

## Student Spaceflight Experiments Program Agreement

This Student Spaceflight Experiments Program (“SSEP”) Agreement (this “Agreement”) is made this 30th day of October 2013, (the “Effective Date”) by and between the National Center for Earth and Space Science Education (“NCESSE”), a Project of the Tides Center, a California 501(c)(3) non-profit, and The Academy @Shawnee (the “Client”) (each a “Party” and collectively the “Parties”).

WHEREAS NCESSE launched SSEP (<http://ssep.ncesse.org>) as a national STEM (Science, Technology, Engineering, and Mathematics) education program in June 2010, providing school districts, and even individual schools, the ability to submit proposals for a student-designed experiment to fly aboard the final two flights of the United States Space Shuttle Program, and then the International Space Station (“ISS”).

WHEREAS SSEP provides for each participating school district or school to submit proposals resulting from an experiment design competition held at their local level, and appropriate for students in grades 5-16.

WHEREAS SSEP reserves a spot for at least one flight-certified mini-laboratory to fly on ISS for each participating school district or school, and provides a kit to assemble, load, and seal their mini-laboratory in advance of the flight;

WHEREAS SSEP provides resources for student proposer teams and their Teacher Facilitators, and provides a suite of programmatic resources for the school district or school holding the design competition to engage the wider community;

WHEREAS NCESSE has a separate agreement with NanoRacks, LLC, a Nevada limited liability company, and where SSEP on-orbit educational research opportunities on ISS are enabled through NanoRacks LLC, which is working in partnership with NASA under a Space Act Agreement as part of the utilization of the International Space Station as a National Laboratory.

WHEREAS Client wishes to participate in SSEP Mission 5 to ISS and become a member of the SSEP Community Network.

NOW THEREFORE, the Parties intending to be legally bound hereby agree to the terms and conditions set forth herein.

1. **PURCHASE OF SSEP.** Client agrees to purchase and NCESSE agrees to sell a SSEP Community Program, which provides for a number of Program Elements.

Program Elements that are included in this Agreement as part of the purchase of a SSEP Community Program, other expected and potential expenses not covered in this Agreement and borne by the Client, and Requirements and Restrictions on Community Participation in the SSEP are described in the attached hereto and incorporated herein as Exhibit A.

2. **TIME OF PERFORMANCE**. NCESSE will provide the Program Elements associated with the purchase of a SSEP Community Program in accordance with the Schedule of Performance agreed to by both Parties and attached hereto and incorporated herein as Exhibit B.

The start of the SSEP Community Program (the "Start Date") shall be the Effective Date of this Agreement.

NCESSE agrees to use its best efforts to adhere to the timeframe established by the Schedule of Performance. Client acknowledges that NCESSE may encounter modifications to the Schedule of Performance due to causes beyond its control, including without limitation, acts of God, and modifications made by NASA or contractors acting on behalf of NASA. A detailed description of these specific means by which the Schedule of Performance can be impacted and modified is provided as part of Exhibit A Section V. In the event of such modification, NCESSE shall promptly notify Client, and NCESSE's obligation under the Schedule of Performance shall be extended accordingly. In no event shall NCESSE be penalized or be in default for modifications to the Schedule of Performance for the foregoing reasons.

3. **PRICE, PAYMENT, METHOD OF PAYMENT AND TAXES**. The total cost for Client participation in SSEP is **Twenty One Thousand Five Hundred Dollars, \$21,500 ("Total Cost")**, with the following cost breakdown reflecting customization for the Client:

i.	participation in SSEP Program	\$21,500
ii.	additional Package of 5 FME Mini-lab Kits (\$350 per Package)	n/a
iii.	additional Experiment Slot on Mission 5 to ISS (\$13,000 each)	n/a
iv.	the following supplemental programming component(s) delivered through NCESSE's <i>Journey through the Universe</i> initiative:	n/a
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		Sub-Total: \$21,500

Funds to be provided separately to NCESSE in support of, <u>and required for</u> , the Client's Participation: [from CASIS]	\$7,000
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Balance Due: \$14,500

Client shall make payments as follows:

- a. 50% of the Subtotal above (\$3,750) is due on the Effective Date of this Agreement;
- b. 50% of the Subtotal above (\$10,750) is due on December 12, 2013;

**All fees due hereunder shall be paid in United States dollars, by check drawn on a United States bank.**

**NOTE: Checks for payments "a" and "b" above shall be made out to Tides Center.**

**All payments shall be sent to the following address:**

**NCESSE / TIDES CENTER  
Attention: Jeff Goldstein  
PO Box 2350  
Ellicott City, Maryland, 21041-2350**



All amounts payable under this Agreement are exclusive of any sales, use, excise, property or any other taxes arising hereunder. Late payments can lead to termination of the Client's SSEP participation, and in such case, there shall be no refund of any payments already made by the Client to NCESSE.

The Total Cost does not include other expenses that Client will or may have to separately incur, including without limitation: optional cost of travel to the launch site to view the launch (assuming NASA makes a launch viewing opportunity available to SSEP delegations); shipping charges associated with the Client's delivery to Houston, and the return to the Client, of the flight mini-laboratory; shipping charges associated with the Client's delivery to NCESSE, and return to the Client, of the Mission Patch(es) selected for flight; and cost of travel to the SSEP National Conference, and any associated registration fees (if such Conference is held). Other potential expenses to the Client are provided in Exhibit A.

4. **STATEMENT OF QUALIFICATION.** In order to qualify for SSEP Program participation, the Client will submit an Implementation Plan to NCESSE, and have the Plan approved by NCESSE, in advance of this Agreement. Approval by NCESSE is recognition that the Implementation Plan as put forward by the Client meets with all requirements for the Client's participation in SSEP.

5. **REPRESENTATIONS AND WARRANTIES.** NCESSE and Client each represents and warrants to the other that:

- a. It will comply with all federal, state, local and municipal laws, rules and regulations that are now or may in the future become applicable to the Party's responsibilities covered by this Agreement; and
- b. It has the full right, power, and authority to enter into this Agreement and each agreement, document, and instrument to be executed pursuant to this Agreement and to carry out the transactions contemplated hereby.

