#usafspokelife

BLUF:

Help the United States Air Force conceptualize, design, and develop a highly mobile, multi-capable, resilient, and sustainable suite of aviation support equipment for the flightline.

OVERVIEW

The United States Air Force (USAF) is seeking an innovative suite of aviation maintenance and support equipment to address an important aspect of Agile Combat Employment (ACE), a scheme of maneuver that shifts operations from centralized, physical infrastructures to a network of smaller, dispersed locations, providing flexibility for friendly forces and complicating circumstances for adversaries. **To learn more about the ACE concept, please check out this video.**

The USAF recognizes the future of USAF maintenance and support equipment must be highly mobile, resource efficient, multi-capable, resilient, and sustainable. Ideally, equipment and manpower demands will be reduced without degradation of operational capacity to swiftly execute missions.

The USAF encourages participants in this Challenge to offer technological solutions for experimentation and/or feasibility study, as well as developed solutions. In either case, we're interested in understanding all underlying technologies upon which the solution relies.

OBJECTIVES

The objectives of the **Common Aviation Support Equipment Challenge** are twofold:

1. The **primary objective** is to demonstrate the viability of equipment solutions that streamline and reduce the footprint of maintenance and support equipment necessary to service multiple types of airframes for Contingency Locations.
2. The **secondary objective** is to accelerate technology development that could lead to operational adoption of advanced capabilities by the U.S. Government.

CONTEXT

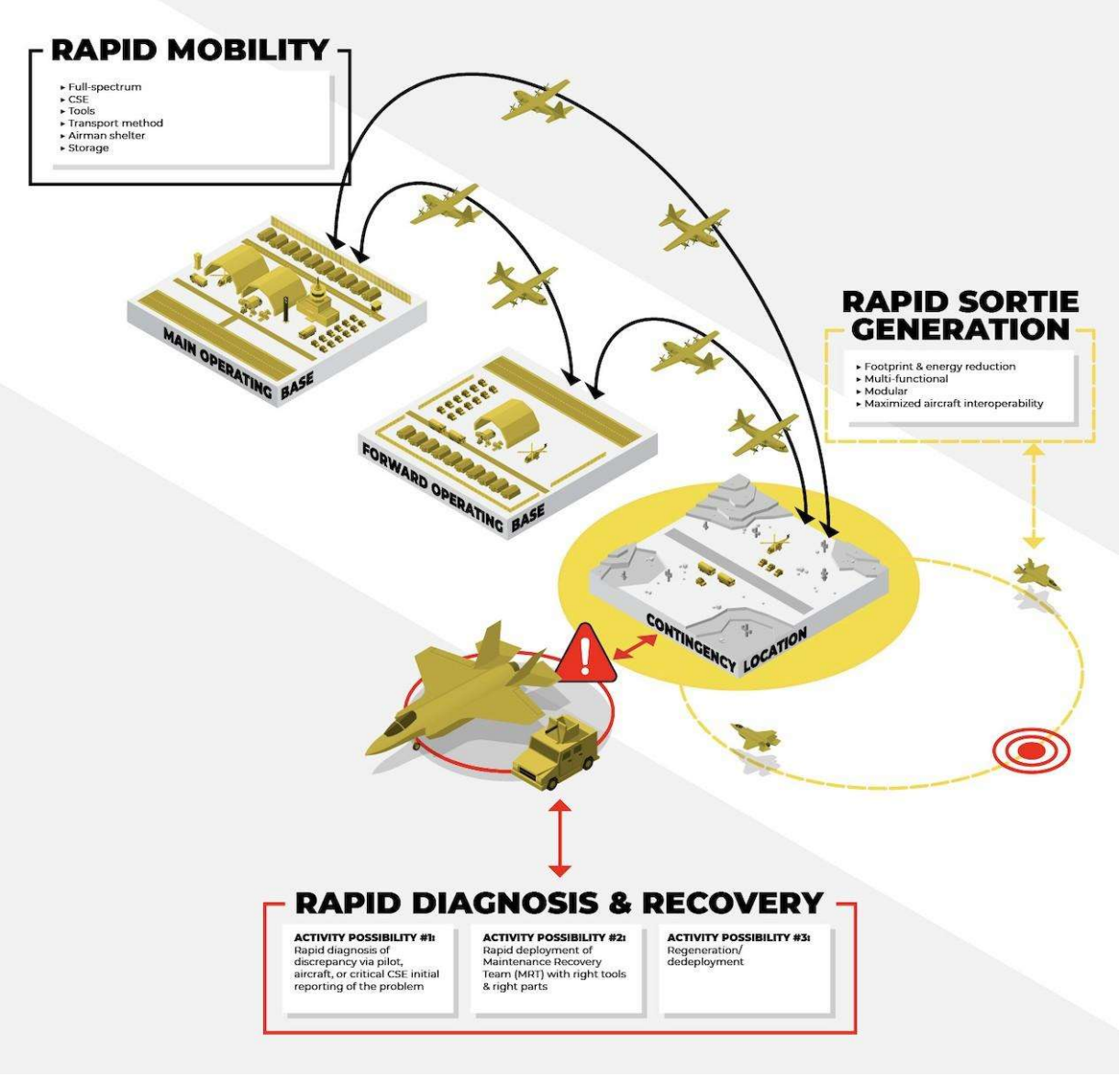
The USAF's ability to effectively and efficiently operate at the edge of a battle area is essential to our superiority. Contingency Locations, also known as CLs, are located at or near the edge and act as non-enduring locations to sustain operations conducted to protect national interests. CLs are categorized as initial, temporary, or semi-permanent and rely on a "hub and spoke" model, wherein equipment and resources are transported from a "hub" or Main Operating Base (MOB) to "spokes" or Forward Operating Bases/Sites (FOBs/FOSes) and pre-positioned CLs.

