

High Altitude Student Platform



Call for Payloads (CFP) 2027

Issued August 10, 2026, by

HASP Management Team
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Department of Physics & Astronomy
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and

Balloon Program Office
NASA Wallops Flight Facility
Wallops Island, VA

Q&A Teleconference: September 25, 2026

Notice of Intent: October 9, 2026

Application Development Teleconference: October 16, 2026

Application Due: November 8, 2026



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I. Introduction

The High-Altitude Student Platform (HASP) program offers payload seats for student-developed experiments on a small volume, zero pressure balloon flight reaching altitudes of ~120,000 feet (~36km) for around 10 hours. This flight opportunity fills the gap between small latex-sounding balloon flights and Earth-orbiting satellites. Seats on the HASP platform include in-flight power, downlink telemetry, command uplink, and remote monitoring for payloads in flight. The HASP platform can seat up to twenty-four payloads in two different classes: sixteen (16) “Small” and eight (8) “Large” payload seats. To date, HASP has been launched 19 times and will have its 20th Flight in September 2026. The float duration and dates of previous flights can be seen in Table 1.

HASP is supported by the Astrophysics Division of the NASA Science Mission Directorate, the NASA Balloon Program Office, Wallops Flight Facility, and the Louisiana Space Grant Consortium located at Louisiana State University.

This Call for Payloads (CFP), jointly issued by the HASP Management team and the NASA Balloon Program Office (BPO), solicits student groups to apply for a seat on the 2027 HASP flight. To apply, student groups will need to develop a proposal describing their payload, including science justification, principle of operation, team structure and management, as well as full payload specifications of weight, size, power consumption, mechanical interface, data requirements, orientation preference, and initial design drawings. This application is solely for a seat on the HASP platform. The HASP program does not provide any financial support for student teams.

- **A Notice of Intent (NOI) is required and is due no later than October 9, 2026.**
- **Applications must be submitted on or before November 8, 2026.**
- **Notification of selection will occur on or near December 11, 2026.**

Two pre-application teleconferences will be held to answer questions and assist teams in developing their proposals.

1. **September 25, 2026:** General questions about HASP and the application process.
2. **October 16, 2026:** Specific questions related to application development.

These meetings are meant to be aids for interested teams; attendance is not a requirement for the application. Any questions about the application should be directed to hasp@lsu.edu.

Table 1 HASP Flight Characteristics 2006 to 2025

Note: Times listed are at float altitude and non-inclusive of ascent and descent

Year	Launch Date	Float Duration (hours)
2006	September 4, 2006	15.0
2007	September 2, 2007	16.5
2008	September 15, 2008	31.8
2009	September 11, 2009	12.0
2010	August 31, 2011	8.0
2011	September 8, 2011	15.7
2012	September 1, 2012	8.8
2013	September 2, 2013	10.5
2014	August 9, 2014	5.6
2015	September 7, 2015	23.1
2016	September 1, 2016	15.2
2017	September 4, 2017	10.6
2018	September 4, 2018	9.0
2019	September 5, 2019	7.6
2021	September 14, 2021	14.2
2022	September 8, 2022	18.0
2023	September 7, 2023	10.1
2024	September 4, 2024	9.1
2025	September 4, 2025	8.3
	Average Float Duration	13.1



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II. The HASP Website

The central repository for all HASP materials is the HASP website found at <https://laspace.lsu.edu/hasp/>. This website contains details about the overall program, news announcements, a calendar of events, and document templates. The website also provides access to real-time monitoring of the HASP vehicle, student payload data, and in-flight video.

Application development teams should make use of the HASP Proposal Template and HASP Payload interface manual found at <https://laspace.lsu.edu/hasp/hasp-participant-information/>.

Failure to follow the template or failure to complete sections may be grounds for rejecting proposals. Information or designs in the application may be preliminary or changed after application with proper notice and review by HASP Management.

III. Application Preparation and Submission

The application package includes a standard HASP application cover sheet, a technical and scientific payload description, team structure and management plans, payload-to-HASP interface specifications, preliminary drawings, and hazard assessment. It can be submitted in MS Word or PDF format.

The **payload description** section of the application should include a two- to three-page summary of the scientific and/or engineering problem your payload will address, the specific scientific/engineering objectives, a high-level overview of your payload systems, plus the principle of operation of the payload.

The application should also include a description of **how your team is structured and managed**. This section should include an organizational chart and participant list identifying the Faculty Advisor and Student lead by name at a minimum.

The **payload specifications** section should describe what HASP resources you will use and how your payload will fit within the HASP constraints. This should include preliminary descriptions of mechanical, data, and power interfaces, including power and mass estimates. A discussion of these constraints for large and small payloads is included in Section X. Student Payload Interface but teams should review the "HASP Student Interface Manual" for a full interface description. You **may request** resources that somewhat exceed those specified for your payload class or those not mentioned in this document. See Section XI. Special Requests section of this document for more information. A particular payload seat request may be justified by payload goals. The position of the upper payload seats is shown in Figure 1.

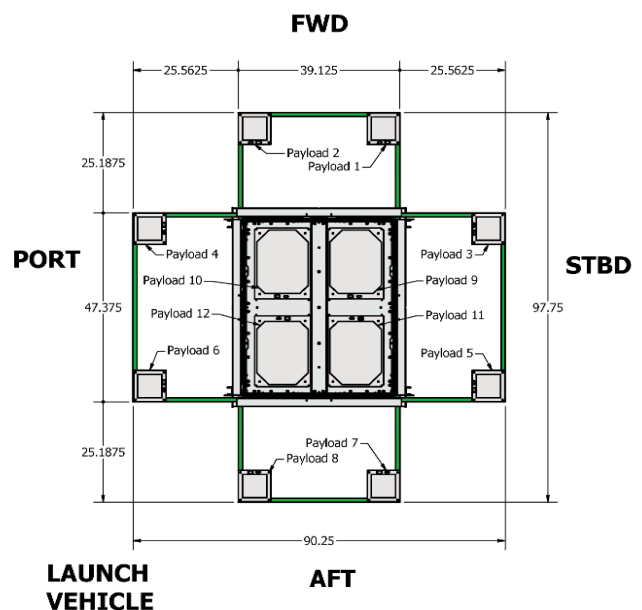


Figure 1: Payload positions as viewed from above. Payload seats 13-24 are located below the displayed seats. Dimensions are given in inches.