6. **DISCLAIMER.** OTHER THAN AS SPECIFICALLY SET FORTH HEREIN, NCESSE MAKES NO WARRANTIES, OR TERMS OR CONDITIONS (EXPRESS, IMPLIED OR STATUTORY), AS TO THE SSEP, THE CLIENT'S PARTICIPATION IN SSEP, OR ANY OTHER MATTER UNDER THIS AGREEMENT AND NCESSE DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

7. **LIMITATION OF LIABILITY.** NCESSE SHALL NOT BE LIABLE FOR LOST PROFITS, REVENUES, OR ANY SPECIAL OR CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS AGREEMENT FOR ANY DAMAGES, NOR SHALL NCESSE'S LIABILITY UNDER THIS AGREEMENT EXCEED THE AMOUNT PAID BY CLIENT TO NCESSE HEREUNDER.

8. **INDEMNIFICATION.** The parties agree to indemnify and hold harmless the other party as follows:

- a. **Indemnification by NCESSE.** NCESSE agrees to indemnify, defend and hold harmless Client, its directors, officers, employees and agents, against any claim, demand, suit, or costs, including reasonably attorney's fees, to the extent such suit or action is based on a claim that (i) constitutes a

breach of the NCESSSE representations and warranties in this Agreement, or (ii) arises out of the gross negligence or willful misconduct of NCESSSE, its directors, officers, employees and agents.

- b. **Indemnification by Client.** Client agrees to indemnify, defend and hold harmless NCESSSE, its directors, officers, trustees, employees and agents, against any claim, demand, suit, or costs, including reasonably attorney's fees, to the extent such suit or action is based on a claim that (i) constitutes a breach of the Clients representations and warranties in this Agreement, or (ii) arises out of the gross negligence or willful misconduct of Client, its directors, officers, employees and agents.

9. **TERM.** This Agreement will commence on the Effective Date and continue until the completion of the last undertaking provided for in the Schedule of Performance, or another date as determined in writing by the Parties, possibly as a result of a modification in the Schedule of Performance as described in Paragraph 2.

10. **TERMINATION.** Either Party may terminate this Agreement by giving thirty (30) days written notice in the event that the other Party commits a material breach or substantial default of obligations under this Agreement that is not cured after thirty (30) days from the receipt of written notification of such breach. Upon the effective date of termination of this Agreement all obligations under this Agreement expire, except those set forth in Paragraph 5-8, and 11-17, which shall survive the termination or expiration of this Agreement.

11. **RELATIONSHIP OF PARTIES.** NCESSSE and Client are and at all times shall be and remain independent contractors as to each other, and at no time shall either be deemed to be the agent of the other, and no joint venture, partnership, agency or other relationship shall be created or implied hereby or herefrom. Except as is expressly set forth herein, each Party shall bear full and sole responsibility for its own expenses, liabilities, costs of operation and the like.

12. **PROPRIETARY MATERIALS.** Client shall have a nonexclusive license to use SSEP-related content on the SSEP website (<http://ssep.ncesse.org>) and contained in any of the program materials listed in Exhibit A. NCESSSE retains all proprietary rights to such content and materials and Client acquires no ownership or proprietary rights in the content and materials.

13. **GOVERNING LAW.** This Agreement will be construed and enforced in accordance with, and governed by, the laws of the State of California, without giving effect to any conflict of laws principals. The Parties hereby consent to the personal jurisdiction of the courts of the County of San Francisco, California, and waive any rights to change venue.

14. **SEVERABILITY.** If any provision of this Agreement or its application in a particular circumstance is held to be invalid or unenforceable to any extent, the remainder of the Agreement, or the application of such provision in other circumstances, shall not be affected thereby, and each provision shall be valid and enforced to the fullest extent permitted by law.

15. **WAIVER.** No requirement of the Agreement shall be deemed waived or varied, nor shall either Party's failure or delay to take advantage of any default of the other Party constitute a waiver of a Party's rights hereunder, or a waiver of a Party's right to take advantage of any subsequent or continued breach by the other Party of any covenant, term or condition contained in this Agreement.



16. **NOTICES.** Any notice, payment, request, instruction, or other document to be delivered hereunder shall be deemed sufficiently given, if in writing and given by personal delivery, by certified mail, return receipt requested, postage prepaid, by email as a scanned document, or by facsimile transmission to:

**Client (Must be Completed by Client)**

NCESSE

Name: William Vander Meer  
Title: Acting Director  
Address: The Academy @ Shawnee  
4001 Herman Street  
Louisville, Kentucky 40212  
Phone: 502-485-7632  
Email: [william.vandermeer@jefferson.kyschools.us](mailto:william.vandermeer@jefferson.kyschools.us)

Name: Dr. Jeff Goldstein  
Title: Center Director  
Address: NCESSE / TIDES CENTER  
PO Box 3806  
Capitol Heights, Maryland, 20791-3806  
Phone: 301-395-0769  
Email: [jeffgoldstein@ncesse.org](mailto:jeffgoldstein@ncesse.org)

17. **ENTIRE AGREEMENT.** This Agreement supercedes all prior agreements and constitutes the entire understanding between the parties hereto and no modification or amendment thereof will bind either party unless it shall be in writing and signed by persons authorized to bind both parties to the Agreement.

IN WITNESS WHEREOF, each Party has caused this Agreement to be executed on its behalf by a duly authorized officer as of the Effective Date.

**NCESSE/Tides Center**

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: Dr. Jeff Goldstein

Name: Jane Levikow

Title: NCESSE Director

Title: Senior Vice President

Email: [jeffgoldstein@ncesse.org](mailto:jeffgoldstein@ncesse.org)

Email: [jlevikow@tides.org](mailto:jlevikow@tides.org)

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**Client**

**Note that the “Authorizing Official” below is an individual that has the authority to sign a contract for the Client. The “SSEP Community Program Director” is the individual responsible for oversight of the SSEP Program in the Client’s Community, and will serve as the Client’s liaison to NCESSE, and the National SSEP Program Manager.**

Signature: \_\_\_\_\_

Signature: 

Name: Donna Hargens

Name: William Vander Meer

Title: Superintendent  
AUTHORIZING OFFICIAL

Title: Acting Director—Challenger Learning Center  
SSEP COMMUNITY PROGRAM DIRECTOR

Email: [donna.hargens@jefferson.kyschools.us](mailto:donna.hargens@jefferson.kyschools.us)

Email: [william.vandermeer@jefferson.kyschools.us](mailto:william.vandermeer@jefferson.kyschools.us)

Date: \_\_\_\_\_

Date: 10-29-13

## **Exhibit A:**

### **I. SSEP Abstract:**

The Student Spaceflight Experiments Program (SSEP): 1) immerses students across a local community in a high profile science competition that is meant to result in spaceflight experiments designed by the students—the **Flight Experiment Design Competition**—in this case, an experiment to fly aboard the International Space Station (ISS) via “SSEP Mission 5 to ISS”, and 2) leverages the excitement by wrapping community-wide science education programming around the experience—the **Community Program**. It is about engaging students, their teachers, and their families in science education, with a focus on the process of inquiry, and in a manner that is customized to a school district’s strategic needs in STEM (science, technology, engineering, and mathematics) education.

