Universities Space Research Association (USRA)

Request for Proposal (RFP)

RFP Release Date:	13 October 2021
Letter of Intent Deadline:	NLT 12pm CDT, 27 October 2021
Proposals Due:	NLT 12pm CDT, 13 December 2021

DISCLAIMER

The information contained in this Request for Proposal document ("RFP") or subsequently provided to Proposers, whether verbally or in documentary or any other form by or on behalf of USRA or any of their employees or advisers, is provided to Proposers on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

This RFP is not an agreement and is neither an offer nor invitation by USRA to the prospective Proposers or any other person. The purpose of this RFP is to provide interested parties with information that may be useful to them in the formulation of their Proposals pursuant to this RFP.

USRA also accepts no liability of any nature whether resulting from negligence or otherwise however caused arising from reliance of any Proposer upon the statements contained in this RFP. USRA may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this RFP.

The Proposer shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by USRA or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses will remain with the Proposer and USRA shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by an Applicant in preparation or submission of the Proposal, regardless of the conduct or outcome of the Selection Process.

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Request for Proposal (RFP) Summary

Universities Space Research Association (USRA), in conjunction with the Air Force Research Laboratory (AFRL) and the U.S. Space Force (USSF) solicits proposals for the University Consortium Research Opportunity. U.S. accredited colleges and universities are invited to submit a proposal in accordance with this RFP as described in the Statement of Work (SOW), and other enclosures.

Proposal Deadline and Submission

Proposal due date is not later than 12 pm CDT, 13 December 2021. Proposals received after the established deadline may not be reviewed.

Proposals shall be signed by an authorized representative of the Offeror and submitted through the USRA Secure File Transfer Site: https://transfer.hou.usra.edu/filedrop/UREP.

Period of Performance

USRA anticipates awarding subagreements for up to two years (24 months), contingent on availability of funds. The period of performance will commence upon subagreement award date.

Type of Subagreement

USRA anticipates the issuance of a Cost Reimbursable subagreement.

Funding Amount and Award Size

USRA intends to award multiple subagreements, subject to availability of funding. Proposed efforts may range in size and complexity.

Subagreements will be awarded for up to $350,000 contingent on availability of funds.

Eligibility Requirements

Offerors that meet the following eligibility criteria may submit a proposal in response to this RFP.

- U.S. accredited, public and private institutions of higher education only (including community colleges).
- Principal Investigators and Co-Principal Investigators must be U.S. citizens.
- Work must be performed in the U.S.

Terms and Conditions

As stated in Enclosure (1) –Draft Subagreement Template, Attachment A.

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Letter of Intent Requirement

Prior to submitting a full proposal, interested institutions are required to submit a Letter of Intent to USRA. **Letters of Intent are due not later than 12pm CDT, 27 October 2021.** Please refer to the Letter of Intent Instructions for additional details.

USRA Contacts

The points of contact (POC) for technical and contractual questions regarding this RFP are:

Technical POC:	Dr. Amanda Smith Hackler USRA Director of Education and Consortium Program Principal Investigator Afrl-urep@usra.edu Ms. Denisse Garza USRA Senior Manager Afrl-urep@usra.edu
Contracts POC:	Ms. Florida Hendricks USRA Principal Manager, Contracts and Grants Afrl-urep@usra.edu

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Statement of Work (SOW)

1.0 Program Summary

The U.S. Space Force (USSF) and Air Force Research Laboratory (AFRL) established the University Consortium Research Opportunity to engage students and postdoctoral fellows in space-based research and development to increase the number and diversity of future space professionals. This is a new approach to tap into university research and innovation to solve critical USSF technical problems. It allows for building the capacity for space research and innovation at institutes of higher education, including Historically Black Colleges and Universities (HBCUs), Hispanic Serving Institutions (HSIs), Tribal Colleges and Universities (TCUs), and other designated Minority Serving Institutions (MSIs). The USSF and the University Consortium Research Opportunity will fund university teams committed to developing new and innovative solutions to research problems and/or maturing their existing product or service.

2.0 Goals and Objectives

The USSF, AFRL, and Universities Space Research Association's (USRA) goals and objectives for the University Consortium Research Opportunity are:

1) The University Consortium Research Opportunity will connect AFRL with academia through the advancement of university-based research that addresses risks and other areas of scientific interest to secure long-term, productive partnerships.

2) To improve research collaboration efforts between AFRL, USSF, and institutions of higher education to contribute and advance meaningful scientific research.

3) To provide undergraduate, graduate, and postdoctoral fellows with authentic research opportunities in collaboration with AFRL that increase interest in science, technology, engineering, and mathematics (STEM) careers of the future.

3.0 Research Topics

The University Consortium Research Opportunity will focus on specific topic areas aimed at addressing the mission needs of the USSF. Colleges and universities interested in pursuing this funding opportunity should propose innovative solutions for **one** of the following research topics.

RESEARCH TOPIC #1 – LEVERAGING MICROGRAVITY FOR MILITARY/COMMERCIAL APPLICATIONS & PRODUCTS
OVERVIEW: The recent explosive growth in the satellite and launch industries has led to a corresponding increase in microgravity processing interest and opportunities (e.g., Virgin Galactic, Space Station commercial opportunities, etc.). A host of commercial entities are now actively exploring uses of the microgravity environment in near-Earth orbit for commercial product applications, many of which have joint military applications. This topic will explore both potential dual use commercial/military microgravity products, as well as the fundamental science underpinning the microgravity processing environment.

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ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Over the past 30 years, researchers have conducted hundreds of experiments examining the effect of space, specifically the lack of gravity, on various processes and materials. NASA has taken the lead for this work in the U.S. with the majority of microgravity experiments performed on the Space Shuttle and International Space Station (ISS). In the course of this research, many types of materials and processes have had their behavior studied in microgravity (e.g., protein crystals, alloys, semiconductor materials, thin films, etc.). Although the pace of the research was significantly hampered by the slow pace of space flight activities, many positive results were obtained.

The objective of this effort is the leveraging of commercial activities and utilization of the microgravity environment to produce improved products/results in relevant Department of Defense (DoD) technology areas that cannot be accomplished on the ground. Several possible areas/examples are:

- Semiconductor single crystal growth (e.g., low defect Gallium Arsenide for power conversion and sensing applications)
- Structural casting (e.g., ultra-high strength materials)
- Crystallization suppression in amorphous materials (e.g., ZBLAN)
- Protein Crystal Growth

RESEARCH TOPIC #2 –

ON-ORBIT SERVICING, ASSEMBLY AND MANUFACTURING

OVERVIEW:
The rapid increase in commercial and government investment has created a space domain that is ever growing in complexity. A key problem is how best to manage costs with limited launch capabilities and spacecraft lifetimes. One possible solution would be to use autonomous robotic spacecraft to perform work on spacecraft in situ. This would include duties such as on-orbit inspection, repair, functional upgrades, refueling and decommissioning/de-orbiting.

ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Traditional spacecraft are typically fully fabricated on ground for a fixed mission and lifetime with little opportunity for change once in orbit. For example, when damage occurs they cannot be repaired, when sensor technology improves they cannot be upgraded, and when fuel is consumed they lose maneuverability. In most cases, the only solution is to launch an entirely new replacement spacecraft. This is both expensive, time consuming, wasteful, and results in low mission responsivity and flexibility. Additionally, launch constraints impose limits on size, complexity of spacecraft if there is no option to assemble or manufacture in orbit.
Advances in autonomy, robotics and additive manufacturing have made it possible to consider a new paradigm – that of on-orbit servicing, assembly and manufacturing. We are seeking ideas from ways to repair, upgrade and refuel spacecraft, methods for fault inspection and diagnosis, and concepts for space-based robotics and autonomous operation. This challenge may also consider new approaches to construction and assembly to create large, low-mass structures and instruments. This could include materials processing and additive manufacturing in the space environment.

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RESEARCH TOPIC #3 –

QUANTUM SENSING FOR LOCATION AND EM FIELD DETECTION

OVERVIEW:
Quantum sensors can provide location information in environments where GPS signals are not available (e.g., underground, underwater, or in denied locations), and can detect electric and magnetic fields with high sensitivity to receive signals or detect other activity. How can we apply these capabilities in military, space, and other arenas?

ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Several advanced sensing capabilities are critical to US interests. Position, navigation, and timing (PNT) is critical to systems across the government, and the vulnerability of GPS signals to jamming and spoofing requires the development of sensors that provide PNT in the absence of GPS. Measuring the electric-field (E-field) and/or magnetic-field (B-field) signals emanated from an associated object can therefore help us determine its functional state, which is highly beneficial when physical contacts or invasive probes are not feasible or not allowed. Hence, high-sensitivity E-field and B-field detectors will be extremely useful in these applications.

Quantum sensors are typically "best-in-class" for these applications, and there is a strong motivation for both improving their performance and developing component technologies to enable low cost, size, weight, and power (C-SWAP) quantum sensors.

The primary quantum sensors for PNT are atom-based devices that are relatively complex, and for them to be implemented into moving platforms, their C-SWAP must be substantially reduced. For example, light-pulse atom interferometers require a complex laser system with multiple optical channels, where each channel will be required to switch on and off, shift its frequency with high accuracy, and actively control its power. Also, the atoms must be contained within a vacuum chamber, and control and power electronics control the laser system, the vacuum system, and the magnetic field at the atoms. Research is needed to drastically miniaturize the laser system, preferably into a photonic integrated circuit. Reducing the SWAP of the vacuum system and eliminating active pumps in the system is also essential and requires research. Many of the atom-based quantum sensors have complex requirements with common themes across them (e.g., lasers and vacuum systems), and research to reduce C-SWAP and increase their tolerance to extreme environments (temperature, vibration, etc.) will enable their adoption into broad-ranging applications.

For electric-field and magnetic-field sensing, the major challenge is the signals at extremely low frequencies (DC or quasi-DC). The conventional electronic sensors suffer from the thermal noise and 1/f noise, and therefore their performance cannot be as good as the electronic state of the art at RF frequencies. Enabled by Atomic-vapor-cell technology, quantum electrometers and magnetometers demonstrate much better sensitivities at DC to quasi-DC regime compared to other existing sensing technologies. For measuring E-field and B-field signals inside a shielded enclosure, a penetrative EM probe has also been experimentally demonstrated by utilizing relativistic effects and the quantum properties of polarized neutrons. There are, however, still great demands for further enhancing their quantum sensing capabilities in field-deployable applications. For technical challenges, we are looking for new coating materials on the inner surface of alkali-vapor cells to reduce the inner-surface electric conductivity for electrometer applications and to increase the spin relaxation time for magnetometer applications. For challenges in advanced quantum approaches, we are looking for novel methods to entangle atomic spins in the same vapor cell or between different vapor cells. We are also seeking a solution for generating non-classical quantum states, such as a spin squeezed state, of neutrons.

Another avenue of research is the continued improvement in the performance of quantum sensors. Miniaturization will often reduce the sensitivity, so techniques to mitigate this need to be researched to enable quantum sensing in mobile applications. Techniques to increase performance can either classical (e.g.,

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technical improvements to increase signal size) or purely quantum (e.g., spin squeezing or entanglement). Simplified techniques to implement spin squeezing or entanglement are particularly interesting.

RESEARCH TOPIC #4 –

RAPID INITIAL ORBIT DETERMINATION

OVERVIEW: As the economic value of space assets in GEO increases, it is critically important to ensure flight safety by rapidly determining the orbits of newly detected debris objects. While passive optical sensors routinely provide angles-only data to the Space Surveillance Network, augmenting current systems with range and range-rate information is one way to speed up the initial orbit determination process.

ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Statistical algorithms are sought which produce joint estimates of satellite states from mixed angles, range, and range-rate information. It is desired that the method not approximate non-linear, gravitational dynamics yet remains computationally tractable for implementation on an industrial-class workstation. The method would be implemented using measurements from a heterogeneous sensor network.

As an example, a wide field-of-view telescope could be scanning a region of GEO and detect an uncatalogued debris object. Using the topocentric angles, a co-located LiDAR system could be cued to measure the objects range, range-rate, or both. The proposed method should be capable of utilizing the combination of measurements to rapidly determine the orbit of the debris object.

RESEARCH TOPIC #5 –

ROCKET CARGO TECHNOLOGY FOR AGILE GLOBAL LOGISTICS

OVERVIEW:
The Department of the Air Force is determining the viability and utility of using large commercial rockets for Department of Defense global logistics. We are interested in solutions to improve our ability to:

1. Air drop cargo from the rocket after re-entry in order to service locations where a rocket or aircraft cannot possibly land.
2. Develop intermodal cargo containers that are mass-optimized for space launch,
3. Engineer a rocket cargo bay and logistics for rapid loading and unloading.

ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Commercial rocket advances have opened opportunities to improve delivery cost and speed of air cargo operations to transport equipment needed to quickly restore a loss of mission operation as well as provide humanitarian aid and disaster relief payloads to stricken areas. There now exists a need for advanced development of new capabilities to move up to 100 tons of cargo for delivery anywhere on the planet within tactical timelines.

Terrain and disaster conditions will not always permit cargo bearing rockets to land in close proximity to target locations. Options must be developed for air-dropping large payloads at high speeds upon rocket reentry and before the rocket must egress to a safe landing location. Delivery options need to balance breaking up large payloads into smaller packages while maintaining mass efficiency. Further considerations include large payloads such as hospital equipment and tents that cannot be broken into smaller packages.

Innovations in cargo packaging and inter-modal containers are needed that have a reasonable mass-optimization for space launch that will still accelerate the speed required to load and unload rocket cargo.

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Furthermore, containers should allow cargo to continue transport via air, sea, rail, and land modes without repackaging.