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Preliminary drawings and schematics will significantly strengthen the application. Preliminary mechanical structural drawings and power distribution schematics are particularly desirable.

Finally, some payload components, such as RF or High Voltage, may pose a hazard to personnel or equipment. Therefore, they may require additional documentation or be banned from HASP payloads. The list of these hazards is shown in Table 3 Hazard List. If your payload includes one of these hazard items, it must be documented in your proposal. Each permitted hazard will require additional information per the tables in Appendix B: Required Hazard Documentation. Preliminary or TBD values are acceptable for the application, but final values must be submitted in the team's preliminary PSIP due March 26, 2027. Adding a hazard following acceptance of your application for HASP will disqualify your payload from flight. Removing hazards is permitted at all times.

Once completed, your application should be submitted via the online submission form as a fully searchable PDF or MS Word document to the web address listed in Section V. Submission of Application by November 8, 2026. As the applications are reviewed, priority will be given to those payloads that are clearly student-designed, built, managed, and operated. The application will be reviewed for completeness, consistency, scientific or technical justification, and ability to fit within the HASP constraints. Seat awards will be announced on or around December 11, 2026.

IV. Q&A Teleconferences

A special virtual meeting (via Microsoft Teams) will be held on **September 25, 2026, at 10:00 am (Central Time)** for groups planning to submit a HASP application. During the meeting, we will briefly describe the HASP program and what we expect to see in all applications and address any questions you may have. Groups that have previously flown on HASP, as well as teams from new organizations should plan on attending this Microsoft Teams meeting. A second virtual meeting will be held on **October 16, 2026, at 10:00 am (Central Time)** to discuss any questions potential applicants may have while creating their proposal.

To participate in either or both teleconferences, **please register at https://lsu.formstack.com/forms/hasp_qa_registration**. Once registered, all the appropriate Teams Meeting information will be emailed to the participants.

V. Submission of Application

Your completed application should be **submitted via the online submission form - https://lsu.formstack.com/forms/hasp_application no later than 11:59 pm on November 8, 2026 (Central Time)**. Applications must follow the HASP Application Template and be saved as a fully searchable PDF file (preferred) or a Microsoft Word document. Your application will not be accepted in any other format. The faculty advisor and student lead will receive an acknowledgment that your application was received.

VI. Financial Support

HASP payload teams must provide their own financial support for payload development, testing, integration in Palestine, Texas, flight operations in Fort Sumner, New Mexico, and subsequent data analysis. Such financial support, for example, is needed for but is not limited



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to, the purchase of supplies, sensors, lab equipment, student salaries, test facility fees, faculty advisor support, travel expenses, special services, shipping, structural materials, electronic components, and other similar items. It is **highly** recommended that a team seek/develop the financial resources needed while completing this application. We strongly recommend U.S. teams reach out to their local [Space Grant organization](#) to seek support. Finally, in all likelihood, the team faculty advisor will need to manage the financial and operational support for the team at their home institution, and a commitment by the faculty advisor to provide this management will be critical to a successful project.

VII. Private Company Support for a HASP Student Team

Private companies cannot use HASP or provide support for a HASP student team to claim improvement on their product technical readiness level or similar commercial gain. If a private company sponsors a student team, the team application must clarify what support is provided by the private company and what effort is planned to be accomplished by the students. A letter of support from the private company specifying the company's contributions to the team and committing the company not to claim commercial gain as a result of the HASP flight must be included in the application. Note that a company logo can be affixed to the exterior of a student payload in acknowledgment of the company's support.

VIII. Application Timeline

Q & A Teleconference:	September 25, 2026
Notice of Intent:	October 9, 2026
Notice of Intent Link:	https://lsu.formstack.com/forms/hasp_notice_of_intent
Application Development Teleconference:	October 16, 2026
Application due date:	November 8, 2026
Application Submission Link:	https://lsu.formstack.com/forms/hasp_application
Application contents:	See Sect. III. Application Preparation and Submission

IX. HASP Platform Description

Figure 2 shows the arrangement payloads in the CSBF TV chamber on HASP before the 2025 Thermal Vacuum Test. The four large payload positions are on the top of the central structure, while the eight small payloads are mounted on fiberglass outrigger booms. For the updated version of HASP, there are an additional eight small payload seats on booms positioned below the first eight as shown in Figure 3. Small payloads have the capability of pointing instruments downward for atmospheric or earth science goals. For flight, HASP is attached to the

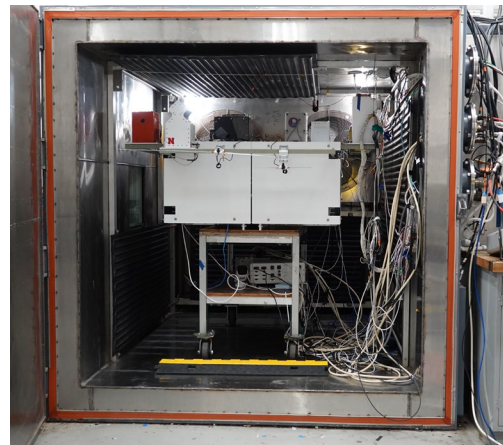


Figure 2: The HASP Payload in the CSBF Bemco Chamber in Palestine, TX in July of 2025.



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Columbia Scientific Balloon Facility (CSBF) Frame (see Figure 4), which supports the CSBF vehicle control equipment.

The fiberglass booms that support the small payloads extend about 55 cm from the aluminum frame. These braces minimize interference between the metal frame and any student payloads that may exercise data transmitters during flight and maximize the unobstructed payload field of view (FOV). Mounting plates for four large student payloads are on the top of the HASP aluminum frame structure. If more than four large payload seats are awarded by HASP management, the additional payloads will be mounted below the HASP frame on the CSBF Frame. Priority for upper seats will be given to teams with science goals requiring an unobstructed view of the sky (e.g., solar or astronomical observation). Specific details about the payload mounting plates and the student payload interface are provided in the next section.