The SSEP paradigm derives from the National Center for Earth and Space Science Education’s Core Beliefs, its embraced Learning Community Model for science education, and its heritage of delivering community-wide programming (see <http://ncesse.org>).

When designing SSEP, NCSSE had its pedagogical approach to STEM education in mind. SSEP empowers the student *as scientist*, and within the real-world context of science that is far more than exploration through inquiry. SSEP allows student teams to design an experiment like scientists, with real constraints imposed by the experimental apparatus, current knowledge, and the environment in which the experiment will be conducted; it allows students to propose for a real flight opportunity like professional scientists, bringing critical written communications skills to bear; it allows students to experience a real 2-step science proposal review process; it allows students to go through a real flight safety review like professional researchers; and it provides students their own science conference, where they are immersed in *their* community of researchers, communicating their thoughts, ideas, and experimental results to their peers. Science is more than a way of thinking and interacting with the natural world. Science is more than a book of knowledge. Science is also a complex social landscape filled with challenges, and the need for multi-faceted and successful communication with ones peers. SSEP is about introducing *real* science to our next generation of scientists and engineers.

### **II. Program Elements Provided through the Purchase of a SSEP Community Program:**

This Agreement is for the sale to the Client of a “SSEP Community Program”. The Following Program Elements are provided as part of this Agreement:

#### **II.1 Program Elements Associated with the SSEP Mission 5 to ISS Flight Experiment Opportunity and Experiment Design Competition**

##### **a. A Package of Five Mini-Laboratory Kits and a Reserved Spot for a Mini-Laboratory Aboard ISS for the Client’s Community**

Experiments flown on the ISS, through SSEP Mission 5 to ISS, will be conducted in the NanoRacks’ **Fluids Mixing Enclosure (FME) Mini-Laboratory**. The FME is a very simple mini-laboratory designed to carry small samples of fluids and solids—the **Experiment Samples**—and provides for the samples to be mixed at an appropriate time in orbit by the astronaut assigned to the SSEP Mission 5 payload. The FME allows a student team to explore the effects of microgravity on a physical, chemical, or biological system contained in the mini-lab.



Each FME is a cylindrical tube 6.75 inches long (17.1 cm), with an outer diameter of 0.5 inches (1.3 cm). It can contain one, two, or three separate volumes of fluids and/or solids (designated the Type 1, Type 2, and Type 3 FMEs). One can equivalently think of the FME as one, two, or three small test tubes that can be mixed in orbit.

Each Client will receive a package of five FME Kits, each Kit providing all the parts for the assembly and loading of a flight certified Type 1, Type 2, or Type 3 FME.

Each Client will receive a reserved spot for an FME on ISS, and be provided all flight services for the launch and return to Earth of their FME.

The Client is responsible for assembly, loading, sealing, and shipping to Houston of the FME to be transported to ISS. On receipt of the FME after its return to Earth, the Client is responsible for unsealing the FME and harvesting the Experiment Samples.

Specifications for the FME; constraints on its use; operation of the FME on orbit; launch services to and from ISS; thermal controls that are and are not available for the Client's mini-lab over its journey from the Client's community, to ISS, and back to the Client; and Client assembly, loading, sealing, and shipping of the mini-lab, and harvesting of experiment samples from the mini-lab on its return, are all covered on the **SSEP Mission 5 to ISS: Mini-Laboratory Operation** page found at:

<http://ssep.ncesse.org/current-flight-opportunities/ssep-mission-5-to-the-international-space-station-iss/ssep-mission-5-to-iss-mini-laboratory-operation/>

**IMPORTANT NOTE: Student experiments MUST be designed to the operational constraints of the FME, and the constraints of transport to and from orbit, or the Client risks loss of their mini-lab spot on ISS.**

#### b. Restrictions on Experiment Samples That Student Teams Can Use

Each SSEP experiment selected for flight must pass a NASA Flight Safety Review. The review is conducted by NASA Toxicology at Johnson Space Center, and is meant to ensure that the fluids and solid materials to be used in the experiment—the **Experiment Samples**—pose no risk to the astronaut crew. The level of risk depends on the toxicity of the experiment samples and how well they are contained in the mini-lab. The more “**levels of containment**” that are engineered into the mini-lab, the less the restrictions on the experiment samples. For each SSEP flight opportunity, NCESS and NanoRacks work hard to ensure a high probability that each of the experiments passes Flight Safety Review. This is done by assessing the safety features engineered into the mini-lab to be used, and what restrictions this assessment imposes on allowable experiment samples.

As a benchmark of success, all of the 70 SSEP experiments selected for flight on the first five SSEP flight opportunities (SSEP on STS-134 – Shuttle Endeavour, SSEP on STS-135 – Shuttle Atlantis, and SSEP on Missions 1, 2, and 3 to ISS) passed Flight Safety Review and flew.

For SSEP Mission 5 to ISS, the FME mini-lab used has three nested and sealed enclosures surrounding the fluids and solids to guard against an accidental release into the crew cabin. The

FME is said to have **three levels of containment**, and this provides so much redundancy against an accident that virtually any fluids and solids can be used by a student team. However, the following are requirements regarding the fluids and solids used in the FME mini-lab:

i. Restricted Samples: student teams must **NOT** use any of the fluids and solids listed below. **A finalist proposal submitted to NCESSE that contains any of the substances listed below will be automatically be rejected, and will not move forward to the Step 2 Review Board for review.**

radioactive fluids or solids  
perfumes  
hydrofluoric acid  
magnets  
cadmium  
beryllium

**The 6 experiment samples listed above are the only known exclusions provided to NCESSE by NanoRacks. However, NanoRacks reserves the right to refuse other substances or items not included in the list above due to safety considerations. The Client is therefore strongly advised to alert their student design teams to carefully consider how hazardous are the samples they are planning to use, even if they are not included in the list of prohibited samples above. If an experiment is making use of something that is known to be hazardous, NCESSE advises the Client to have their design team alert NCESSE as soon as possible so that NCESSE can have NanoRacks assess the hazard and any potential impact on NASA Flight Safety Review.**