Finally, innovative concepts are required for loading/unloading cargo from the payload bay of a large rocket generally 150 from the ground. Solutions must maintain time efficiencies to equal the 30–60-minute global transport times, develop cargo holds that can properly position the center-of-gravity, and containers that can survive a 150-foot drop.

RESEARCH TOPIC #6 –

SMART SENSING AND MACHINE LEARNING FOR GROUND BASED REMOTE SENSING OF SATELLITES

OVERVIEW:
Space domain awareness requires advanced sensing, data processing, and algorithms. Such sensing requires large amounts of data collection, which in turn requires automated reduction of data to highlight for a space guardian the most relevant activities in space. The emergent areas of investigation into smart sensing machine learning for automated reduction of data are areas that could potentially revolutionize how ground-based remote sensing of satellites and space debris is accomplished.

ADDITIONAL CONTEXT TO PROBLEM STATEMENT:
Characterization of space objects is a remote sensing problem. By using photons reflected or emitted from the space object one seeks to understand the properties of that space object. Properties can be as a function of time, either over long durations such as months and weeks, or seconds to minutes. Non-traditional sensing methods, multispectral, infrared, and fusion of information can all reveal characteristics of a space object. Many times, determining the characteristics of a space object from observations is a classical inverse problem. Machine learning techniques and novel sensing techniques have been explored in the past (references available). However, Machine Learning algorithms have advanced dramatically in the past several years and we seek advanced techniques to solve remaining challenges in space object characterization. Additionally, new modalities for sensing, to include “smart sensors” which permit fusion of diverse sensing methods promise to provide new types of data, potentially enabling enhanced characterization of space objects.

4.0 Principal Investigator (PI) Responsibilities

- Research proposals should include a realistic plan to address the problem statement/research topic area of choice, including the expected results and direction of any future research.
- The proposed approach should demonstrate understanding of the problem statement/research topic area with relevant references included.
- The proposal should also discuss in detail all new and innovative aspects of the research approach.
- PIs should identify all possible risks, both technical and programmatic, and propose a mitigation plan.
- Students are a focal point of this opportunity, and PIs should include undergraduate and graduate students, and postdoctoral fellows as part of their research team. The PIs are required to serve as mentors to the students. A brief description of the student’s work plan should be included in the proposal. PIs are encouraged to propose new approaches to integrate students in their research.

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- PIs are required to allocate a portion of their total annual budget towards student and postdoctoral fellows stipend support and travel associated with program events on-site at Kirtland Air Force Base (KAFB).
- Additionally, PIs will be responsible for identifying two students for participation in the AFRL Scholars Program. The students identified will participate in a summer internship onsite at KAFB working under the guidance of an AFRL mentor. The stipend payment associated with the internship will be paid by AFRL/USRA and should not be included the proposed budget.

5.0 Place of Performance

Research should be conducted predominately at the PI's university and/or facility. The research may also be conducted virtually, as needed. PIs and students/postdocs with U.S. citizenship, may be asked to travel to Kirtland Air Force Base, in Albuquerque, New Mexico to conduct research on base, and/or meet with AFRL researchers.

6.0 Reporting Requirements

The Offeror will be required to submit quarterly technical progress reports that specifically highlight progress and accomplishments resulting from the proposed research effort. Technical Progress Reports will be due on the following dates: 15 October, 15 January, 15 April, and 15 July during the period of performance. An annual report summarizing the project activity and accomplishments will be due 30 days prior to the award anniversary date.

Additionally, the recipient will be required to submit a final report summarizing the accomplishments and results resulting from their research. The final report will be due within 30 days of the end of the period of performance.

NOTE: Additional reporting requirements will flow down from USRA's prime agreement with AFRL and may include (but are not limited to):

- Federal Financial Report (SF-425) (due quarterly)
- Audit Reports

7.0 USRA Responsibilities

- USRA will assign a Program Specialist to work closely with AFRL Program Managers and the Core Technical Competency (CTC) Lead(s) and serve as the primary interface throughout the implementation period with PIs.
- USRA will explore options for students and postdoctoral fellows supported through the University Consortium Research Opportunity to participate in innovative program events, both virtually and on-site.
- As needed and per the request of AFRL Management, USRA will process security clearances for PIs, faculty, students, and postdoctoral fellows, and arrange access to KAFB for meetings and other events.
- USRA will manage funding allocation to the selected college or university.

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Letter of Intent Instructions

As previously mentioned, prior to submitting a full proposal, interested institutions are required to submit a Letter of Intent to USRA at https://transfer.hou.usra.edu/filedrop/UREP. **Letters of Intent are due not later than 12pm CDT, 27 October 2021.**

Letters should be no more than **one page** and include the following:

a. Name and title of PI and Co-PI
b. Institution Name
c. Descriptive title of the research topic
d. Description of the proposed effort to include but not limited to:
    i. Summary of how the proposed effort meets the University Consortium Research Opportunity program goals and objectives as described in the statement of work (SOW).
    ii. Rationale for proposed effort.
    iii. Details of how the success of the proposed effort will be met and the recipient's capacities to achieve success in the proposed effort.
    iv. A brief explanation detailing how students/postdocs will support the proposed research.
e. Proposed period of performance.
f. Administrative/business contact (name, address, phone, email address).
g. Limit word count to 500, single-space, one-inch margins, 12-point Arial, Calibri, or Times New Roman font.
h. Letter to verify that the proposer is U.S. accredited, public and private institutions of higher education, that the Principal Investigators and Co-Principal Investigators are U.S. citizens, and that work will be performed in the U.S.
i. Both Cover Letter and Verification Letter (listed in paragraph (h) above should be signed by the authorized organizational representative to bind the institution.

Letter of Intent Review and Notification

The Letter of Intent will be reviewed in coordination with the USRA Contracts and Grants Principal Manager, USRA Management, and designated AFRL Program Manager(s). The review procedure is intended to: (1) confirm the institution's eligibility per the requirements outlined in this RFP; (2) minimize unnecessary efforts in proposal preparation; (3) track the number of interested Offerors in the research funding opportunity; and (4) encourage interested Offerors to submit full proposals. Interested Offerors will receive written notification to proceed and submit full proposal to USRA.

NOTE: USRA reserves the right to reject a Letter of Intent provided by an interested Offeror. Offerors will be notified by USRA with a response to their Letter of Intent.

Proposal Submission Instructions

USRA seeks submission of proposals from Offerors that: (1) submitted a Letter of Intent; (2) received written notification from USRA to proceed and submit a full proposal; and (3) meet the RFP eligibility requirements. In response to the RFP, Offerors shall identify and mark proprietary/confidential information where applicable. **Proposals are due not later than 12pm CDT, 13 December 2021.** Acceptance of late proposals will be at USRA's sole discretion.

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Technical Proposal

As previously mentioned, proposals shall be signed by an authorized representative of the Offeror and submitted through the USRA Secure File Transfer Site: https://transfer.hou.usra.edu/filedrop/UREP.