HASP provides the means for receiving and processing uplinked commands, acquiring and archiving the payload data, downlinking status information, and controlling the student payloads via an RS-232 serial interface. The downlinked data is made available through the HASP website during a flight. All data is automatically archived on the HASP system, so in the event of a loss of telemetry, payload data will be available post-recovery.

Student payload commanding is available during flight via the serial interface. These commands will take the format of a predefined 7-byte packet transmitted to the payload with the 4th and 5th bytes containing the payload command (chosen as desired by the team). Before the flight, the student team will provide HASP operations with a listing of all commands. During flight, teams will request commands via a web interface; upon request, the command will be uplinked by the HASP Ground Station Operator. A single active-low, open-collector digital input (referred to as a “Discrete”) may be provided on the HASP power connector. It is recommended for teams to use this to trigger high-priority, software-independent changes such as switching relays, disabling transmitters, opening shutters, etc.

The primary **power source** for HASP will be ~28V battery packs, with student payloads sharing a battery bank with 200 Ahr total capacity. Previous HASP teams, **please take note, this is a new battery system being used, and the voltage range is different.** The new battery packs are a nominal 28V, but teams should design their power system to accommodate a bus voltage of 25-30V to account for variations in battery voltage due to temperature and load changes.

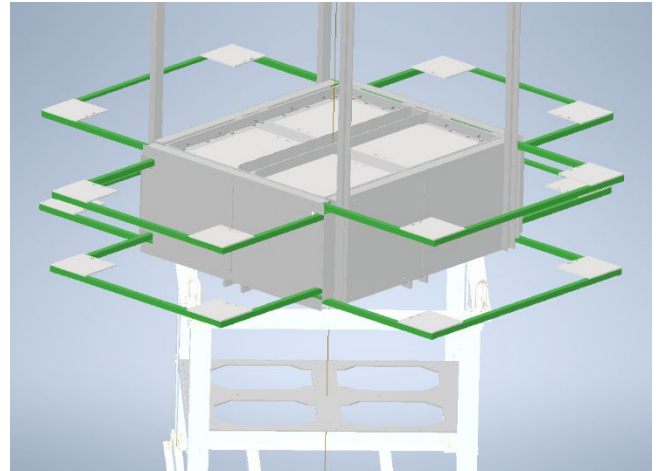


Figure 3: Location of payload seats in relation to the HASP frame. The small payloads mount positions are the white plates mounted at the end of green fiberglass booms, with 4 large payload seats on top of the HASP frame. The remaining 4 large payloads are mounted to on plate on the CSBF frame below HASP.

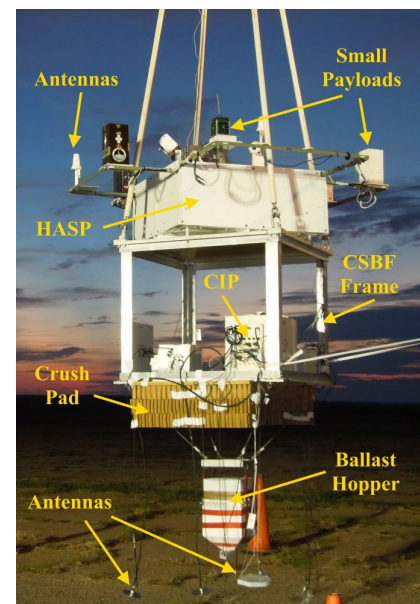


Figure 4: The HASP flight configuration



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HASP is flown from the Continental United States (CONUS) launch site in Ft. Sumner, New Mexico, once a year in September. HASP is launched in the morning (i.e., dawn) when surface winds are calm. After launch, the ascent to the float altitude (~120,000 feet) will take roughly 2 hours.

The time at float will then directly depend upon the strength and direction of the high-altitude winds. The target minimum float duration for HASP is 10 hours, but actual flight conditions vary significantly depending on upper-level wind conditions. The duration of previous flights are found in Table 1.

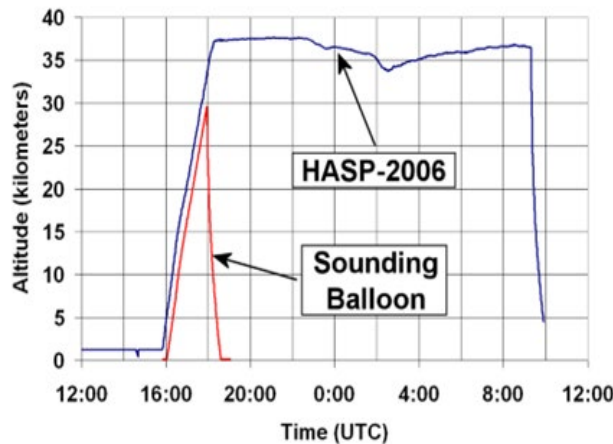


Figure 5: The HASP Flight Profile vs a typical sounds balloon flight

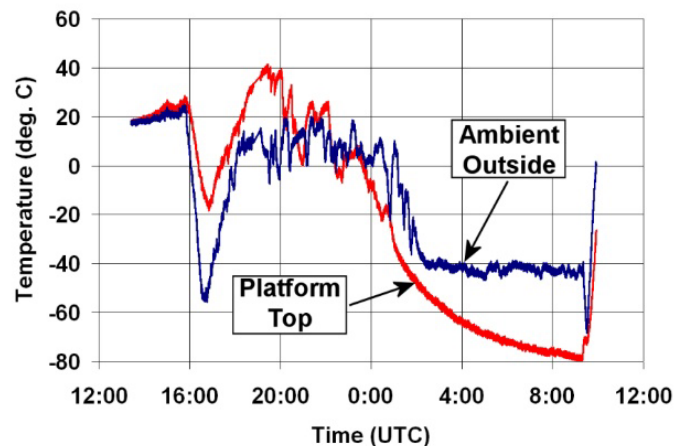


Figure 6: Temperatures at the position of Large Payload (Blue) and small payload (2006) during the 2006 HASP flight. Launch occurred at ~10:00 am local time and landed at ~9:00 am the following day.