The suite of equipment on a CL flightline must be rapidly deployed to support sortie generation (missions to attack an enemy position and return to the CL or another base). The elements of support can include, but are not limited to, aircraft power, conditioned air, refueling, rearming, and diagnostic and recovery tasks. To maximize flexibility, it's desirable for the equipment to be multi-fuel capable (if fuel is required) and energy efficient to reduce the risk to operations from contested fuel logistics and to limit fuel pre-positioning requirements. In addition, it's desirable for the equipment to support force sustainment elements, including human performance, low maintenance, and the wellbeing of the user.

FOCUS AREAS

Based on internal knowledge and market research conducted across the DoD, industry, and academia, **the USAF has identified three focus areas** to bring structure to the crowdsourcing process for this Challenge. In reviewing the focus areas, please note the following:

- The USAF is interested in net-new solutions, enhancements to existing solutions, and the development of multi-capable solutions (e.g., a system that can support both aircraft and Airmen).
- For the purposes of this Challenge, assume that munitions and fuel are available for operations. The equipment needed to build munitions and/or supply fuel at the CL is not within the scope of this Challenge.
- Within each focus area, the USAF has identified a set of desired capabilities. Please note that these are not requirements, but are offered to clarify USAF needs. Additionally, the list of desirable capabilities provided here should not be considered comprehensive.
- While participants may submit one or more solutions for each focus area, the same solution may not be submitted in multiple focus areas.



FOCUS AREA #1) Rapid Mobility: Capability for rapid deployment of equipment for a) maintenance and support of aircraft, and b) support of Airmen conducting rapid sortie generation; includes download off the transport aircraft, support to Airmen on site, movement around the flightline in support of sortie generation, and upload onto the transport aircraft.

Desirable capabilities include:

- Transport
    - Transportable by air (C-130), rail, and/or ship
    - On/off transport vessel via self-contained wheels, self-propelled, for independent movement (goal is 15-minute on/offloading time)
    - “Un-pack” and/or “setup” time under 30-minute goal
    - Around airfield: self-propelled, semi-autonomous, variable speed, top speed of 5 MPH
- Support considerations
    - Full spectrum of maintenance and support equipment and tools for CL sortie generation, over several continuous weeks
    - CSE maintenance functions in priority order:
        - Aircraft ground power (multiple waveforms)
            - Power outputs for 4th & 5th gen aircraft (i.e., 3 Ph, 115/200 VAC, 400 Hz; 270 VDC; 28.5 VDC)
        - HVAC, nitrogen, hydraulics
        - Bleed air, convenience power, lighting
        - Fuel transfer, munitions lift, and liquid servicing
    - Command, control, communication for repair/resupply
- Energy efficiency and innovative technology solutions
    - Improve “operational energy intensity” of operations by increasing the unit output (or mission activity) per gallon of fuel, known as “lethality per gallon”
        - Could negate need for fuel entirely (electrification or otherwise)
    - Mitigate risk to energy supply chains by reducing demand at forward locations
- Other considerations
    - Power, alternative energy options, needed waveforms for flightline

    - Could employ various power architectures (e.g., diesel, hybrid, electric)
    - Airmen shelter/environmental factors to survive and maximize performance
        - Equipment "package" that could be offloaded and, in doing so, also provide some mix of shelter; climate controlled (hot and cold), sleeping provisions, food, and water (latrine optional)

FOCUS AREA #2) Rapid Sortie Generation: Capability for generating aircraft sorties to include refueling, rearming, and munitions materiel handling.