**The final decision on whether an experiment passes Flight Safety Review – whether the proposed experiment samples are acceptable – is NASA’s and out of the control of NCESSE and NanoRacks.**

ii. Human Samples: All human Samples, such as blood, will need to be tested for Hepatitis B, Hepatitis C, HIV-1, HIV-2, HTLV-1, and HTLV-2.

iii. Material Safety Data Sheets: each student team is required to provide a standard Materials Safety Data Sheet (MSDS) for each of their experiment samples (fluids and/or solids). A MSDS should be supplied by the vendor from which you purchase a sample. For those samples where a MSDS is not typically provided by the vendor, *e.g.*, Tilapia fish eggs, NCESSE will provide the team the necessary guidance to submit the needed safety paperwork without undue burden.

iv. Specificity of Samples: NCESSE and NanoRacks require that each flight experiment team provide, as part of their proposal, the level of specificity for their experiment fluids and solids (both biologicals and non-biologicals) as is required by NASA for Flight Safety Review (*e.g.*, specific description of substance, volume to be used, concentration to be used). The Client is directed to the document **Required Specificity for Description of Experiment Samples** available for download from the Documents Library.



### c. Teacher and Student Proposer Resources

The following resources are provided:

i. *Ongoing Technical Assistance*: Technical assistance is available to student teams throughout the experimental design process, to help with an understanding of the design constraints imposed by the experimental apparatus, the flight timeline, and the on-orbit protocols for conducting the experiment; and to address any general flight experiment questions and concerns.

The SSEP Program Manager will serve as point of contact for all technical assistance questions and will maintain and oversee the suite of Teacher and Student Proposer Resources. The Program Manager can be reached using the **Contact** page at the SSEP website (<http://ssep.ncesse.org>).

ii. *The SSEP website* (<http://ssep.ncesse.org>): the website is designed to be a comprehensive, online, easy to read environment with full details of the Student Space Flight Experiments Program. It includes important pages for Student Teams and their Teacher Facilitators concerning the experiment design competition, the process of experiment design, mini-laboratory specifications and operation, and flight operations.

iii. *The Document Library, and the Student Proposers Resource Library*: The **Document Library** found on the SSEP website provides SSEP participating communities all the documents necessary to conduct the SSEP. All documents referred to throughout the SSEP website, as well as additional resource documents, are found in the Library. This Library serves as a single download point for all documents.

The Documents Library also includes the **Student Proposers Resource Library** containing important information on the science of microgravity, case studies of microgravity experiments in the mini-lab to be used, and proposal requirements to help guide student proposers on experimental design, proposal submission, and experiment samples submission.

iv. *FAQs*: Two separate types of FAQs are maintained for SSEP participants, both of which are updated as questions are received by the SSEP Team. The **SSEP Program FAQ** addresses general program questions, while the **SSEP Flight Experiment FAQs** address questions specifically regarding experiment design, the flight hardware to be used, and the experiment design constraints.

v. *To Teachers – How to Move Forward*: This page at the SSEP website is designed to get teachers up to speed on the Student Spaceflight Experiment Program in a straightforward manner, and to get their students moving forward on experiment design. This page provides a step-by-step recipe for facilitated engagement in the classroom.

### d. Experiment Design Competition

The student experiment to fly in the mini-lab slot reserved for the Client will be selected as a result of an experiment design competition held by the Client in the Client's community. The Client designates the grades 5-16 student audience that is to participate in the competition.

**IMPORTANT NOTE: the maximum number of participating students is 3,200 unless NCSSE grants an exception.**

*Review Process:* The selection of the winning proposal will be undertaken via a 2-step formal review process. The Client will set up a Step 1 Review Board, which can be established with local science educators and local area researchers. The task of the Step 1 Review Board is to review all proposals from across the Client's community—based on the proposal review criteria found in the **Flight Experiment Proposal Guide's** related documents, titled **Background for Teachers** and **Background for Students** (all found in the Document Library)—and choose **THREE** finalist proposals for each mini-lab slot reserved for the Client aboard ISS (the Baseline SSEP Program Cost only provides a single mini-lab slot for a Client). The Client then forwards the finalist proposals to NCSSE for formal review by a Step 2 Review Board—a national team of professional scientists and engineers, and distinguished STEM educators—for flight experiment selection. The Step 2 Review Board will select one experiment to fly from the Client's finalist proposals, for each mini-lab slot you have reserved. This 2-step proposal review process models a real call for proposals for a flight opportunity by NASA.

The approach described above serves to: 1) engage the Client's community in the selection process, which in and of itself is a teachable moment for students and teachers, 2) limit to a manageable number the total number of proposals received for review by SSEP, and 3) allow the Client's community to be of any size—given the community forwards only **THREE** finalist proposals to SSEP for each experiment slot the Client has reserved.

*Relevance to Real World Science:* The competition mirrors how professional scientists propose, conduct, and report on their research programs. It is a real world, multifaceted process that is far broader than just submitting an experimental write-up. It requires critical thinking in order to pose a good scientific question, and creatively designing an experiment and experimental procedures that might provide an answer to the question. It requires a good understanding of the experimental constraints imposed by the flight opportunity. It requires an understanding of core knowledge—often across many disciplines—as the foundation for framing the experiment. And it involves important communication and writing skills to: justify the proposed experiment, put forward a competitive proposal, and ultimately report results to the larger scientific community.

The proposal review criteria are therefore reflective of the entire process and the skill set each student team must bring to the opportunity. It is not simply about assessing whether a proposed experiment will pass a Flight Safety Review. This program is truly designed to let students BE scientists.

## II.2 Program Elements Associated with the Community Program

Listed below are the **Community Program** elements that are provided under this Agreement—

### a. General Program Resources

#### i. The Main SSEP Website: <http://ssep.ncsesse.org>

The website serves as a comprehensive clearing house for SSEP program information. The website also contains the **SSEP National Blog**, providing the latest program news and updates.