The flight profile (altitude vs. time) for the 2006 HASP flight is shown in Figure (blue curve) compared with the profile for a typical latex, sounding balloon flight (shown in red). Temperatures encountered during the HASP 2006 flight are shown in Figure 6. The red curve is representative of the temperatures experienced by a large payload, and the blue curve shows temperatures experienced by a small payload. The low temperature around 17:00 UTC is due to passage through the tropopause during ascent, the temperature will warm once float altitude is reached. After sunset, at about 2:00 UTC in the plot, temperatures drop to very low values again. At float altitudes, the ambient pressure is 5 – 10 millibars. Payloads must be designed to survive and operate under these conditions. UTC time-stamped GPS position and altitude information will also be available postflight. Student teams can download these files from the HASP website. HASP will fly at least 1 video camera system that provides real-time views of the student payloads, the balloon, and the Earth during launch, flight, and termination (see Figure 7). Teams are encouraged to use visual



Figure 7: Live video camera view during the HASP 2019 flight



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indicators such as LEDs, movement, etc., and monitor the video livestream to verify payload operation.

After termination descent takes approximately 1 hour. Once on the ground the recovery team typically returns student payloads to the launch site within 1 to 2 days but recoveries requiring helicopter operations several weeks later have occurred.

X. Student Payload Interfaces

Specifications for the mechanical, electrical, and data interfaces between HASP and a student payload are provided in the latest version of the document “HASP Student Payload Interface Manual,” which can be obtained from the Participant Information page of the HASP website (<https://laspace.lsu.edu/hasp/hasp-participant-information/>).

Note: Starting with the 2025 HASP Flight, the HASP interfaces have been updated, and the EDAC pinout and payload plate dimensions are not the same as in previous years.

Note that the HASP Interface Manual is updated periodically. In the event of conflicting information between this “Call for Payloads” and the “Interface Manual,” the most recent document should be used.

It is highly recommended that you download and review this document before developing your payload application. A summary of the payload constraints and interface is provided in Table 2 below.

Mechanical: HASP supports two classes of student payloads. **Small** payloads have a maximum weight of 3 kg and are located on fiberglass booms. **Large** payloads have a maximum weight up to 20 kg and are located either on the top of the HASP aluminum frame or on the CSBF Frame below HASP. Your payload application must indicate whether your payload class is small or large. **The total weight of all components associated with your payload (excluding the payload plate) must not exceed the class mass limits.**

If your application is accepted for flight, your team will be sent the payload mounting plate appropriate for your class. These plates, shown in Figure 8, are constructed from ¼” thick PVC, include wiring for the electrical/data connections, and are marked with a keepout area. Payloads may not extend into the keepout area, except for the cables from the EDAC and DB9 connectors. The plate can be modified within the allowed region for payload support structure and, if needed, downward-pointing apertures on small payloads.

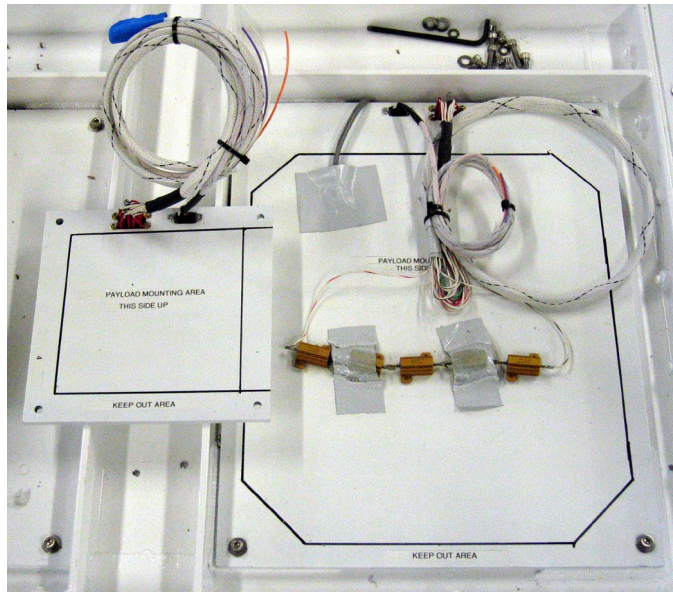


Figure 8: The small (left) and large (right) student payload mounting plates.



Table 2: HASP Large and Small Payload Constraints

Small Student Payloads:

Total number of positions available:	16
Maximum Total Payload weight (sum of ALL payload components):	3 kg (6.6 lbs)
Maximum footprint (must include mounting structure):	15 cm x 15 cm square (~6" x 6")
Maximum height (may need to be negotiated with neighbor payloads):	30 cm (~12")
Supplied voltage:	26 - 30 VDC
Available current:	0.5 Amps
Serial interface:	9600 baud, RS232, DB9 connector
Analog downlink:	1 ADC Input 0 to 5 VDC
Discrete commands:	Up To 1 Active Low Open Collector Digital Command
Power, Analog, & discrete interface:	EDAC 516-020

Large Student Payloads:

Total number of positions available:	8
Maximum Total Payload weight (sum of ALL payload components):	20 kg (44 lbs)
Maximum footprint (must include mounting structure):	38 cm x 30 cm octagon (~15" x 12")
Maximum height (may need to be negotiated with neighbor payloads):	30 cm (~12")
Supplied voltage:	26 - 30 VDC
Available current:	2.5 Amps
Serial interface:	9600 baud, RS232, DB9 connector
Analog downlink:	1 ADC Input 0 to 5 VDC
Discrete commands:	Up To 1 Active Low Open Collector Digital Command
Power, Analog, & discrete interface:	EDAC 516-020

Note that the HASP structure and thermal insulation will be located immediately below each large payload on top of HASP, so downward-pointing apertures would not be appropriate.

Any intrusion into the "KEEP OUT AREA" might result in your payload being disqualified from flight. Payload groups requesting the placement of payload components anywhere other than on a designated payload seat must submit a special request included as a part of the application and receive a waiver granting approval from LSU HASP Management, CSBF, and BPO. This approval may include additional paperwork, including flight safety documentation and analysis. See section VIII for more information regarding special requests. The size of the allowed footprint and payload height are given in Table 2 on the following page.

Note that the payload must be secured to remain intact and attached to the mounting plate under a 10 g vertical and 5 g horizontal shock. At a minimum, teams shall provide a bill of materials and drawings showing all structural components. Teams will provide this information in the PSIP; it is not required at the time of application.

