HASP 2010
University of Maryland
May Status Update
5/28/2010

The focus of the UMD team for May has been as much fabrication and testing as possible before our first test flight. The team has made progress in population and testing of PCB's and testing of the first flight mechanical detach mechanism.

1. Activities of Team Members

The electronics team has designed, ordered, and populated the first revision of the detachment mechanism, or servo driver, PCB. The software team has also loaded the boot loader and first revision of flight software on to the servo board for testing and the first flight. Testing and debugging is ongoing for an Ethernet dropout issue with the flight CPU.

The software team has also set up an external data transfer test network for the CU team to be able to test remotely with our CPU substitute board and the flight board. Testing and modification on the final flight data transfer software should begin shortly. Testing of the communications board software is also in development and a new PCB to test the APRS radio is being populated.

The mechanical and structures team has made huge progress on the first flight module. The design has again been modified slightly towards a more secure design. The team has completed bench testing with DB9 connectors. The flight DB15 high density connectors arrived yesterday and testing of the mechanism with the new connectors is in progress. The mechanical team has also been continuing work on the first test rig, which includes a tethered in-flight drop and rigidly attached video recorder payload.

As mentioned, the team is working towards the first capsule test flight. We have tentatively scheduled this flight for June 2-6, weather dependant. The team has been focused on preparing the elements of that flight, such as camera modules, tracking modules, method of tethering the dropped UMD payload to our test duplicate HASP plate, and method of attaching camera payload to the UMD/HASP plate.

2. Issues Encountered During Design

The mechanical detachment has continued to be refined, particularly with the addition of an experienced machinist to the team. Our current mechanical issue is the force required to separate the high density DB15 connectors. We have been testing with DB9's and the detachment has been successful. However, from recent testing, a change is needed in order to generate the force required to separate the DB15s with the current draw requirements. We are looking into a servo change with more gearing or a board redesign towards friction based connectors that may be easier to separate, such as some types of hypertronics connectors.

As mentioned above, there are still some debugging issues left to determine the cause of a problem with the Ethernet on the flight board. The UMD team is also continuing to look at solutions to the problem of power requirements needed for the flight. With a more significant portion of the electronics finished and a test flight coming up, we have a much better idea of what we're looking at. To get an idea of outside thermal effects on our enclosure, we will be flying HOBO data loggers on our first flight to monitor box panel and internal temperature.

3. <u>Milestones Achieved</u>

-Bench testing of first flight prototype
-Population, programming, and testing of detach driver PCB
-Design of first flight rig
-Completion of external data transfer network for testing

4. <u>Current Team Members and Leaders</u>

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