Technical proposals should be formatted according to the order listed below and ***should not exceed 19 pages*** excluding certifications, forms, endorsement letters and appendices.

Technical Proposal Content

1) **Cover Letter (one page):** The following information shall be submitted with your Cover Letter:
    a. Company or institution name & address
    b. Business classification
    c. Name, title & phone number of Offeror's Technical POC
    d. Name, title & phone number of Offeror's Administrative POC
    e. Name, mailing address, telephone number and POC of Offeror's audit agency, if known
    f. Contractor and Government Entity (CAGE) Code
    g. New Unique Entity Identifier
    h. Taxpayer Identification Number (TIN)
    i. Proposal date
    j. Proposal validity period (minimum of 120 days)

2) **Table of Contents (one page)**

3) **Proposal Summary (2 page maximum):** Provide a brief description of the proposed effort to include but not limited to:
    a. Summary of how the proposed effort meets the University Consortium Research Opportunity goals and objectives as described in the statement of work (SOW).
    b. Brief rationale for the proposed effort.
    c. Number of students involved, academic classification, and qualifications for supporting proposed research.
    d. Details of how the success of the proposed effort will be achieved and the recipient's capacities to achieve success in the proposed effort.

4) **Proposal Description (10-13 pages):** Provide a detailed description of the proposed activity to include but not limited to:
    a. Introduction
    b. Scientific and Technical Relevance
    c. Goals and Objectives
    d. Project Plan and Technical Approaches
    e. Project Timeline and Key Progress Milestones
    f. Risk Mitigation Plans
    g. Student Involvement and Work Plans

5) **Personnel (one page maximum)**
    a. Qualification of PI, co-PI, and other key personnel
    b. Detailed CV/Resume for all key personnel may be submitted as an appendix.

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6) **References: (1page):** If applicable, provide list of references.

7) **Appendices:**
   a. Appendices are excluded from the page count.
   b. This should be brief as the proposal should be capable of standing alone.
   c. This material will not be included in the evaluation, but for the purpose of providing evaluators with additional information that may be needed.

Cost Proposal

Offerors must provide a detailed cost break-out to conduct a cost analysis of the proposal that includes a basis of estimate and other supporting documents as stated below:

1) Budget shall be broken down by Major Cost Elements which includes Direct Labor (Labor Categories, Labor Hours or Percentage of Time or FTE, Labor Hours and Labor Rates), Fringe benefits, Materials, Equipment (with back up quotes), ODC's (Other Direct Costs) with supporting backup information, Travel (#of trips, # of days, # of travelers, departure/arrival information, purpose), MTDC (Modified Total Direct Costs), and Total Costs.

   Each of the major cost elements shall be supported by a written narrative and an excel spreadsheet (Enclosure 2) to be submitted with the proposal. The cost narrative is separate from the Technical Proposal and excluded from the 20-page maximum.

2) The University's Facilities and Administrative (F&A) Rate and/or Indirect Rate Agreements or equivalent approved by a government agency.

3) If travel is applicable, the number and destination for each travel trip, and the breakdown of the airfare, car rental, lodging, and per diem. Foreign travel is not allowed under this RFP.

Proposal Preparation Expenses

This solicitation does not commit USRA to issue a subagreement. All proposal preparation expenses are the sole responsibility of the Offeror and are not reimbursable.

Proposal Evaluation

Evaluation Process

USRA will manage a comprehensive proposal evaluation process that includes multiple phases. An initial review will be conducted by USRA to determine the Offeror's eligibility, submission of all required forms, and confirmation the Offeror submitted a Letter of Intent and received approval to submit a full proposal. Proposals passing the initial review are assessed by external evaluators considered subject matter experts (SMEs) in the proposed research area. Evaluators will assess the

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proposals based on the merit review criterion detailed below and provide feedback to a government selection panel.

Merit Review Criteria

All individuals including the external evaluators, the government selection panel, and USRA will evaluate Offeror proposals based on the following criterion:

- Scientific and Technical Merit
- Student Involvement
- Management Plan and Risk Mitigation
- Budget Approach

Scientific and Technical Merit – (40%)

This criterion takes into consideration the following:

- Extent to which the proposal demonstrates understanding of the problem statement/research topic area.
- Extent to which the proposed research aligns with the research needs of AFRL and USSF.
- PI's ability to leverage existing capabilities and competencies.
- Degree to which the proposed scope of work and delivery schedule can be accomplished reasonably and successfully during the period of performance.
- Degree to which the proposed research encourages new ideas from multiple fields of research.

Student Involvement – (20%)

This criterion takes into consideration the following:

- Extent to which the PI will ensure undergraduate, graduate, and postdoctoral fellows are engaged with the research team and obtain a hands-on learning experience.
- Strength of the students' project work plan.
- Degree to which PIs intend to promote student opportunities, such as internships, to increase interest in STEM careers within AFRL and USSF.
- New approaches to integrating students in their research.

Management Plan and Risk Mitigation – (20%)

This criterion takes into consideration the following:

- Extent to which the research team has the expertise and resources to accomplish the proposed research goals.
- Degree to which all technical and programmatic risks were identified and a mitigation plan was developed.
- Strength of the risk mitigation plan.
- Degree to which the PI plans to track and report metrics, outcomes, lessons learned, and overall impact of the proposed research.

Budget Approach – (20%)

This criterion takes into consideration the following:

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- Degree to which the proposed skills and level of technical effort/direct labor is appropriate for the scope of work proposed.
- Degree to which the proposed types and quantities of equipment and materials are appropriate and reasonable for the scope of work proposed.
- Degree to which the proposed budget will be used to support students as part of the research team.
- Reasonableness of any proposed travel.

Other Information

RFP Amendments

USRA reserves the right to issue any Request for Proposal Amendment(s) to the documents. Offerors will be required to acknowledge the receipt of Amendments, if issued and submit with their proposal.

Waivers, Acceptance or Rejection

USRA, notwithstanding any other provision of this Solicitation (including all attached documents), expressly reserves the right to:

- Waive any minor informality or irregularity in the solicitation procedures or proposals if the objectives of this solicitation are indeed met.
- Reject any and/or all proposals,
- Reissue a solicitation, or
- Not issue any subagreement.

Questions

All questions regarding this solicitation shall be submitted via electronic mail (e-mail) no later than 12:00pm (CDT) on **5 November 2021** to afrl-urep@usra.edu. For each question, please include the reference to the specific section(s) of the RFP to which the question applies following the format below. Answers to questions will be anonymously published **on or before 17 November 2021**.

Question No.	*Page*	*Document/Section #*	*Question*

Attachments

The following enclosures are included with this RFP.