Electrical: A twenty-pin EDAC 516 (manufacturer number 516-020-000-301) will interface with HASP system power and analog downlink channels. Power is supplied as +28 VDC fused at 0.5 A for small and 2.5 A for large payloads.



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Note: Exceeding the current limit could result in a blown fuse. Blowing your HASP power supply fuse at any time may disqualify your payload for flight. If a fuse is blown during flight, restoring power will not be possible. The payload will be responsible for internally converting the +28 VDC to whatever voltages are required. In addition, one analog output channel is available on the EDAC connector. This pin will be read by a 0-5V (referenced to power ground) 12-bit ADC approximately 1/second. The HASP environmental monitoring system will sample and transmit this channel approximately once a minute to provide real-time monitoring of one key payload parameter.

Downlink Telemetry and Uplink Commanding: Commands and Data are transferred by a serial using a 9-pin D-shaped connector (DB-9) mounted to the payload plate. Pin 2 is HASP receive, Pin 3 HASP transmit, and Pin 5 signal ground. The voltage levels will comply with the RS-232 standard. Bytes will be transmitted via serial protocol with the following settings: 8 data bits, no parity, 1 stop bit, and no flow control. HASP will collect data from the student payload as a byte stream: The bytes received will be written to a data file without alteration, modification or verification. The HASP ground station will publish the received data to the HASP website for student team access. Therefore, it is strongly advised to adopt a record structure for the payload that includes elements such as a unique record identifier, record length, start and termination indicators, and a checksum. The “HASP Student Payload Interface Manual” provides a suggested record format.

Commands to payloads will use the same interface. The command packet received by the payload will contain bytes of header and footer information in addition to the two (2) command bytes. The payload will be responsible for properly parsing and extracting the command bytes. Each command will be uplinked by the HASP operator. The payload is responsible for the serial command's validity and contents. Uplink commanding can include significant latency, so it is recommended to minimize the number of commands you plan to use during flight. The format of the command packet sent to a student payload is included in the “HASP Student Payload Interface Manual.”

A common problem with interfacing microcontrollers with the HASP serial interface is connecting the serial wires directly to the microcontroller's serial pins. Because the controller uses TTL (3.3 or 5V) levels, and the HASP serial interface uses RS232 levels. Thus, you must level shift the signals between the payload controller and HASP. Teams should also take care to connect the HASP receive to the payloads transmit, and the HASP transmit to the payload receive.

Command Request Interface: A web app provides communication between payloads and HASP Management during integration and flight. Each payload is given a unique account login, which allows each group to send command requests and other comments to HASP Management. This interface will also be used by teams to request powering the payload on and off and to send the discrete commands.

Thermal: The HASP platform provides **no** thermal control to the student payloads. The payload developers are responsible for ensuring their experiment remains within acceptable temperature limits. **Note:** At float altitudes, payloads are prone to overheating in sunlight and freezing in darkness due to high heat input from direct sunlight and the inefficiency of heat transfer in a vacuum environment.



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Vacuum: During flight, payloads will be exposed to pressures less than 10 mbar. In such a vacuum, traditional cooling methods such as finned heatsinks and fans will be ineffective. High-voltage systems can discharge and arc. The payload developers are responsible for ensuring their experiment will operate correctly in a low-pressure environment.

Hazards: Certain items may present danger to personnel and/or the flight systems. These hazards are either outright banned (payloads including them will be rejected) or require additional documentation and safety screening. All potential hazards **MUST** be clearly identified in the HASP application. If the payload is accepted for flight, the student team must provide all documentation, testing, and risk mitigation plans required by BPO and CSBF before integration with HASP.

NOTE: Several hazards are explicitly banned from flight on HASP and will result in the application and payload being disqualified if used. Table 3 lists all potentially hazardous materials and identifies them as banned or requiring additional documentation and review before approval. The details of the additional documentation can be found in Appendix B. The list is not exhaustive. Any hazard may require additional documentation to be provided to NASA safety before that payload is cleared for flight. Therefore, we advise that student teams consider this and only incorporate any hazard identified in this section if they are willing to commit to providing all additional documentation by the specified deadlines. **At a minimum, teams will be required to complete the corresponding table from Appendix B prior to integration. This information is not required at the time of application, but preliminary information will assist in identifying issues or allow processing of long lead time approvals if required.**

Table 3 Hazard List

Hazardous Items List	
RF transmitters	See Appendix B
High Voltage	See Appendix B
Lasers (Class 1, 2, and 3R only) Fully Enclosed	See Appendix B
Pressure Vessels	See Appendix B
Non-Rechargeable Batteries	See Appendix B
Magnets	BANNED for field strengths greater than 1 Gauss
Intentionally Dropped Components	BANNED
Liquid Chemicals	BANNED
Cryogenic Materials	BANNED
Radioactive Material	BANNED
Pyrotechnics	BANNED
UV Light	BANNED
Biological Samples	BANNED
Rechargeable Batteries	BANNED
High intensity light source	BANNED



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XI. Special Requests

A team wishing to exceed power, weight, or data constraints or have payload components outside their designated area is required to submit a waiver request. Waiver requests must be submitted in writing to hasp@lsu.edu using the form provided on the HASP Website Document Center (<https://laspace.lsu.edu/hasp/hasp-participant-information/>). The request **MUST** describe what is being requested, including weight tables, power tables, dimensioned mechanical drawings, power supply schematics, etc. as required. The request must clearly justify the need for the waiver by referencing your payload's scientific and technical objectives. Requests will be assessed on feasibility, safety, and impact to other payloads. Teams should not assume a request has been granted without a formal written statement from HASP management.

XII. Anticipated Schedule and Required Deliverables

Payload Selection - ~ December 11, 2026: After reviews have been completed, teams selected for flight will receive a seat assignment and feedback on their proposal via an email from HASP management. **Teams may receive provisional acceptance contingent upon additional information or a revised proposal. In that situation, teams will be given the specific revisions/information needed and a corresponding deadline to receive full acceptance.**

HASP flight eligibility status is contingent upon completing all required deliverables and participation in monthly teleconferences. Templates for deliverables other than Monthly reports are available on the HASP website at <https://laspace.lsu.edu/hasp/hasp-participant-information/>. All documents will be submitted via the LSU Formstack system. Links to these will be distributed to student leads and faculty advisors.