**IMPORTANT NOTE: All SSEP participants in the Client's community (students, teachers,**



and other stakeholders) are advised to subscribe to the SSEP Blog on the SSEP Home Page to keep up-to-date. The Blog is the primary source of SSEP news.

ii. SSEP Community Network Hubsite: □ <http://ssep.ncesse.org/communities>

The **Community Network Hubsite** provides an online gathering spot to explore all SSEP activities across the network of participating communities. The Hubsite includes **Community Profiles**; a **SSEP In the News** page providing links to media coverage across the nation; a **SSEP In Our Own Words** page, providing a sense of program impact from the leadership, teachers, and students in participating communities; a showcase for **Experiments Selected for Flight**; and video libraries of student research teams presenting at the SSEP National Conference at the Smithsonian National Air and Space Museum. If you want to keep up with the world of SSEP, the **Hubsite** is the place to go.

iii. Student Team Clips Archived at YouTube

The Client is invited to submit video clips produced by classes in their community that are designing SSEP experiments. A clip can address the SSEP experience as the class sees fit, and can be submitted any time. Clips will be featured on the SSEP Community Network Hubsite.

b. Student Voices of Mission Control

For each participating community NCESSSE will offer to set up a Twitter account where students designated by the Client can serve as the community's Student Voices of Mission Control, providing real-time, ongoing coverage of the flight of the Client's experiment, from pre-flight preparations, to launch, flight operations, and return to Earth. Individual Twitter accounts can be followed at Twitter, or will be viewable as an aggregated stream, along with tweets from the astronauts and official NASA Twitter accounts, at the SSEP Community Network Hubsite. The goal is to provide live, interactive coverage of the *local experience* for both a national and global audience.

c. Mission Patch to Fly in Space – A Student Design Competition

Community-wide engagement, and cross-disciplinary learning are also cornerstone objectives for SSEP in the context of the embraced Learning Community Model for STEM education. In this spirit, NCESSSE is providing the opportunity for students across the Client's community to design a Mission Patch as part of a local art and design competition. A Mission Patch is a paper 3.5-inch x 3.5-inch square emblem that captures the community's SSEP experience. NCESSSE will fly the winning Mission Patch as part of the payload containing the Client's experiment. While participation should be open to at least the students participating in the SSEP experiment design competition, NCESSSE encourages each community to broaden participation by opening the design competition to wider student involvement across, *e.g.*, grades K-12, and to classes beyond STEM disciplines.

On a case-by-case basis, NCESSSE will also consider flying two patches for a community to accommodate potentially two mission patch competitions. Flying 2 patches first requires the Client to submit a "2 Patch Plan" to NCESSSE that justifies flight of 2 patches as a means of extending the community experience to larger and/or different audiences, *e.g.*, one competition for lower grades (grades K-4) and one for upper grades (grades 5-12). To fly 2 patches requires NCESSSE to approve the Plan.

III. Options that May be Purchased by the Client through this Agreement:

Four optional elements are available to the Client at an additional cost. They are described below, and if selected for purchase by the Client, will be identified as such in Paragraph 3 of the attached Agreement.

#### 1. Purchase of Additional Fluids Mixing Enclosure (FME) Kits

The Baseline Program Cost includes a Package of 5 FME Kits. Each Kit allows assembly of a flight certified FME ready for loading of experiment samples, sealing, and shipping to Houston for incorporation into the SSEP Payload scheduled for flight to ISS. The FME Kits can be used to assess the operation of the FME mini-lab, design and refine experiments, prepare an FME for flight to ISS, and conduct formal ground truth experiments while the flight experiment is ongoing.

The Client can opt to purchase additional Packages, each containing 5 FME kits, at a cost of \$250 per Package (includes shipping).

#### 2. Reserving Additional Mini-Laboratory Slots

This option allows a Client to fly 2 (or more) mini-labs, hence 2 (or more) experiments. One approach might be to conduct one competition for a slot reserved for grades 5-8 and one for a slot reserved for grades 9-12, so that middle school students are not competing directly with high school students. □ The community submits 3 finalist proposals for each additional mini-lab slot. The cost per additional mini-lab slot is \$13,000.

#### 3. Expanding the Number of Students Participating in the Design Competition

A Client may want more than 3,200 students to participate in the experiment design competition in their community. The added cost is dependent on the scope of the expanded program.

#### 4. Optional Programming

There is a diverse array of optional programming that the Client can purchase, all of which is delivered through NCESSE's *Journey through the Universe* program, including: a National Team of scientists and engineers spending up to a week in the community, talking to up to 2,000 students one classroom at a time; family and public programming; and a suite of professional development workshops and institutes for grade K-12 educators.

Through choice of available content and programming resources, communities small and large can create a customized *Journey through the Universe* program tuned to SSEP, that reflects the community's *strategic* needs in STEM education; can be delivered *systemically* across an entire school district; and is designed to be *sustainable*.

Visit the *Journey through the Universe* page at the NCESSE website as a one-stop-shop for program details, including a comprehensive set of links to pages on program design, pedagogy, assessment, available content, connections to standards and NCLB, and to extensive testimonials from the educational leadership in communities across the nation.

<http://ncesse.org/programs/journey-through-the-universe/>

#### IV. Additional expenses, and potential expenses, to the Client not covered by the Agreement for the purchase of a SSEP Community Program:

The Client is responsible for any and all costs associated with the following:



1. Experiment samples (fluids and solids): the cost of the experiment samples to be used in the student experiments. (Note that Client experiences to date include a large number of vendors for experiment samples that have provided samples at no charge to the Clients due to the nature of the SSEP and the visibility it affords.)

2. Shipping Costs: cost of FedEx for: 1) the Client to send the flight-ready FME to Houston for integration into the SSEP Payload; 2) the Client to send the Mission Patch(es) to NCSSE, and the return of the Mission Patch after the flight; and 3) NanoRacks to send the FME to the Client, after return to Earth, if a community representative does not travel to Houston for pickup.

3. Step 1 Review Board: all costs associated with meetings of the community's Step 1 Review Board, and associated activities.

4. Travel to the Launch Site: all costs associated with optional travel for the Client's students, teachers, administrators, and family members to the launch site at Kennedy Space Center (KSC) in Florida or the Mid-Atlantic Regional Spaceport (MARS), Wallops Island, Virginia, for viewing the launch of the SSEP payload, assuming NASA makes a launch viewing site available to SSEP. **This assumes that the Mission 5 to ISS ferry flight launches from the U.S. on a U.S. commercial vehicle and not from Kazakhstan on a Soyuz vehicle. NASA has full authority to identify, or change, the ferry flight used for the SSEP Mission 5 to ISS payload at any time.**

5. SSEP National Conference in Washington, DC:

NCSSE desires to hold 2014 and 2015 SSEP National Conferences in the nation's capital, in likely early July each year, where student teams from SSEP on Mission 5 to ISS participating communities can present on their experiment designs, and those teams that flew experiments can report preliminary results. NCSSE wants to immerse students in the experience of a science conference. Given that SSEP is dedicated to providing students the ability to step into the shoes of scientists and engineers, a conference should be part of the experience.