- Enclosure (1) Draft Subagreement Template:
  - Attachment A – Prime Contract Flow-Down Provisions
- Enclosure (2) Budget Proposal Form

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ENCLOSURE (1) DRAFT SUBAGREEMENT TEMPLATE

Subagreement

between

Universities Space Research Association

and

[Name of Institution]

USRA Address:	Universities Space Research Association 7178 Columbia Gateway Drive Columbia, Maryland 21046
Subrecipient Address:	_____ _____ _____
USRA's Principal Investigator:	_____
Subrecipient Co-Investigator:	_____
Effective Date: _____	
Subagreement Type:	_____
Subagreement Value:	NOT TO EXCEED $[TBD]
Subagreement Funding:	NOT TO EXCEED $[TBD]
Period of Performance:	_____20XX through _____20XX
Proposal Title:	_____
Issued Under USRA's Prime Agreement:	
Project Number:	
Subagreement Number:	SUBK-21-XXXX
USRA Purchase Order#:	P21-XXXX
Catalog of Federal Domestic Assistance (CFDA)#:	

Universities Space Research Association (USRA)

and

_____

PREAMBLE

This agreement, effective as of the fully executed date is signed by and between Universities Space Research Association (USRA or Prime Recipient), located at 7178 Columbia, Gateway Drive, Columbia, Maryland 21046, and _____ (Subrecipient), located at _____.

RECITALS

Whereas, USRA and Subrecipient desire to enter into a Subagreement relationship for the performance of work on Cooperative Agreement Cooperative Agreement #_____; as further described in the Statement of Work; and

Whereas, USRA and Subrecipient desire to define their mutual rights and obligations during the performance of work hereunder; and

Whereas, this Subagreement, including all laws, regulations and terms incorporated by reference in effect on the date of this award or modified thereafter, represents the definitive terms and conditions for the work contemplated by this Subagreement;

Now therefore, in consideration of the promises and mutual agreements hereinafter set forth, the parties hereto mutually agree as follows:

ARTICLE I - STATEMENT OF WORK

The Subrecipient shall provide the necessary personnel and facilities to perform the effort as described in Subrecipient's Proposal entitled "_____" dated _____20XX (incorporated herein as Attachment B).

ARTICLE II - PERIOD OF PERFORMANCE

A. This period of performance for all work under this Subagreement shall be from _____, 20XX through _____, 20XX.

B. Whenever the Subrecipient knows, or reasonably should know, that any actual or potential condition is delaying or threatens to delay the timely performance of the work, the Subrecipient shall, within 10 days, give USRA notice thereof, including all relevant information. Should any of the Subrecipient's personnel be unable to perform scheduled services because of illness, resignation, or other causes beyond the control of the Subrecipient, Subrecipient shall notify USRA's Contract Specialist, *as appropriate*, promptly. The Subrecipient shall attempt to replace such personnel who meet the work requirements, as determined by USRA. Failure to provide acceptable personnel in a timely manner may result in immediate termination of this agreement by USRA without further obligation on the part of USRA.

ARTICLE III - REPORTING REQUIREMENTS AND DELIVERABLES

A. Subrecipient shall provide the following deliverables to USRA:

i. Subrecipient shall provide reporting specified by the by the USRA program office in sufficient detail to allow USRA to evaluate and measure performance and ensure completion of its own performance under the Prime Award or Cooperative Agreement.

ii. All the administrative reporting requirements required by the government-wide regulations are set forth in the general AFRL PRS Assistance Terms and Conditions and the DoD Research and Development (R&D) General Terms and Conditions (September 2020) and are incorporated into this Award and referenced in Attachment A of this Subagreement. These general terms and conditions implement Office of Management and Budget (OMB) guidance, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," published in the Code of Federal Regulations (CFR) at 2 CFR part 200 and implemented by the DoD at 2 CFR part 1103, "Interim Grants and Cooperative Agreements Implementation of Guidance in 2 CFR part 200" (79 FR 76047, December 19, 2014)

iii. Subagreement Closeout Documents:

The following closeout material is required as part of this subagreement. All closeout material is to be submitted to the USRA Representative listed below. Final payment will not be released without the submission of the closeout documents below.

- Subrecipient's Release (See Attachment C)
- Subrecipient's Assignment of Refund, Rebates…(See Attachment C)
- Final Report of Inventions (See Attachment C)
- Final Cumulative Invoice

B. Submission of Subagreement Reports and Deliverables.

All reports shall include the Subagreement Number. Subrecipient shall submit one original and one copy of all reports required by Article III of this Subagreement to:

Name:
Phone:
Email:

The report deliverable schedule will be determined upon award.

ARTICLE IV - KEY PERSONNEL

The following Subrecipient personnel are considered essential to the successful performance of the effort described herein, and shall not be replaced and/or removed from this effort without the prior written consent of the USRA Program Director:

Name/Position: _____

ARTICLE V – PLACE OF PERFORMANCE

Work under this Subagreement shall be performed at Subrecipient's facilities or at other site mutually agreed upon.

ARTICLE VI – COST REIMBURSABLE

This Cost Reimbursable Subagreement is awarded in the amount not to exceed $_____ and is made pursuant to the budget incorporated herein (Attachment B).

This is an incrementally funded Subagreement. The current funding amount allotted for this Subagreement is $xxx. USRA is not obligated to pay Subrecipient in excess of this funded amount under any circumstances. This is a multiple year Subagreement. Contingent on the availability of funds, scientific progress of the project, and continued relevance to AFRL programs, USRA anticipates continuing support at approximately the following levels:

Option Period 1: _____, Not-to-Exceed $xxx

Notwithstanding any other provision of this Subagreement, all payments to the Subrecipient shall be subject to the funding limitation set forth above. USRA's obligation to Subrecipient shall not exceed the funding limitation set forth above.

Any changes in funding will be made by way of USRA-issued Subagreement Modifications. Each such Subagreement Modification shall state the total funds allotted for the performance of this Subagreement. The provisions relating to funds allotted shall be deemed modified in accordance with each such Subagreement Modification. A decrease in funding may not be affected to the extent that the new sum authorized would be less than the sum of Subrecipient's previously authorized expenditures and obligations (including termination costs) to the effective date of the Subagreement Modification decreasing the funds.

ARTICLE VII - INVOICING AND PAYMENT

A. Invoicing

Before the Subrecipient's invoice will be processed for payment, the Prime Recipient must receive a proper invoice from the Subrecipient.

Invoices should be sent to USRAAPINVOICES@usra.edu
If unable to email invoices, please send to:

USRA
Attention: Accounts Payable
3600 Bay Area Blvd
Houston, TX 77058

Invoice Requirements

Invoices must include:

- ☑ 1. USRA assigned PO number
- ☑ 2. Vendor invoice number
- ☑ 3. Invoice date
- ☑ 4. Description that refers to work completed/delivered
- ☑ 5. Dates of shipment, service, or period of performance of the invoiced item
- ☑ 6. Subagreement number
- ☑ 7. Remittance address
- ☑ 8. Amount due
- ☑ 9. Cumulative amount billed to date
- ☑ 10. Certification, authorized signature, printed name, email and phone number
- ☑ 11. Tax Identification Number (TIN)
- ☑ 12. Any required backup documents
- ☑ 13. Numbered pages

"I hereby certify that the above invoice is correct and just, that payment therefore has not been received."