Request for extensions, changes in Team Lead, changes in Faculty advisor, etc., should be submitted prior to deadlines via hasp@lsu.edu.

PROVIDED TEMPLATES ARE REQUIRED AND NO DELIVERABLES WILL BE ACCEPTED VIA EMAIL.



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Table 4: Anticipated HASP 2027 Schedule

August 10, 2026	HASP 2027 Call for Proposal Released
September 25, 2026	Q & A Teleconference
October 9, 2026	Notice of Intent Letter Due
October 16, 2026	Application Development Teleconference
November 8, 2026	Application due date
December 11, 2026	Announce student payload selection
January 15, 2027	HASP Kick Off Meeting
February –November 2027	Monthly status reports and teleconferences
March 26, 2027	Preliminary PSIP document due
April 30, 2027	NASA Integration Security Document due
June 25, 2027	Final PSIP Document due
June 25, 2027	NASA Flight On-Site Security Document Due
July 16, 2027	Final FLOP Document due
July 26 - 30, 2027	Student payload integration at CSBF *
August 23 - 24, 2027	HASP flight preparation *
August 28, 2027	Target flight ready *
August 30, 2027	Target launch date and flight operations *
September 2-3, 2027	Recovery, packing, and return shipping *
December 10, 2027	Final Flight / Science Report due

*These dates are preliminary and subject to change. A final schedule will be distributed to all teams with the payload seat award letter. In addition, the official calendar will be located on the HASP Website.

Kick-Off Meeting - January 15, 2027: A HASP 2027 Kick-Off virtual meeting (via Microsoft Teams) will be held in early January to introduce the HASP leadership team, provide a detailed overview of the HASP 2027 schedule and expectations, and answer any questions that the accepted flight teams may have. The exact details will be provided to teams in their acceptance documentation.

Monthly Status Reports: Beginning February 2027 through November 2027 on the **last Friday** of Every Month. A **brief** written report describing accomplishments and challenges encountered, and updates on the student team demographics.

Monthly Teleconference Meetings: A meeting via Microsoft Teams will be held from February through December on the **first Friday** of the month. At least the Faculty Advisor and Student Team Lead should be present at the teleconference, but we encourage all team members to participate. These teleconferences will be used to 1) Update teams on changes in schedule, upcoming deadlines, 2) Address issues from monthly status reports, and 3) Answer questions from teams.



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Preliminary Payload Specification & Integration Plan (PSIP) - March 26, 2027: The **Preliminary PSIP** document provides preliminary technical details on the final flight configuration of your payload, including estimated weight, estimated current draw (@28 VDC), planned downlink data, uplink commands, planned use of the Analog and Discrete pins, and mechanical drawings. It should include all test procedures and expected results, requested test equipment, and travel schedule for integration.

The Preliminary PSIP must also include a mechanical Bill of Materials (BoM) for NASA safety review. A BoM spreadsheet is included with the PSIP template. Any hazards documentation safety table must be complete and finalized at this time.

CSBF Integration On-site Security Clearance Documentation April 30, 2027: This document provides the list of all individuals who will travel to HASP integration at the Columbia Scientific Balloon Facility in Palestine, TX. Note: this list is only to initiate the security screening. Being cleared to visit NASA facilities will require completing the required information in the NASA Visitor System (U.S. Nationals) or the NASA IdMAX System (Foreign Nationals). Visitors may be required to present different documentation or may be refused depending on Country of Birth or Country of Citizenship. See Appendix A: NASA On-Site Security Clearance Requirements for more details. **No additions to this list will be accepted after this date. All changes requested after the due date will be rejected.**

Final Payload Specification & Integration Plan (PSIP) - June 25, 2027: The **Final PSIP** document provides final technical details on the flight configuration of your payload, including measured weight, measured current draw (@28 VDC), implemented downlink data, uplink commands, use of the Analog and Discrete pins, and mechanical drawings. It should include all test procedures and expected results, requested test equipment, and travel schedule for integration.

Fort Sumner Flight On-site Security Clearance Documentation - June 25, 2027:

A second, separate document will list the individuals traveling to the launch site in Ft. Sumner, NM. **This is a separate deliverable from the Palestine Clearance Document. Individuals attending the flight may be different than those attending the integration and being cleared for Palestine does not give someone access to Ft. Sumner.**

Flight Operations Plan (FLOP) - July 16, 2027: This document provides the procedures to prepare the payload for launch and operate it during the flight. This takes the form of a timeline of any actions taken once the payload has been physically mounted and electrically connected to HASP at the launch site, with T=0 being launch. Examples of actions are remove lens cap, power on payload, send uplink command 0xFF AA, check for blinking external LED, etc. Teams should assume they will not have physical access to the payload after it is mounted to HASP at Fort Sumner.



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Figure 9: Student teams at the HASP 2026 Integration and System Test.

Payload Integration - July 26 - 30, 2027: During the late July / early August, student payloads will undergo integration testing at the CSBF facility in Palestine, TX. During this week-long event, teams will integrate with the HASP power, telemetry, and mechanical systems. After integration, payloads will undergo a thermal/vacuum (TV) test cycle to simulate the temperature and pressure extremes your payload will experience during flight (see Figure 11). Two tests will be conducted, one on Wednesday and one on Friday. Payloads must be completely integrated by 5:00 pm the day before to participate in the test. During integrations and testing, the full flight telemetry and commanding interface will be available to teams.



Figure 10: HASP and student payloads in the CSBF BEMCO chamber in preparation for thermal / vacuum testing.

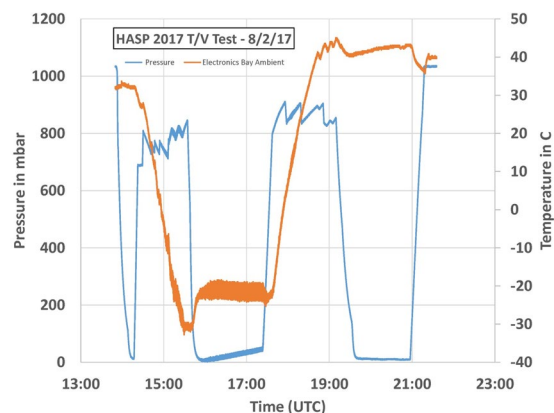


Figure 11: A typical temperature (orange) and pressure (blue) profile for a HASP thermal / vacuum test.

