

Wallops/Virginia Tech FY08 Student Balloon Experiment

Payload Specification and Integration Procedures

Suitcase Name: Virginia Tech MIL

Suitcase S/N 04

Flight: HASP Flight, Ft. Sumner, N.M.
September, 2008

Payload Specification:

There is one University student experiment—autonomous power and data collection.

Suitcase Contains: 16 AA commercial Eveready lithium batteries (2), Data logger, Thales DG14 GPS receiver, BEI MotionPak II 3-axis Inertial Measurement Unit (IMU), and Science Grade Vector Field Magnetometer Electronics Box.

Outside Suitcase: Fixed mechanical boom (5 ft box beam with 2 in. cross section and ¼ in. thickness), Science Grade Vector Field Magnetometer Sensor Unit, GPS antenna, camera housing, Canon A520 cameras (5).

Suitcase Orientation: Horizontal with handle to the side

Payload Orientation and Location: The MIL boom is restricted in its attachment to the gondola. The boom specifications are as follows:

- Boom must be mounted in three locations.
- Bottom edge of boom must be secured no more than 12 inches from the bottom of the gondola.
- Camera housing must be at least 6 inches from the bottom of the gondola.
- Boom must be oriented to be 90° from vertical plane of gondola.
- Three feet of the boom's length must hang freely from the edge of the gondola.

Integration Procedures

Questions - call Jessica Thompson work: 7578241080 cell: 4104302654 or Ben Cervantes work: 7578241526

1. Receipt and Unpacking

A. Unpack suitcase

Apparent damage to shipping carton/box? No _____ Yes _____ (if yes explain) _____

B. Visual Inspection

Apparent damage to suitcase No _____ Yes _____ (if yes explain) _____

C. Record condition of LED lights

Left Side:

MAG Power LED RED	ON _____	OFF _____
IMU Power LED GREEN	ON _____	OFF _____
GPS Power LED RED	ON _____	OFF _____
DATA Power LED GREEN	ON _____	OFF _____
CAMERA Power LED RED	ON _____	OFF _____

Normal Condition: All Left side lights should be off.

If any Power LED is on, switch silver toggle down (off).

Right Side:

MAG Data LED RED	ON _____	OFF _____
IMU Data LED GREEN	ON _____	OFF _____
GPS Data LED RED	ON _____	OFF _____
CAMERA Data LED GREEN	ON _____	OFF _____

Normal condition: All Right side lights should be off.



Expected Receipt Condition

Notes:

1. Three (3) momentary push button switches and one (1) toggle switch have temporary protective caps Capton taped in place. Once these switches are properly activated, data logging commences and must be reset.

2. Installation of System on Gondola

A. Mount the suitcase horizontally with handle to the side.

B. Mount boom to camera housing with two bolts connecting boom to corresponding channel.

C. Mechanical Boom and camera housing un-mounted: mount at edge of gondola frame looking outward on any available side with orientation and location specifications detailed above.

Does the location chosen interfere with HASP payload structure?

YES _____ NO _____

Does the location chosen interfere with the CosmoCam experiment?

YES _____ NO _____

Does the location chosen interfere with ground equipment needed for launch?

YES _____ NO _____

If NO to all of the above:

Mount the mechanical boom and camera housing using the hard mount bracket, bolts and washers.

YES _____ NO _____

Does the mechanical boom hang three feet from the edge of the gondola?

YES _____ NO _____

Is the bottom edge of the mechanical boom secured at least 12 inches from the bottom of the gondola?

YES _____ NO _____

Is the bottom surface of the camera housing secured at least 6 inches from the bottom of the gondola?

YES _____ NO _____

Is the boom mounted in three locations to the gondola?

YES _____ NO _____

Run the sensor cables from the suitcase down the boom towards the camera housing. Secure the magnetometer sensor unit and GPS antenna to the end of the boom with the hard mount bracket, bolts and washers.

YES _____ NO _____

Secure the wiring along the boom with tie wraps or zip ties.

YES _____ NO _____

D. Payload testing: Determine the magnetic signature of the HASP payload and ensure cameras are working properly.

Turn on the system via the silver toggle switch.

YES _____ NO _____

Verify that the system is powered.

Left Side:

MAG Power LED RED ON _____ OFF _____

IMU Power LED GREEN ON _____ OFF _____

GPS Power LED RED ON _____ OFF _____

DATA Power LED GREEN ON _____ OFF _____

CAMERA Power LED RED ON _____ OFF _____

Verify that the sensors are outputting data.

Right Side:

MAG Data LED RED ON _____ OFF _____

IMU Data LED GREEN ON _____ OFF _____

GPS Data LED RED ON _____ OFF _____

CAMERA Data LED GREEN ON _____ OFF _____

Continue to log data for 30 minutes.

YES _____ NO _____

Download data to a memory stick via Port A.

YES _____ NO _____

Shut down system by switching silver toggle OFF.

YES _____ NO _____

Verify that the system is OFF.

Left Side:

MAG Power LED RED ON _____ OFF _____

IMU Power LED GREEN ON _____ OFF _____

GPS Power LED RED ON _____ OFF _____

DATA Power LED GREEN ON _____ OFF _____

CAMERA Power LED RED ON _____ OFF _____

Verify that the sensors are OFF.

Right Side:

MAG Data LED RED ON _____ OFF _____

IMU Data LED GREEN ON _____ OFF _____

GPS Data LED RED ON _____ OFF _____
CAMERA Data LED GREEN ON _____ OFF _____

E. Take digital pictures of installation. Email **photos and magnetic signature data** to Jessica Thompson (Jessica.A.Thompson@nasa.gov) and Kevin Shinpaugh (kashin@vt.edu).

Below is the current HASP Balloon Flight Schedule:

May 1: Complete HASP refurbishment.

May 1 – June 6: HASP system integration and testing

June 9 – June 16: Packing and Shipping to CSBF at Palestine, Texas.

June 22 – June 28: Student payload integration at CSBF.

July 30 - Aug 3: Complete HASP integration / testing and pack for shipping to Ft. Sumner.

Aug 27: HASP crew arrives at Ft. Sumner

Aug 21 – Aug 29: HASP flight preparation.

Aug 29: HASP flight ready.

Sept 1: Target HASP launch date and flight operations.

Sept 2 – Sept 7: Recovery, packing, and return shipping

Here is a rough cut at our schedule in order to meet the HASP schedule:

March 24 – March 30:

- Machining camera housing
- Finalizing plan for thermal control
- Completing purchases
- Wiring cameras

March 31 – April 6:

- Coding software
- Testing structural components
- Completing microelectronic wiring of cameras
- Starting to build wiring harness

April 7 – April 13:

- Testing software
- Completing wiring harness
- Integrating entire system
- Performing environmental testing

April 14 – April 20:

- Analyzing environmental testing results
- Updating system with appropriate thermal design changes

- Repeating environmental testing (if needed)
- Finalizing software design

April 21 – April 26:

- Finalizing system integration
- Finalizing all testing, including full system testing
- Finalizing budgets
- Delivering to Wallops Flight Facility for Mission Readiness Review (April 26)

*** See Table 2 – anticipated HASP schedule in HASP CFP 2007 document for further scheduling after April 26.