_____	_____
Authorized Signature	*Name (Please Print)*
_____	_____
Email	*Phone Number/Extension*

B. Payments

Automatic Clearing House (ACH) payments will be made by USRA via Electronic Funds Transfer (EFT) upon receipt of the Electronic Payment Authorization Form. EFT payments will be made in response to a properly submitted invoices in accordance with the following schedule:

- [TBD]

The final invoice shall include the Subagreement number and the following certification:
"Payment of this final invoice shall constitute complete satisfaction of all of USRA's obligations under this Agreement and Subrecipient releases and discharges USRA from all further claims and obligations upon payment hereof."

All payments shall be remitted to: _____

C. Payment of Final Invoice

If the deliverables/requirements required under Article III of this Subagreement are not delivered or are determined to be deficient or unacceptable upon delivery, USRA may withhold payment to the Subrecipient until such time as the reports are delivered and are determined by the USRA Program Director to be acceptable. Such withholding of payment is in addition to all other rights and remedies available to USRA under the terms and conditions of this Subagreement.

ARTICLE VIII - REPRESENTATIVES

A. Technical Matters

The USRA Technical Representative is authorized to issue technical directions under the Subagreement on behalf of USRA. This direction may include instructions that provide details or otherwise complete the general scope of work set forth hereunder.

The USRA Technical Representative will also exercise a broad general power of supervision and control over the results of the work of the Subrecipient to ensure satisfactory performance. This power of supervision shall include the right to inspect, stop work, make suggestions and recommendations as to the details of the work, and oversee all technical direction of the projects that the Subrecipient's personnel are assigned to work on. Subrecipient and its personnel shall adhere to all requirements and specifications of the Government governing the workplace and the nature of the work. However, the Subrecipient, in conjunction with its personnel, will determine the method, details, and means of accomplishing the work assigned to it.

All matters affecting the technical direction of the work under this Agreement shall be referred to the USRA Technical Representative.

USRA Technical Representative:

- Name, Title, Phone Number and Email Address

Subrecipient Technical Representative:

- Name, Title, Phone Number and Email Address

B. Financial and Administrative Matters

The representatives of the parties for all financial and administrative matters are:

USRA Financial Representative:

- Name, Title, Phone Number and Email Address

USRA Contract Representative:

- Name, Title, Phone Number and Email Address

Subrecipient Financial Representative:

- Name, Title, Phone Number and Email Address

Subrecipient Contractual Representative:

- Name, Title, Phone Number and Email Address

ARTICLE IX - LOWER-TIER SUBAGREEMENTS

No lower-tier Subagreements are contemplated for the performance of any work called for hereunder. In the event that Subrecipient desires to enter into such a relationship with a third party, written consent must be received from USRA in advance.

ARTICLE X - DISPUTES

Any dispute arising under this Subagreement which is not settled by the agreement of the parties will be litigated in the state or federal courts of Maryland. Pending any decision, appeal or judgment in such proceedings, or the settlement of any dispute arising under this Subagreement, the Subrecipient shall proceed diligently with the performance of this Subagreement unless otherwise agreed between USRA and the Subrecipient.

In the event of a dispute as to the meaning and terms of this Subagreement between the parties herein, the laws of Maryland shall prevail, excluding their laws regarding choice of law.

ARTICLE XI - INSURANCE COVERAGE

The Subrecipient shall obtain and maintain insurance coverage as follows for the performance of this Subagreement:

(1) Worker's compensation and employer's liability insurance as required by applicable Federal and State worker's compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when subagreement operations are so commingled with the Subrecipient's commercial operations that it would not be practical. Employer's liability coverage shall be at least $100,000 except in states with exclusive or monopolistic funds that do not permit worker's compensation to be written by private carriers.

(2) Bodily injury liability insurance on the comprehensive form of policy of at least $500,000 per occurrence.

(3) Automotive liability insurance on the comprehensive form of policy providing for bodily and property damage liability covering the operation of all automobiles used in conjunction with performing this Subagreement. Policies covering automobiles operated in the United States shall provide coverage of at least $200,000 per person and $500,000 per occurrence for bodily injury liability and $20,000 per occurrence for property damage. The amount of liability coverage of other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) In the unlikely event that aircraft are used in connection with performing this Subagreement, aircraft public and passenger liability insurance of at least $200,000 per person and $500,000 per occurrence for bodily injury, other than passenger liability, and $200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least $200,000 multiples by the number of seats or passengers whichever is greater.

Upon instruction by the Government to do so, USRA may disapprove the purchase of any insurance coverage not in the Government's best interest.

Policies evidencing such insurance as is required herein shall contain an endorsement to the effect that any material change in the coverage adversely affecting the Government's or USRA's interest shall not be effective unless the insurer of the Subrecipient gives written notice of cancellation or change to USRA's Procurement Officer. When the coverage is provided by self-cancellation, the Subrecipient shall not change or decrease the coverage without USRA's written approval.

No Subrecipient employee shall enter any Government installation for performance of work under this Subagreement until all of these insurance requirements have been met.

The Subrecipient's policy shall include the following statement:

"The insurance company waives any right of subrogation against the United States of America which may arise by reason of any payment under the policy."

The Subrecipient shall be required to supply a copy of the Certificate of Insurance upon USRA's request.

ARTICLE XII - COMPLIANCE WITH LAWS

The parties hereby agree to comply with all applicable provisions of any federal, state, or local law or ordinance and all orders, rules, and regulations, issued thereunder, that are applicable to the performance of this Agreement.

ARTICLE XIII - EXPORT REGULATIONS

Performance of this Subagreement may require the use of or access to articles, technical data, or software that is subject to export controls under the International Traffic in Arms regulations (22 USC 120-130) or the Export Administration Act (50 USC 2401-2420) or Export Administration Regulations (15 CFR 7768-799) and their successor and supplemental laws and regulations, collectively referred to hereinafter as the "Export Laws and Regulations", The Subrecipient represents that it is a U.S. Person as that term is defined in the Export Laws and Regulations and shall comply with any and all Export Laws and Regulations and any licenses issued thereunder. The Subrecipient agrees that compliance with this Article is a material Provision of this Subagreement. The Subrecipient further agrees that it shall not give any Foreign Person access to Technical Data or Software as those terms are defined in the applicable Export Laws and Regulations without the prior written consent of an authorized representative of USRA. However, no such consent shall constitute a waiver of the requirements of compliance with the Export Laws and Regulations nor constitute consent for the Subrecipient to violate any provision of such Export Laws and Regulations. The Subrecipient shall indemnify and hold harmless USRA from and against any and all damages, liabilities, fines, penalties cost and expenses including attorney's fees, arising out of claims, suit allegations or charges of Subrecipient's failure to comply with the provisions of the Export Laws and Regulations or breach of the warranty that the Subrecipient is a U.S. citizen.