During the integration process, payloads will be checked for compliance with the HASP serial communication, power, and mechanical interface requirements. Teams are expected to fully test all uplink commands and use their downlinked data to demonstrate functionality of the payload. To that end, teams should develop a test plan of specific actions to take during the



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test and the expected outcome. This plan is a required section of the previously discussed PSIP. Teams are not required to participate in both the Wednesday and Friday Test cycles; the Friday test is intended to provide teams unable to complete integration by Tuesday a test opportunity and allow testing of any corrective actions for failures experienced during the Wednesday test.

Teams that operate successfully during a testing cycle will be issued a Payload Integration Certification (PIC) with flight certification. Certified teams may elect to ship their payload to Ft. Sumner with the HASP, but must be packed in a shipping box or package. The flight certification is helpful in justifying flight operational support from your funding agency. If issues are uncovered and not resolved during integration, you will be issued a *PIC without Flight Certification* listing the issues to be resolved prior to flight. **Attending integration in person is not required but is STRONGLY recommended. If a team is unable to attend, they may ship their payload to Palestine for testing. Teams that do not undergo a TV test will be required to prove, via their own test results, that their payload is flight ready.**

Flight Operations: Flight Preparations - August 23 - 24, 2027: The HASP vehicle and support crew will arrive on-site in late August. Any student payloads that were shipped with HASP (i.e., in late July) will be prepared for flight without any further intervention by the student team. Teams may ship their payload to Fort Sumner for flight. Teams should arrive at Fort Sumner between August 23 - 24, 2027. Teams delivering a payload should arrive early in that window to allow adequate time to integrate the payload. On August 28, 2027 a hang test and Flight Readiness Review (FRR) will be conducted for HASP.

HASP is targeting August 30, 2027 for the earliest launch attempt, but the actual launch will be dependent on weather conditions, both for the launch and the predicted flight trajectory.

During the flight, all telemetry data and commanding will be available via the HASP website. Links to live video streams from the gondola cameras will be found on the HASP website. After several hours, the flight will be terminated based on the predicted landing location, and recovery operations will begin. **Note: Teams will not be allowed to follow the HASP recovery team.** Assuming a flight on August 30, 2027 we would expect the HASP platform and the student payloads to be returned to Fort Sumner on September 2-3, 2027 at which point, payloads will be returned to teams, if on-site, or prepared for shipment back to their home institutions. **NOTE: Teams must provide a shipping container and pre-paid shipping label. Failing to do so by the time of HASP recovery will result in the payload being shipped back to LSU.**

Final Science Report - December 10, 2027: Final Flight / Science Report: A final report should include an assessment of the payload performance, problems encountered, lessons learned, the science / technical results from the flight, and a completed participant list for your project team. The report must be submitted utilizing a submission form provided to flight teams. No other submission methods will be allowed.



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Appendix A: NASA On-Site Security Clearance Requirements

NASA maintains strict entrance requirements for anyone planning to enter a NASA facility, including the Columbia Scientific Balloon Facility in Palestine, Texas, and the Launch Facility in Ft Sumner, New Mexico. Both Citizenship and Country of Birth identifiers are used to determine the applicant's classification. **NOTE:** Any institutions with foreign nationals traveling to Palestine or Fort Sumner must also provide a letter on institution letterhead identifying the foreign nationals and accepting responsibility for them while onsite. An example of this letter will be posted on the HASP website - <https://laspace.lsu.edu/hasp/hasp-participant-information/> and will be included in the PSIP documentation.

Applicant	Country of Birth	Citizenship	Classification
	USA	USA	US National
	Foreign Non-Designated	USA / USA Green Card	US National
	Designated	USA / USA Green Card	US National
	Foreign Non-Designated	Foreign Non-Designated	Foreign National Non-Designated
	Foreign Non-Designated	Designated	Designated National
	Designated	Foreign Non-Designated	Designated National
	Designated	Designated	Designated National

If the Applicant is a US citizen:

1. If the site visit is less than 29 days:
 - a. No background investigation is required
 - b. Government-issued identification is required to access CSBF sites (PSN, FTS, etc.)
2. If the site visit is greater than 29 days: **(Note: While HASP activities are less than 29 Days this is cumulative NASA Wide so this may apply to U.S. National participants)**
 - a. Background investigation is required
 - b. Required to fill out forms to be assigned a NASA identity in IdMAX

If the Applicant is a Foreign National from a Non-Designated Country:

1. If the applicant has been assigned a US Green Card, see the requirements listed above for US Citizens.
2. If the applicant does not have a Green Card and is from a Non-designated Country,
 - a. Notify CSBF of the individual name, email address, and affiliated institution
 - b. Applicant must create a NASA profile
 - c. ESTA, Passport, Visa, I94, etc., potentially required
 - d. WFF will perform a background check

If Applicant is a Foreign National from a Designated Country:

1. The Applicant will **NOT** be approved for access to NASA Facilities
2. For more information on US Designated Countries, please visit this site <https://oiir.hq.nasa.gov/nasaecp/>.



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Appendix B: Required Hazard Documentation

For any payloads including any of the hazards in Table 3 Hazard List NASA's Balloon Program Office (BPO) will require additional information to clear the payload for flight. This additional information is needed to facilitate NASA WFF Safety and Mission Assurance Division's ability to perform flight and ground safety assessments for the Fort Sumner Campaign. These tables are included in the Proposal and PSIP Templates. The application should include preliminary information, and a finalized version must be included in the Preliminary PSIP due on March 26, 2027.



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I. Radio Frequency Transmitter Requirements for HASP Flights

RF transmitters are listed as a safety hazard by NASA. As such, the use of RF transmitters on HASP must be documented and approved in the Ground and RF flight safety plans. Any team using a transmitter must provide the following information in both their application and the PSIP document supplied later in the flight season. **In addition, the frequency range 425 - 435 MHz is used for critical flight operations and, therefore, BANNED for any payload use.** This table must be completed for each RF transmitting device type flown on HASP.

