

HASP Integration Testing Agenda

The goal of HASP integration at CSBF is to ensure that student payloads can successfully mount on the HASP frame, operate within the constraints of the HASP guidelines, verify that payload communications operate as intended, and demonstrate that the payload can function properly in the environmental conditions experienced during a flight. This is usually a very busy and intense week.

At the end of integration testing for your payload, the team must complete the Payload Integration Certification (PIC) paperwork. Without a fully completed PIC document, a flight team may not be allowed to fly on HASP.

Monday (Day 1 - Integration)

Teams are required to check in at the welcome center. Anyone coming onto CSBF property must check in and be badged. You must also confirm that everyone on the team has watched the safety briefing. If not, you will stay at the safety center until you complete the video. Once teams are cleared to enter the base, they can proceed to the T&E building to begin preparing their payload for integration.

8:00 AM: Visitor Center open for badging

1:00 PM – 5:00 PM: Pre-integration of payloads begins. Teams must complete a pre-checkout before being given clearance to move to the integration onto the HASP stage.

Integration of Payloads onto HASP begins. Teams will be called in the order they complete the pre-integration checkout.

Tuesday (Day 2 - Integration)

9:00 AM – 5:00 PM: Pre-integration of payloads continues.

9:00 AM – 5:00 PM: Integration of cleared payloads onto HASP continues

5:00 PM: Integration of payload is complete. No additional payloads will be cleared for testing for Thermal Vac Test #1

5:00 PM – 6:00 PM: HASP prepared for Thermal Vac Test

Wednesday (Day 3 - Testing)

7:30 AM – 8:00 AM: Arrive at base to prepare for loading HASP into the Thermal Chamber

8:00 AM – 8:15 AM: CSBF Rigging arrives to forklift HASP into the Thermal Vacuum chamber. **All teams must remain well clear of the TV Chamber during forklift operations.**

8:15 AM – 8:30 AM: Finish any last-minute wiring through the chamber

8:30 AM – 8:45 AM: HASP turned on. All Payloads powered on.

All Teams should be logged into the HASP Control sheet

Teams should be on the HASP website, ready to download and verify flight data when it is transferred to the site.

8:45 AM – 9:00 AM: Thermal Vacuum doors close.

9:00 AM – 3:30 PM: Commence TV Test. **During the test, teams are expected to actively monitor, downlink data, test commands, and prove the proper function of payloads. Teams should be prepared to show the HASP management team plots, data products, and logs to that end.** An approximate timeline of the test is as follows:

Pump down to ~5mbar (~1 Hour)

Backfill to 800 mbar with dry nitrogen (~ 15 Minutes)

Begin cooling to -50 °C once the backfill is complete. (~ 1 Hour)

Pump down to 10mbar when cooling is completed (~20 Minutes)

HASP sits at float altitude and -50 °C (~ 30 Minutes)

Backfill to 800 mbar with dry nitrogen begins (~15 Minutes)

Begin heating to 50C once backfill is complete (~1 Hour)

Start pump down to 10 mbar when heat soak is completed (~20 Minutes)

HASP sits at float altitude and 50 °C (~ 30 Minutes)

Test Complete

During test pre-integration checks for the remaining teams will continue.

3:30 PM – 3:45 PM: Chamber doors are opened

3:45 PM – 4:00 PM: HASP is lifted out of the chamber

4:00 PM – 5:00 PM: Payloads are removed from HASP and returned to teams

Teams that perform correctly during the first TV Test may choose to stay mounted to HASP to participate in the 2nd Thermal Vac test, or may be dismantled and packed for shipment at that time.

Teams that experience a failure during the TV Test are expected to take corrective actions. After doing so they will perform pre-integration and integration checks for the 2nd TV Test.

Thursday (Day 4 - Integration)

9:00 AM – 5:00 PM: Pre-integration of payloads continues.

Integration of cleared payloads onto HASP continues

5:00 PM: Integration of payload is complete. No additional payloads will be cleared for testing for Thermal Vac Test #2

5:00 PM – 6:00 PM: HASP prepared for Thermal Vac Test

Friday (Day 5 - Testing)

7:30 AM – 8:00 AM: Arrive at base to prepare for loading HASP into the Thermal Chamber

8:00 AM – 8:15 AM: CSBF Rigging arrives to forklift HASP into the Thermal Vacuum chamber. **All teams must remain well clear of the TV Chamber during forklift operations.**

8:15 AM – 8:30 AM: Finish any last-minute wiring through the chamber

8:30 AM – 8:45 AM: HASP turned on. All Payloads powered on.

All Teams should be logged into the HASP Control sheet

Teams should be on the HASP website, ready to download and verify flight data when it is transferred to the site.

8:45 AM – 9:00 AM: Thermal Vacuum doors close.

9:00 AM – 3:30 PM: Commence TV Test. **During the test, teams are expected to actively monitor, downlink data, test commands, and prove the proper function of payloads. Teams should be prepared to show the HASP management team plots, data products, and logs to that end.** An approximate timeline of the test is as follows:

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Pump down to 10mbar when cooling is completed (~20 Minutes)

HASP sits at float altitude and -50 °C (~ 30 Minutes)

Backfill to 800 mbar with dry nitrogen begins (~15 Minutes)

Begin heating to 50C once backfill is complete (~1 Hour)

Start pump down to 10 mbar when heat soak is completed (~20 Minutes)

HASP sits at float altitude and 50 °C (~ 30 Minutes)

Test Complete

3:30 PM – 3:45 PM: Chamber doors are opened

3:45 PM – 4:00 PM: HASP is lifted out of the chamber

4:00 PM – 5:00 PM: Payloads are removed from HASP and returned to teams