it ran for 40 hours straight, taking 6000 pictures and logging all the data read from sensors. Work has started on a server program for both OLite and the associated ground station based on a custom transmission protocol tailored exclusively for burst wireless transmission.

- Comm Experiment – The Communication Experiment has completed nearly all brass board testing and component characterization of the individual circuits. The flight board schematic was completed and review prior to beginning the layout phase. The Board was then laid out and received it's own series of reviews before being sent out for manufacturing.
  Currently we are finalizing the integration with the CDH subsystem and defining the packets. The next step will be the population of the flight board in the coming week and verification testing to follow. The final steps will include the integration with CDH and Power subsystems and a successful environmental test.
  The antenna has been modeled and a prototype machined in-house. Currently the physical antenna properties are being evaluated. The final tasks remaining are the interface with the HASP gondola and the testing of the length of cable required.

- Power Experiment – Both the solar panel and experimentation boards have been ordered and are expected to arrive next week.

- Ground Station - Ground station subsystem is awaiting the arrival of parts ordered to begin testing and integration. Upon receiving the system components, testing and integration will begin with the communications system.

- GNC Experiment – GNC has been focusing on the final development and testing of our attitude determination algorithm. Since February 26th, we have completed the algorithm in Matlab, and are verifying that each function of the code works properly, then coverting it into C code. After the code has been debugged, GNC will be using test inputs to determine the amount of attitude error generated by the software.

GNC circuit design for OLite was completed, and all circuit boards for the GNC experiment on OLite were designed and ordered. Connectors between the main GNC board and the Sun Sensor boards were specified and ordered, and the sun sensor box prototype was completed. Communication with the magnetometer has been established, and required test data has been taken from it. We are currently testing the Sun Sensors while waiting for the boards to arrive.

Design/Development Issues

As a result of last month's meeting, it was decided that we would be hanging our antenna from below the gondola itself. Can we also get dimensions for the gondola itself and should we be submitting a wavier?

We will not need a waver for our top solar panel, as we have optimized the design to fit within the allocated space.

Milestones

All OLite experiment boards are on order and will be arriving within the week. The subsystem boards have gone through preliminary testing and are operating as expected.

Current Leaders

Project Management	Allen Kummer
Systems	Phil Weir
Mechanical	Corey Friedenberger
Power Subsystem	Matthew Anderson
Command and Data Handling Subsystem	
Hardware	Eric Root
Software	David Zhang
Guidance Navigation and Control Experiment	Alex Malone
Communications Experiment	
Radio	Steve Devore
Antenna	Scott Pfeiffer
Power Experiment	Matthew Anderson

*Full list of participating students available on request

Contact Information

Allen Kummer
OLite Project Manager
atk50250@psu.edu

Dr. Sven Bilén
SSPL Director and Faculty Advisor
sbilen@engr.psu.edu