If Subrecipient, at any time during the terms of this agreement, feels that the work/research that is being done may be defined and controlled under export control laws and regulations, the subrecipient must notify the Recipient immediately before continuing any work or research that the subrecipient may feel is defined and controlled under export control laws and regulations.

ARTICLE XIV - TRAVEL INSIDE AND OUTSIDE THE UNITED STATES

A. Unless expressly agreed otherwise, Subrecipient shall seek prior approval from USRA of any travel plans, prior to travel.

B. Subrecipient shall submit a written request to the USRA representative specified in Article VIII.B of this Subagreement, including the name(s) of traveler(s), destination, proposed travel dates, purpose of travel, relation of travel to Subagreement statement of work, and estimated cost. Requests must be submitted four to six weeks prior to travel.

C. The Fly America Act, 49 U.S.C. 40118, requires the Subrecipient to be ticketed though U.S. flag air carriers for international air transportation of personnel and property to the extent that service by such carriers is available. ***Costs of travel aboard a foreign-flag air carrier may be disallowed if U.S.-flag carrier air service is available.***

ARTICLE XV - LIABILITY

In the event that Subrecipient, its employees, or agents enter premises owned or controlled by USRA during the performance of this Subagreement, the Subrecipient agrees that it will indemnify and hold harmless USRA, its officers and employees from any loss, cost, damage, expense, or liability by reason of property damage or personal injury, including death, of whatsoever nature or kind arising out of, as a result of, or in connection with such performance caused by the negligent actions or omission of the Subrecipient, its employees, or agents.

Neither party shall be liable to the other for any indirect, incidental, or consequential damages arising under this Subagreement, with the exception of Subrecipient's liability for any liability, damages or claims arising out of breach of Articles XII, XIII, XVIII or XX hereof.

PLEASE REFER TO DISCLAIMER ON PAGE 2

ARTICLE XVI - ASSIGNMENT

Neither the interest of either party to this Subagreement nor any other rights or obligations contained herein, may be transferred to any third party, nor may any secured interest therein be created without the prior written consent of the other party.

ARTICLE XVII - TERMINATION

A. Should AFRL terminate USRA's cooperative agreement in whole or in part, this subagreement may also be terminated in whole or in part. In the event AFRL terminates USRA's cooperative agreement, USRA will issue a Stop Work notice, and the Subrecipient shall stop work as specified in the notice. In the event of such termination USRA will be obligated to pay Subrecipient for allowable and allocable costs incurred prior to notice of termination or incurred as specified in the notice, including any non-cancelable fees incurred up to such date, consistent with the provisions of §1800.904, incorporated and modified as set forth in Attachment A – General Provisions and Clauses.

B. Either party may terminate this Agreement, in whole or in part, by serving sixty - (60) day's written notice on the other party. Upon receipt of a notice of termination, Subrecipient shall immediately stop work on the termination date and to the extent specified in the Notice of Termination, use its best efforts to minimize costs in terminating all work under this Agreement. Subrecipient shall be paid for all work performed up to the date of termination, including any non-cancelable fees incurred up to such date.

ARTICLE XVIII – INTELLECTUAL PROPERTY INDEMNITY

A. Subrecipient shall indemnify USRA, USRA's customer and/or the Government and their respective officers, agents and employees against liability and losses, including costs, for infringement of any United States or foreign patent, copyright, trademark, or other intellectual property arising out of the manufacture or delivery of supplies or performance of services under this purchase order or out of the use or disposal by, or for the account of, USRA, USRA's customer and/or the Government of such supplies or services. The foregoing indemnity shall not apply unless Subrecipient shall have been informed as soon as practicable by USRA, USRA's customer and/or the Government of the suit or action or other proceedings alleging such infringement and shall have been given such opportunity as is afforded by applicable laws, rules or regulations to participate in the defense thereof.

B. Notwithstanding the foregoing, when this Subagreement is performed under the authorization and consent of the Government to utilize United States patents, Subrecipient's liability for Subrecipient's patent infringement under this Subagreement shall be coextensive with USRA's liability.

ARTICLE XIX - MODIFICATIONS

This Subagreement is subject to all laws and regulations in effect on the effective date of the Subagreement. Government revisions to laws and applicable regulations made applicable to the USRA Prime Agreement shall be flowed down into the terms of this Subagreement and made applicable to the Subrecipient by modification properly signed by an authorized USRA representative in accordance with Article XX of this Agreement.

Unless otherwise specified herein, any other changes or modifications to the terms, conditions, dates, or consideration of this Subagreement shall not be binding on either party unless the appropriate document has been signed by a duly authorized official of each party. USRA may, however, unilaterally extend the period of performance or obligate additional funding without changing total estimated costs.

For the purposes of this Subagreement, the duly authorized officials are:

USRA: _____, Contracts Specialist
Subrecipient: _____, (Title)

ARTICLE XX- PROVISIONS

Provisions set forth in Attachment A can be found in the Department of Defense (DoD) Research and Development (R&D) General Terms and Conditions September 2020 (Attachment A). These general terms and conditions implement Office of Management and Budget (0MB) guidance, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards," published in the Code of Federal Regulations (CFR) at 2 CFR part 200 and implemented by the DoD at 2 CFR part 1103, "Interim Grants and Cooperative Agreements Implementation of Guidance in 2 CFR part 200" (79 FR 76047, December 19, 2014).

The DoD Research and Development (R&D) General Terms and Conditions (September 2020), are incorporated into the Award and reflected throughout this document, the DoD Component's Addendum to this document (if applicable), and the DoD Component's Programmatic Requirements can be found at https://www.onr.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions

The DoD provisions in Attachment A shall be deemed to be modified, as appropriate, with the substitution of "USRA" for "AFRL" or "DoD" or "Grant Officer", the substitution of "Subrecipient" for "Recipient", and the substitution of "Subagreement" for "Grant" or "Cooperative Agreement" or "Contract".

ARTICLE XXI - ORDER OF PRECEDENCE

In the event of an inconsistency between the terms and conditions of this Agreement, the inconsistency shall be resolved by giving precedence in the following order:

a. The Subagreement
b. The General Provisions
c. All other terms and conditions of the Subagreement whether incorporated by reference or otherwise.

ARTICLE XXII - NOTIFICATION AND PUBLICATION

By accepting this Subagreement, the Subrecipient authorizes USRA and AFRL to publish notice of this award. Prime Recipient and Subrecipient shall not use (and shall not authorize any others to use) the name, likeness or logo or any variants thereof of either party, the name or likeness of the Principal Investigator, or the name or likeness of either party's employees, in any advertisement or promotional material, or for any other purpose, without the written consent of the other party, except as may be required by law.

During the term of this Subagreement and for a period of three (3) years thereafter, Prime Recipient and Subrecipient shall not disclose information concerning work under this Subagreement to any third party, unless such disclosure is required by law or necessary for the performance of this Subagreement. No news releases, public announcement, denial or confirmation of any part of the subject matter of this Subagreement or any phase of any program hereunder shall be made without prior written consent of the other party, which shall not be unreasonably withheld.