Desirable capabilities include:

- Overall footprint size and weight reduction
    - Ability to be "multi-functional" is desired as a means of keeping the equipment lighter and smaller than the aggregate of separate equipment pieces
- Energy efficiency and innovative technology solutions
    - Seeking to reduce operational risk by using less energy and/or multiple energy sources in forward locations
    - Seeking achievement of 100% zero emissions for aircraft support equipment by FY32
- Modular
    - Could leverage single power plant (i.e., prime mover)
    - Open architecture: enables plug-and-play of various functions and vendors
    - Family of components to reduce and condense (size, weight, transport, storage)
- Maximize interoperability between aircraft
    - Legacy, 5th generation, rotary, UAV, foreign partner(s)
    - Easy to use: interface is simple and intuitive to reduce Airmen, training, and specialties
- Multi-functional
    - Multi-fuel capable (prefer a single fuel on the battlefield or at least compatible with commercial aviation fuel)
    - Aircraft power (multiple waveforms), HVAC, nitrogen, hydraulics, bleed air, convenience power, lighting
    - Fuel transfer, munitions lift, liquid servicing, others

- Miscellaneous
    - Powering equipment and shelters
    - Design/transport with single or double 463L pallet dimensions
        - HCU 463L air cargo pallet (HCU-6/E) specs and capabilities: dimensions are 108" W x 88" L x 2-1/4" H; tare weight is 290 lbs; and capacity is 10,000 lbs.
        - I.e., a C130 currently only has eight pallet positions' worth of footprint and/or containers. In this footprint, if pallets are used to tie down supplies, this often leaves more than 20 feet of wasted "air space" above the equipment/tooling/etc. tied down to those pallets
    - Stress and labor reduction for Airmen
    - Semi-autonomous support equipment to reduce labor, headcount, and repetitive tasks
    - Increased autonomy (e.g., robots)
    - Self-propelled (reduction/elimination of vehicles at CL)
    - Smart system: self-diagnostics; wireless health monitoring and control
    - Corrosion and EMP resistance
    - Reliability: reduced/easy maintenance (goal is >90% reduction at CL)
    - Reduced signature (IR, RF, sound)
    - Capable of long-term storage
    - Reduced emissions
    - Military temperature environments (-30F to 130F)
    - Could be attritable

FOCUS AREA #3) Rapid Diagnostics and Recovery: Capability for discrepancy diagnosis after initial report of problem via pilot, aircraft, or critical equipment, with recovery duration measured in hours or days.

Desirable capabilities include:

- Smart systems
    - Self-diagnostics
    - Interoperable system/tester – compatible with all aircraft (currently each aircraft has up to four peculiar diagnostics systems and testers)
    - Innovative new equipment/capability for rapid reporting: increased use of wireless reporting to MOB, FOB, and CL as appropriate
        - i.e., could report damaged equipment to operators/logisticians before aircraft lands at CL
    - Innovative new equipment/capability for rapid on-site maintainer verification of problem (leverage multi-capable Airmen)
    - Innovative new equipment/capability for aircraft recovery at CL
    - Innovative new rapid delivery capabilities to get parts and/or Airmen to CL

WHO SHOULD PARTICIPATE

The USAF welcomes involvement from individuals or teams in industry, academia, investing, and government. Structured collaboration is highly encouraged.

What you stand to gain:

- Potential to receive funding for concept development and/or rapid prototyping and prospective further development of your solution within the USAF
- Potential long-term contract or agreement and continuing business relationships with the USAF and other government agencies
- Chance to inform and shape our nation's elite warfighting capability, positively impacting our Airmen and creating a more resilient and mission-ready military force
- Opportunity for teaming and technology development
- Potential invitation to attend the Challenge showcase event and network with peers, the USAF and DoD, customers, and other investors
- Official recognition for you and your organization, if selected, through publication on internal and external USAF communication channels

PROCEDURES

The submission and evaluation process evolves over three spirals.

1. Spiral 1: Offerors submit the web form and optional supplemental document. The Government will evaluate Solution Submissions against the criteria within this Call. Selected offerors will be invited to Spiral 2.
2. Spiral 2: Selected offerors may be invited to provide additional information to further elaborate and discuss their proposed concept/technology/solution. The Government will evaluate the oral demonstrations against the criteria within this Call. Selected offerors will be invited to submit proposals in Spiral 3.
3. Spiral 3: Offerors whose Solution Submission and Oral Demonstration are evaluated and determined to hold sufficient technical merit will be invited to submit a full written proposal. Instructions and evaluation criteria will be provided in the Spiral 3 Request for Commercial Solution Proposal.