The conference will also include featured presentations by space scientists and engineers who will passionately talk about human exploration, and hopefully inspire many young women and men in the audience.

The 2011, 2012, and 2013 Conferences were held at the Smithsonian's National Air and Space Museum, one of the most visited museums on the planet. The conferences took place in the Moving Beyond Earth Gallery, where student teams provided power point presentations on their experiment designs and results. The Museum's visiting public was invited to watch the conference as part of the Museum's visitorship experience. Student teams also presented to the public using conference display boards in the Space Race gallery. Visit the **National Conference** page at the SSEP website for more information about the 2011, 2012, and 2013 Conferences.

The SSEP National Conference is considered an Additional Expense given that all conference travel costs, including airfare, hotel, meals, and miscellaneous travel, are the responsibility of the conference attendees. In addition, a registration fee per attendee *may* be required to cover costs associated with conference venue rental, AV rental, and assistance by venue staff. These costs are not covered in the SSEP Baseline Program Cost. Note that the 2011, 2012, and 2013 SSEP National Conferences did not require a registration fee given it was held at the National Air and Space

Museum as a joint program with the Museum's Education Division. As such, there was no charge for venue use, and NCESSE was able to cover the cost of AV and the Museum's staff time.

NCESSE and the Museum hope to hold the 2014 Conference at the Museum in early July, and the expectation for this conference is that there will be no registration fee.

**IMPORTANT NOTE: While the expectation is that the National Air and Space Museum will agree to host the 2014 conference, if they decline then NCESSE will be required to rent a venue. To underwrite such a cost, NCESSE will explore identifying national underwriters, as well as charging a conference registration fee per attendee. Whether the conference will take place will therefore depend on the cost of the venue, the required registration fee, and the level of attendance projected by the Client's community and the other participating communities.**

V. Requirements and Restrictions on Community Participation in the SSEP:

The attached Agreement must reflect commitments and obligations that are in force through:

- i) a separate agreement between NanoRacks, LLC, and NCESSE, for the SSEP Mission 5 to ISS flight opportunity, and
- ii) Space Act Agreement SAA-SOMD 6355 dated September 9, 2009 ("SAA") enacted by NASA with NanoRacks, LLC, to procure space services including, but not limited to, flight opportunities and space station operations. The SSA gives NanoRacks the right to convey space payload opportunities on ISS.

In accordance with these separate agreements—

1. *Ferry Flights to and from ISS*: Via NanoRacks, NCESSE will provide the Client the following ferry flights to and from ISS for SSEP Mission 5:

Ferry Vehicle to ISS: **To Be Determined**; likely either SpaceX Dragon or Orbital Sciences Cygnus  
Current Launch Date: **To Be Determined**; targeting Spring 2014

Ferry Vehicle for Return to Earth: **To Be Determined**; likely a Soyuz vehicle  
Current Undocking/Landing Date: **To Be Determined**  
Landing Site: if Soyuz then Kazakhstan

Payload Duration on ISS: nominally 1.5 months

The Client recognizes that the scheduled launch and landing dates, and consequently the payload duration in orbit, are subject to NASA review and modification. Should launch and/or landing schedules change, NanoRacks will work with NASA and NCESSE to find an appropriate set of alternate ferry flights to and from the ISS. NCESSE will inform the Client of any changes.

The Client recognizes that while launch and landing schedules may change, there are certain SSEP deadlines (*e.g.*, submission of student proposals), as defined on the Schedule of Performance that cannot be allowed to slip.

2. More generally, the Client recognizes that some or all aspects of the space flight program,



including the flight opportunity and the launch date, the time aboard ISS, the ability of the crew to interface with the payload, or the specific mission that will carry the payload may change in date or duration, or become unable to be realized. NCSSE and NanoRacks will not be held liable for any and all actions taken by NASA, or contractors acting on behalf of NASA.

3. The Client recognizes that NASA, or contractors acting on behalf of NASA, may require changes that could result in additional expenses to the educational program. NanoRacks will contact NCSSE immediately if such a highly improbable situation arises, and will take no action without written authorization from NCSSE. In the event that NCSSE is unable to make the payments required by NASA or its contractors, the education program will be terminated. The Client recognizes that NCSSE's ability to make the required payments will be dependent on the Client's ability, coupled with the ability of other clients participating in the SSEP Community Program, to secure additional funding.

3.1 Formal termination will be made through a notification from NanoRacks to NCSSE, and the date of termination will be the date of the notification.

3.2 On termination, any payments that were not yet due to NCSSE from the Client, hence not yet due to Nanoracks, are no longer required to be made to Nanoracks and NCSSE.

4. The parties agree that the Liability and Risk of Loss provisions contained in Article 8 of the SAA, attached as Exhibit C to this Agreement, are incorporated into this Agreement and made a part of this Agreement. The term "Party" as used in Exhibit C shall mean the Client or NCSSE for purposes of this Agreement.

5. The parties will hold each other harmless in the event of any change in policy, procedure or agreement instituted by NASA or any organization acting on its behalf, as well as based on any actions of NASA or any such organization acting on its behalf.

6. All future press releases or communications by the Client which specifically address the SSEP, and the Clients participation in SSEP, and that are intended for the general public, must be pre-approved by both NanoRacks and NCSSE. Final say on the press release wording will rest with NanoRacks and NASA.

6.1 The Client must provide in advance all draft press releases, or communications intended for the general public, for both NCSSE and Nanoracks review, and not doing so risks program termination for that education client. The Client will submit all drafts to NCSSE.

6.2 All press releases or communications intended for the general public, and disseminated by the Client, must include:

"The Student Space Flight Experiments Program [or SSEP] is undertaken by the National Center for Earth and Space Science Education (NCSSE; <http://ncesse.org>), a project of the 501(c)(3) Tides Center, in partnership with Nanoracks, LLC (<http://www.nanorackslc.com>).

This on-orbit educational research opportunity is enabled through NanoRacks LLC, which is working in partnership with NASA under a Space Act Agreement as part of the utilization of the International Space Station as a National Laboratory."

For short press releases or public communications, the Client can request if alternate shorter wording is possible. Such requests shall be directed to NCESSE.

6.3 If the Client issues a press release or a communication intended for the general public that was not vetted and approved by NCESSE and Nanoracks, then Nanoracks can ask NCESSE to terminate the Client's participation in the SSEP.

6.4 NCESSE and NanoRacks cannot control what is ultimately reported by the media. In cases of inaccurate, even negative reporting, Nanoracks cannot terminate the SSEP, and cannot request NCESSE terminate the Client. It is recognized, however, that NASA has the right to take action it deems appropriate within the constraints specified by the SAA.

