

HASP 2010  
University of Maryland  
March Status Update  
3/26/2010

During March, the UMD team has been mainly concerned with redesigning the mechanical release mechanism, setting up testing for data transfer, and testing hardware and software pertaining to the mechanical release system. Payload components have also begun to arrive. We have received our PC104 CPU and some materials for the release mechanism.

#### 1. Activities of Team Members

A test network has now been set up to test the data transfer between our payload and attached science payloads. We have a board set up that is similar in speed to the PC104 board that will be used on the flight. This is so software development can continue on the actual hardware while not affecting the ability of our team and other teams to test transfer software. The file transfer has been tested on our internal network via a preliminary automated shell script. The software and electronics team has also written a summary of the file transfer and purpose pertaining to the science payloads, and written instructions for other schools to set up their payload and test the file transfer to our prototype over internet. We hope to see if any schools are interested and willing to try testing at the upcoming telecom. Current work consists of expanding the functionality of the test script.

The software and mechanical team have also received servos and some building materials and have tested the chip, software, and servo that will be used for the release mechanism. Current work includes integrating the servo, code, and microprocessor into a test rig.

The mechanical team has also been working on a redesign of the release mechanism due to manufacturing issues detailed in the next section. The first of two new designs being machined in the next few days consists of a notched tube, dowel with pin, and spring system. The idea of the system is to compress the spring when the dowel is pushed in and the pin goes into the 90 degree notch. When the servo rotates the dowel, it moves in the notch and when it reaches the vertical segment, the spring will actively push the payload down as well as being pulled down by gravity. The second new design is an inversion of the original design. A tube with sloped spiral may be easier to machine than a dowel.

#### 2. Issues Encountered During Payload Design

As mentioned above, there have been manufacturing issues with the dowel piece in the original mechanical release mechanism. Due to the current state of repair of a few machines, the piece cannot be made on campus. While our budget includes the manufacturing of the dowel piece by an outside company, due to the fact that we will be doing a lot of testing, it was decided that it was not worth the time and high expense of having the piece made elsewhere. Therefore, the mechanical

release mechanism has been redesigned as above and two new methods will be tested in the next week.

### 3. Milestones Achieved

The UMD team has:

- Completed preliminary testing of some components for the release mechanism
- Completed preliminary testing of data transfer
- Completed the set up required to test data transfer with other universities

April Milestone Goals:

- Complete testing of both new release mechanism designs
- Set up network and transfer software on PC104 board
- Complete design for onboard HAM radio transmitter
- Continue working on thermal and electronics design

### 4. Current Team Members and Leaders

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