ARTICLE XXIII- AUDIT

This agreement is subject to the provisions of the Single Audit Act, as implemented by the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (2 CFR 200.).

By signature to this agreement, the grantee certifies that it has met the audit requirements of 2 CFR § 200.501 and shall furnish a copy of such audit report upon request or shall make publicly available on the internet.

ARTICLE XXIV- ENTIRE AGREEMENT

This Agreement is the entire agreement between the parties hereto which supersedes any prior oral or written agreements, commitments, understandings, or communications with respect to the subject matter of this Agreement.

ACCEPTANCE:

Subrecipient:	Prime Recipient:
_____	Universities Space Research Association
By_____	By_____ _____
Signature Date	Signature Date
_____	_____
Typed Name	Typed Name
_____	_____
Title	Title

PLEASE REFER TO DISCLAIMER ON PAGE 2

Attachment A – PRIME CONTACT FLOW-DOWN PROVISIONS

This Award is subject to the following general AFRL PRS Assistance Terms and Conditions, and subject to the Department of Defense (DoD) Research and Development (R&D) General Terms and Conditions. These general terms and conditions implement Office of Management and Budget (OMB) guidance, "Uniform Administrative requirements, Cost Principles, and Audit Requirements and Federal Awards," published in the Code of Federal Regulations (CFR) at 2 CFR part 200 and implemented by the DoD at 2 CFR part 1103, "Interim Grants and Cooperative Agreements Implementation of Guidance in 2 CFR part 200" (79 FAR 76047, December 19, 2014)

The DoD Research and Development (R&D) General Terms and Conditions (September 2020), are incorporated into the Award and reflected throughout this document, the DoD Component's Addendum to this document (if applicable), and the DoD Component's Programmatic Requirements can be found at:
https://www.onr.navy.mil/work-with-us/manage-your-award/manage-grant-award/grants-terms-conditions

Any inconsistencies in the requirements of this Award will be resolved in the following order:

i. Federal statute
ii. Federal regulations
iii. 2 CFR part 200, as modified and supplemented by DoD's interim implementation found in 2 CFR part 1103
and the DoD Grant and Agreement Regulations (DoDGARs)
iv. Award-specific terms and conditions
v. In case of disagreement with any requirements of this Award, the Recipient shall immediately contact the Grants and Agreements Officer.

Attachment A-1 Award Specific Terms and Conditions

1. Reporting Requirements

1) **Federal Financial Report (SF-425):** The submission of interim SF 425 shall be on a quarterly basis. A final FFR shall be submitted at the completion of the award agreement. The following reporting period end dates shall be used for interim reports: 3/31, 6/30, 9/30, or 12/31. Quarterly reports shall be submitted no later than **15 days** after the end of each reporting period. The SF 425 form available to download at: https://www.grants. gov/forms/post-award-reporting-forms.html
2) **Technical Progress Reports** - The submission of Technical Progress (TP) Report shall be on a quarterly basis. The TP report will include information on programmatic developments to include major success or major problems/issues/concerns. The following reporting period end dates shall be used for interim reports: 3/31, 6/30,9/30, or 12/31. TP Reports shall be submitted no later than **15 days** after the end of each reporting period.
3) **Annual Reports -** A complete annual Performance Progress Report is mandated by AFRL. This report will include information about the organization and program specifics. The Annual Report shall include but is not limited to, an overview of each Specific Tasks (Section 4 of SOW), accomplishments, metrics, demographics of program participants, number of program participants, financial position, projected financial needs for future year(s), etc. The Annual Performance Progress Reports shall be submitted no later than 15 days after the end of each program year period.
4) **SAM.gov Annual Financial Assistance Certs and Reps Report -** This report will be due a year from the date of the Award.
5) **Audit Reports -** If an Institution of Higher Education, non-profit organization, or state/local government is a Prime Recipient or sub-recipient and has expended $750,000.00 or more of Federal funds during the non--Federal entity's fiscal year, then a single or program-specific audit is required. For additional information refer to 2 C.F.R. 200.
6) **Final Reports -** Detail the full programmatic accomplishments summarized from prior reports and forecast for ongoing program sustainability and contribution to DoD and AFRL STEM education and workforce needs as the funding ends. Include, as feasible, examples of educational materials produced, success stories, accomplishments, links to digital materials, and other resultant material from the Award.
7) **Other Reports** (Other reports may include but are not limited to):
    1) Scientific and Technical Reports
    2) Kick-off meeting reports and associated data
    3) Presentation materials, reports, and associated data
    4) Conference reports and associated data
    5) Invoicing Reconciliation Reports

Note: Copies of publications and presentations shall be submitted in accordance with the terms and conditions of the award. All reports shall be sent to the Program Management and the Contracting team.

PLEASE REFER TO DISCLAIMER ON PAGE 2

2. PUBLIC AFFAIRS COORDINATION:

In coordination with the Government designated Program Manager, the Recipient shall coordinate and request approval from the designated Program Manager, prior to release of any information relating to this Award, such release shall include a statement to the effect that the project or effort depicted was or is sponsored by the AFRL. For the purpose of this Award "information" includes but is not limited to material presented in news releases, articles, manuscripts, brochures, advertisements, still and motion pictures, speeches, presentations, meetings, conferences, symposia, etc. If applicable, nothing in the foregoing shall affect compliance with the requirements of the clause of this Award entitled "Security Requirements".

3. PROPERTY ADMINISTRATION

Shall be in accordance with 2 CFR 200 and DoD Research and Development (R&D) General Terms and Conditions (September 2020).

4. DATA RIGHTS

All rights and title to data, as defined in 48 CFR 27.401 and shall be in accordance with 2 CFR 200 and DoD Research and Development (R&D) General Terms and Conditions (September 2020).

5. EXPORT CONTROL

The Recipient must comply with requirements to protect information that Federal statute, Executive order, or regulation requires to be protected (e.g., personally identifiable or export-controlled information), to include both information generated under this award and information provided to the Recipient and identified as being subject to protection. The Recipient shall receive the Grants and Agreements Officer and Program Manager approval before assigning or granting access to any work, equipment, or technical data generated or delivered under this Award to foreign persons or their representatives. The notification shall include the name and country of origin of the foreign person or representative, the specific work, equipment, or data to which the person will have access.

6. RECIPIENT AND SUBAWARDS

PLEASE REFER TO DISCLAIMER ON PAGE 2

All procurement transactions must be conducted in a manner providing full and open competition in accordance with 2 CFR 200 and DoD Research and Development (R&D) General Terms and Conditions. In Addition, the Recipient must flow down to the subrecipients, subcontractors, consultants, etc., all applicable terms and conditions of this Award of which the Recipient is required to comply with.

PLEASE REFER TO DISCLAIMER ON PAGE 2