6.5 It is understood by the Client that there can be no endorsement stated or implied as coming from NASA of SSEP or of NCESSE.

7. The Client cannot approach any NASA offices, or NASA staff with requests for support of their SSEP Community Program. All such requests must be made through NCESSE, which will in turn take the request to NanoRacks. NanoRacks will review the request and determine if it should be forwarded to NASA. If such a request is made of NASA directly by the Client, Nanoracks can ask NCESSE to terminate the Client's participation in the SSEP.

8. This Agreement does not permit the Client to sublease the mini-lab slot to any organization, either commercial or educational that intends to market the slots rather than use it themselves.

8.1 In the event that an organization does market to the general community one or more of the mini-lab slots, its place on the manifest can be withdrawn without due compensation.

9. NanoRacks is responsible for all aspects of the SSEP Mission 5 to ISS payload, interface with NASA, and assuring NASA provisions are followed by all participants, including NCESSE and the Client.



## **Exhibit B: Schedule of Performance**

Below is a timeline of milestones for SSEP Mission 5 to the International Space Station (ISS), and covers activities associated with the experiment design competition, selection of flight experiments, launch, operations aboard ISS, and sample return to Earth.

### **Phase 1: The Timeline through student experiments selection—**

**September 9, 2013: SSEP begins in all participating communities**

**September 23, 2013: NCESSSE ships 5 Fluids Mixing Enclosure Mini-lab (MixStik) Kits to Each Participating Community**

**October 20, 2013: Deadline for Signed Contract and First of Two Installments** □

Final date for your community and SSEP to have a signed contract in place; by this date, SSEP must have received the signed contract, and a check to Tides Center (NCESSSE's parent non-profit) for 50% of the total cost.

**September 27, 2013: Deadline for Community's Two Patch Plan to be Received by NCESSSE (see Mission 5 to ISS Mission Patch page on SSEP website)**

**September 9 – November 11, 2013: 9 weeks of Experiment Design and Proposal Writing in Participating Communities** □

Community-wide engagement in SSEP; student teams frame experiments; student teams write and submit 5-page proposals to your community's lead organization on SSEP. Note: all proposing teams should be required to send a Notice of Intent to propose (NoI) to your community's lead organization on SSEP by **October 11**, so the size of your needed Step 1 Review Board can be determined and assembled in advance.

**November 11, 2013: Deadline for Student Team Proposal Submission to Your Community's Lead Organization for Step 1 Review**

**November 11-14, 2013:** proposals are processed by your community's lead organization on SSEP and distributed to your Step 1 Review Board.

**November 15-25, 2013:** your community's Step 1 Review Board completes review of proposals, and selects up to 3 finalist proposals for forwarding to SSEP for each experiment slot you have reserved. The Step 1 Review Board must only forward proposals that meet proposal requirements, as per the Proposal Requirements Checklist (found in the Flight Experiment Proposal Guide which is downloadable from the Document Library.)

**November 25, 2013: Deadline for Finalist Proposals to be Received by NCESSSE Via Email by 10:00 PM U.S. ET for Step 2 Review; proposals submitted after this deadline will not be accepted**

**CRITICAL NOTE:** Proposals must be sent to NCESSSE's Flight Operations Manager for SSEP.

**CRITICAL NOTE:** Once received, the Flight Ops Manager will determine if each proposal is complete. Incomplete proposals will not be accepted. If a proposal is incomplete, the submitting community will be notified as soon as possible, and have until the 10:00 PM ET deadline on November 25 to rectify the situation. This means that communities will want to get proposals to the Flight Ops Manager a few days before the deadline to ensure there is time to address any missing information.

**November 26-27, 2013:** finalist proposals from across the world are processed by SSEP Team and distributed to Step 2 Review Board.

**December 3-4, 2013:** Step 2 Review Board Meets

**December 5, 2013: Flight Experiments Tentatively Selected** □

NCESSE reviews Board's comments, assesses if there are any outstanding questions regarding fluids/solids to be flown, special handling instructions, and required astronaut interactions aboard ISS, and contacts student teams for any clarification or missing information. This milestone is not associated with a public announcement.

**December 5-12, 2013: Student Teams Lock Down Their Experiments** □

Student Experiment teams finalize their: 1) List of Experiment Samples (fluids/solids to be flown), 2) special handling instructions, and 3) baseline experiment timeline for astronaut interactions, based on the feedback from the Step 2 review committee.

**December 12, 2013: Flight Experiments Formally Selected** □

A list of proposals selected for flight are posted on this website. This milestone is associated with a public announcement.

**December 12, 2013: Deadline for Second and Final Installment** □

Deadline for NCESSE to receive second and final installment from your community, with a check to Tides Center (NCESSE's parent non-profit) for 50% of total cost, allowing program to proceed to the flight phase.

**December 12, 2013: Flight Experiment Details Submitted to NanoRacks**

NCESSE provides experiment details to NanoRacks for delivery to NASA. These details must include the List of Experiment Samples (fluids and solids to be flown), with prescribed concentrations, to be given to NASA Toxicology for flight safety review; and the timeline for astronaut interaction with the experiment aboard the ISS, to be provided to NASA's ISS crew activities scheduling team.

**December 18, 2013: NASA Toxicology Receives List of Experiment Samples** □

By this time NanoRacks provides the List of Experiment Samples to NASA Toxicology. NASA Toxicology requires receipt of the list 90 days in advance of launch. Launch must therefore take place no earlier than **March 18, 2014**.

**Phase 2: The timeline for selected experiments—**

Student teams with experiments selected for flight can continue to refine their experiments until they ship their loaded mini-laboratory to NanoRacks. Note, however, that any modification to the approved list of experiment samples (fluids and solids) for an experiment is limited to specifically REDUCING concentrations, and addition of new samples is NOT allowed. Also note that a sample can be removed entirely from the experiment's list of samples, which corresponds to reducing the concentration to 0.

During Phase 2, modifications to special handling instructions, and astronaut interaction times with the experiment aboard ISS, are possible in consultation with NCESSE and NanoRacks prior to mini-lab submission to Houston.

□

**February 1, 2014: Deadline for NCESSE to Receive Mission Patch(es) to Fly to ISS**



**T= 0, Handover: Deadline for NanoRacks to Receive All Mini-labs from Flight Experiment Teams; Deadline for Any Updates to Fluid/Solid Concentrations, Crew Interactions and Activities, and Special Handling Requirements**□

Once received, NanoRacks will log receipt of shipment, heat seal level 2 and 3 containment bags around each mini-laboratory, and load the mini-lab into the SSEP Mission 5 Payload.