HASP RF System Documentation	
Manufacture Model	
Part Number	
Ground or Flight Transmitter	
Type of Emission	
Transmit Frequency (MHz)	
Receive Frequency (MHz)	
Antenna Type	
Gain (dBi)	
Peak Radiated Power (Watts)	
Average Radiated Power (Watts)	



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II: High Voltage Hazard Requirements for HASP

High Voltage systems are listed as a safety hazard on NASA payloads. Therefore, the use of High Voltage on HASP must be documented and approved in the Ground and Flight safety plans. A source is considered High Voltage if the output voltage exceeds 50V. Any team using a high-voltage source must provide the following information in their application and the PSIP document supplied later in the flight season for each source type. In addition, a detailed schematic, safety plan, and operation procedure must be included in this application. A final version of these requirements must be included in the PSIP submitted later in the flight cycle.

HASP High Voltage System Documentation	
Manufacture Model	
Part Number	
Location of Voltage Source	
Fully Enclosed (Yes/No)	
Is High Voltage Source Potted?	
Output Voltage	
Power (W)	
Peak Current (A)	
Run Current (A)	



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III: Lasers (Class 1, 2, and 3R) Hazard Requirements for HASP

Lasers are listed as a safety hazard on NASA payloads. Therefore, the use of lasers on HASP must be documented and approved in the Ground and Flight safety plans. Only Class 1, 2, and 3R lasers will be considered for flight. All other laser classes are **banned**. Any team using an onboard laser must provide the following information in their application and the PSIP document supplied later in the flight season for each source type. The laser approval process is a time-consuming operation, and complete data must be submitted with the application to ensure the payload team is notified of the approval status early in the HASP timeline. A detailed schematic, safety plan, and operation procedure must also be documented in the PSIP.

HASP Laser System Documentation			
Manufacture Model			
Part Number			
Serial Number			
GDFC ECN Number			
Laser Medium			
Type of Laser			
Laser Class			
NOHD (Nominal Ocular Hazard Distance)			
Laser Wavelength			
Wave Type		<i>(Continuous Wave, Single Pulsed, Multiple Pulsed)</i>	
Interlocks		<i>(None, Fallible, Fail-Safe)</i>	
Beam Shape		<i>(Circular, Elliptical, Rectangular)</i>	
Beam Diameter (mm)		Beam Divergence (mrad)	
Diameter at Waist (mm)		Aperture to Waist Divergence (cm)	
Major Axis Dimension (mm)		Major Divergence (mrad)	
Minor Axis Dimension (mm)		Minor Divergence (mrad)	
Pulse Width (sec)		PRF (Hz)	
Energy (Joules)		Average Power (W)	
Gaussian Coupled (e-1, e-2)		<i>(e-1, e-2)</i>	
Single Mode Fiber Diameter			
Multi-Mode Fiber Numerical Aperture (NA)			
Flight Use or Ground Testing Use?			
Beams Enclosed?			
Transmitting External to Payload?			



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IV: On-Board Batteries Hazard Requirements for HASP

Batteries are listed as a safety hazard on NASA payloads. Therefore, using any batteries on HASP must be documented and approved in the Ground and Flight safety plans. Unmodified general-use alkaline and lithium-ion batteries will be approved but must be documented in the form below. Any modifications to pre-packaged batteries are **banned** and will not be allowed on HASP. In addition, all rechargeable batteries are banned from being used on HASP. All Li-ion batteries must have a UL certification. Li-Ion batteries must be stored in a fire-rated bag or cabinet when not installed in the instrument. Examples of previous battery types that have been approved on HASP are listed below:

- Any domestic battery manufacturer: Duracell, Energizer, Rayovac, etc
- Ultralife U9VL-J-P

HASP Battery Hazard Documentation	
Battery Manufacturer	
Battery Type	
Chemical Makeup	
Battery modifications	<i>(Must be NO)</i>
UL Certification for Li-Ion	
SDS from manufacturer	
Product information sheet from the manufacturer	



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V: Pressurized System Hazard Requirements for HASP

Pressurized systems are listed as a safety hazard on NASA payloads. Therefore, the use of any pressurized systems on HASP must be documented and approved in the Ground and Flight safety plans. Any component with a pressure differential with the external atmosphere surrounding it is considered a pressurized system. Teams that have questions about Pressurized System hazards can request, through HASP Management, a meeting with the NASA Pressure Systems Manager.

Additional documents required for review and certification of the pressurized or vacuumed systems include:

- The following requirements apply to all components within the pressure boundary (the pressure source to the exhaust/relief valve)
 - Detailed Pressure Systems Configuration Drawings/Schematics
 - Detailed Bill of Materials with Maximum Allowable Working Pressure (MAWP) pressure ratings
 - Data Sheets of Applicable Pressurized Components (Valves, Regulators, Relief Valves, Gauges, flexible hoses)
- Proof Pressure Test Records &/or Leak Test Records
Pressure Vessels containing custom-made or non-coded components will need to be tested. Pressure/leak test results must be included in documenting a stable chamber per applicable safety and engineering practices. NASA Safety guidelines require a 10-minute pressure/leak test. Mission Assurance testing should be 12 hours.
- Functional Test Record for Relief Valves (sticker or tag on equipment)
 - All relief valves must be ASME-rated. New valves need the required stamp information. Reused valves require a pop test.
- Applicable calibration record for pressure gauges (stickers or tags on equipment)
 - Safety critical pressure gauges must be calibrated every three years. Reference-only pressure gauges must be calibrated every five years. Calibration documentation must be included.
- Applicable engineering analyses (possibly analysis may include pipe/tube stress analysis per ASME B31.3, tube pressure rating table, or relief device sizing analysis)
- Provide pressurization hazardous procedure, if applicable, and SDS(s)
- Note: Personnel training in pressure systems or compressed gas safety is also required to operate pressure systems at NASA WFF or its associated facility.
 - Pressure systems' safety training and on-the-job training for mission operations required. A letter from university management certifying that students or system operators have completed this training must be included.



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HASP Pressurized System Hazard Documentation	
System Description	
Maximum Expected Operating Pressure (PSIG) or Vacuum	
Fluids (e.g. GN2, GHe, Air)*	
Notes	
SDS from manufacturer	

*Note: Only gaseous fluids are allowed here. Any liquids are still banned on HASP.