**Current Target: Winter/Spring 2014 (Aim for Launch Minus 4 Weeks)**

**T + 8 Days: SSEP Mission 5 Payload Turned over by NanoRacks to NASA for Vehicle Integration**

**Current Target: Winter/Spring 2014 (Aim for Launch Minus 3 Weeks)**

**Launch Minus 10 Days or Less: SSEP Mission 5 Payload Is Loaded into Ferry Vehicle**

**T + 4 Weeks: Launch of SSEP Mission 5 Payload to ISS**

**Current Target: Spring 2014, no earlier than March 18, 2014**

**T + 4.4 Weeks: Payload Transferred from Ferry Vehicle to ISS (Launch Plus Approximately 3 Days)**

**T + Approximately 10 Weeks: SSEP Mission 5 Payload Returns to Earth (Launch Plus Approximately Six Weeks)**

**Current Target: Spring/Summer 2014**

**Return to Earth Plus 24-48 Hours: SSEP Mission 5 Payload Received by NanoRacks in Houston; Mini-labs Shipped Directly To Experiment Teams**□

Mini-lab ships as soon as FedEx is open. Shipping will be done as per special handling requirements defined by flight experiment team, *e.g.*, pack mini-lab with cold packs or dry ice. International experimenters will need to have their mini-lab shipped to a U.S. address such as an embassy or a consulate, or have a representative pick up their mini-lab in Houston.

**Note that NanoRacks cannot absolutely control the activities of NASA and its ISS partners when they are handling the payload.**

## **Exhibit C: Liability and Risk of Loss Provision**

### **ARTICLE 8. LIABILITY AND RISK OF LOSS**

1. The objective of this Article is to establish a cross-waiver of liability in the interest of encouraging participation in the exploration, exploitation, and use of outer space through the International Space Station (ISS). The Parties intend that the cross-waiver of liability be broadly construed to achieve this objective.

2. For the purposes of this Article:

a. The term "Damage" means:

- (i) Bodily injury to, or other impairment of health of, or death of, any person;
- (ii) Damage to, loss of, or loss of use of any property;
- (iii) Loss of revenue or profits; or
- (iv) Other direct, indirect, or consequential Damage.

b. The term "Launch Vehicle" means an object, or any part thereof, intended for launch, launched from Earth, or returning to Earth which carries Payloads, persons, or both.

c. The term "Partner State" includes each Contracting Party for which the Agreement Among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning Cooperation on the Civil International Space Station (IGA) has entered into force, pursuant to Article 25 of the IGA or pursuant to any successor agreement. A Partner State includes its Cooperating Agency. It also includes any entity specified in the Memorandum of Understanding (MOU) between NASA and the Government of Japan to assist the Government of Japan's Cooperating Agency in the implementation of that MOU.

d. The term "Payload" means all property to be flown or used on or in a Launch Vehicle or the ISS.

e. The term "Protected Space Operations" means all Launch Vehicle or Transfer Vehicle activities, ISS activities, and Payload activities on Earth, in outer space, or in transit between Earth and outer space in implementation of this Agreement, the IGA, MOUs concluded pursuant to the IGA, and implementing arrangements. It includes, but is not limited to:

- (i) Research, design, development, test, manufacture, assembly, integration, operation, or use of Launch Vehicles or Transfer Vehicles, the ISS, Payloads, or instruments, as well as related support equipment and facilities and services; and
- (ii) All activities related to ground support, test, training, simulation, or guidance and control equipment and related facilities or services.

"Protected Space Operations" also includes all activities related to evolution of the ISS, as provided for in Article 14 of the IGA.

"Protected Space Operations" excludes activities on Earth which are conducted on return from the ISS to develop further a Payload's product or process for use other than for ISS- related activities in implementation of the IGA.

f. The term "Related Entity" means:

- (i) A contractor or subcontractor of a Party or a Partner State at any tier;



- (ii) A user of a Party or a Partner State at any tier; or
- (iii) A contractor or subcontractor of a user or of a Party or a Partner State at any tier.

The terms "contractor" and "subcontractor" include suppliers of any kind.

The term "Related Entity" may also apply to a State, or an agency or institution of a State, having the same relationship to a Partner State as described in paragraphs (2)(f)(i) through (2)(f)(iii) of this Article or otherwise engaged in the implementation of Protected Space Operations as defined in paragraph (2)(e) above.

g. The term "Transfer Vehicle" means any vehicle that operates in space and transfers Payloads or persons or both between two different space objects, between two different locations on the same space object, or between a space object and the surface of a celestial body. A Transfer Vehicle also includes a vehicle that departs from and returns to the same location on a space object.

### 3. Cross-waiver of liability:

a. Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article based on Damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for Damage, whatever the legal basis for such claims, against:

- (i) Another Party;
- (ii) A Partner State other than the United States of America;
- (iii) A Related Entity of any entity identified in paragraph (3)(a)(i) or (3)(a)(ii) of this Article; or
- (iv) The employees of any of the entities identified in paragraphs (3)(a)(i) through (3)(a)(iii) of this Article.

b. In addition, each Party shall, by contract or otherwise, extend the cross-waiver of liability, as set forth in paragraph (3)(a) of this Article, to its Related Entities by requiring them, by contract or otherwise, to:

- (i) Waive all claims against the entities or persons identified in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article; and
- (ii) Require that their Related Entities waive all claims against the entities or persons identified in paragraphs (3)(a)(i) through (3)(a)(iv) of this Article.

c. For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of claims arising from the Convention on International Liability for Damage Caused by Space Objects, which entered into force on September 1, 1972, where the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.

d. Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not be applicable to:

- (i) Claims between a Party and its own Related Entity or between its own Related Entities;
- (ii) Claims made by a natural person, his/her estate, survivors or subrogees (except when a subrogee is a Party to this Agreement or is otherwise bound by the terms of this cross-waiver) for bodily injury to, or other impairment of health of, or death of, such person;
- (iii) Claims for Damage caused by willful misconduct;
- (iv) Intellectual property claims;

(v) Claims for Damage resulting from a failure of a Party to extend the cross-waiver of liability to its Related Entities, pursuant to paragraph (3)(b) of this Article; or

(vi) Claims by a Party arising out of or relating to another Party's failure to perform its obligations under this Agreement.

e. Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.