SUBMISSION OF SOLUTION FOR SPIRAL 1:

1. Participation in this challenge requires a completed submission using the AFWERXchallenge.com website located at the following link: https://afwerxchallenge.com/operationaleffectiveness/ace-common-aviation-support-challenge

   The form includes the following fields:

   - **Solution title**: Provide the concise name of your solution.
   - **Executive summary**: Explain your solution in 500 characters or less.
   - **Solution description**: Explain in detail how your solution tackles the stated problem.
   - **Value proposition**: Describe how your solution can benefit the USAF.
   - **Inputs and outputs:** List the inputs and outputs that your solution needs and produces (if applicable) so an integration effort can more easily be defined.
   - **Solution maturity**: Indicate the development stage of your proposed solution, e.g., idea, prototype/experiment, complete application (has been tested and is ready for launch), or commercially available.
   - **Proof of concept:** Can you provide a test or proof of concept (PoC) for your solution, prior to potential implementation at scale? If yes, provide the timeline required to complete the test or PoC.
   - **Implementation**: Provide the timeline required to implement your solution.

- **Keywords**: Specify any descriptive keywords that may be useful for a search related to your solution.

Note:

- It's possible to create a private draft during the submission period by selecting "Save As Draft." You can edit and then launch the public submission when you're ready.
- Public submissions can be edited until the submission deadline.
- Participants can attach private files that are only made visible to the evaluation team.

2. Solution Submissions shall contain the following:

   a. ***Offeror Information****: Point of Contact Name, E-Mail Address, Phone, and Address.*

   b. ***Executive Summary***: Provide an executive summary of the technology. (This is included in the 5 written page limit).

   c. ***Technology Concept:*** Show and/or describe how your proposed solution or potential new capabilities fulfill requirements, close capability gaps, or provide potential technological advancements in support of the Challenge mission focus area to provide capabilities to aid in the observation, orientation, decision and action across all domains. Describe the unique aspects of your technology and the proposed work as it relates to the applicable Challenge mission focus area including key attributes such as data sources, automation, user experience, cyber security, and ability to integrate with other systems. Identify whether the effort includes the pilot or demonstration of existing commercial technology (identified as commercially ready and viable technology), or the further development of commercial technology for potential defense application.

   d. ***Feasibility & Scalability:*** If development or adaptation is proposed, identify a suggested path to mature the technology. Identify aspects of your proposal, to include data and software, which may be considered proprietary. Identify the ability of the solution to scale rapidly across USAF and other agencies, and whether the proposed solution can provide a reasonable management approach for technical delivery, schedule, and cost.

   e. ***Warfighter impact:*** Provide an assessment of how the solution brings value to the warfighter.

   f. ***Offeror Responsibility & Solution Viability:*** Provide a brief overview of the offeror. Provide a summary of current experience, qualifications, and resources or ability to obtain them in accordance with FAR Part Subpart 9.4, e.g., summary of the top line (gross sales/revenues) and balance sheet. Provide a summary of product development, manufacturing (if relevant), and logistics strategy to the best extent possible.

   g. Data Rights Assertions for Commercial Items (if applicable).

   h. Identify any Intellectual Property (IP) in the technology, all relevant owners and

licensors, and associated restrictions on Government use.

i. Due Date for Spiral 1 is 04/18/2023.

Note: Offeror Information does not count against page limit, however the executive summary does.

EVALUATION CRITERIA FOR SPIRAL 1:

A designated team of government personnel will evaluate the challenge submissions to determine which solutions should advance to Spiral 2. The government will use the following evaluation criteria listed below. Evaluation criterion are of equal importance:

- **Relevance:** Demonstrates alignment with the Challenge purpose and Focus Areas.
- **Technical merit:** Provides product/technology solution works as stated in support of mission objectives and demonstrates feasibility.
- **Innovation:** Demonstrates a novel, unique, or previously underutilized approach when considered against the Government application.
- **Multi-purpose functionality:** Solves multiple problems regarding movement/maneuver, sortie generation support and/or repair and diagnostic support to Airmen.
- **Integration potential:** Functionality as part of a system.
- **Technical readiness speed:** Reasonable timeline for solution to be delivered.
- **Scalability:** Meets or exceeds the needs of mission profiles for broad impact across the USAF.
- **Impact:** Expected benefits to the USAF and Airmen.

Note: The USAF encourages working with partners or teams to meet or exceed the evaluation criteria. Please note, we may apply additional criteria (e.g., cost and implementation timing) to future stages of this Challenge. If so, details will be communicated to all Challenge participants.

ORAL DEMONSTRATION CONTENT FOR SPIRAL 2:

Offerors invited to participate in Spiral 2 shall address the following:

a. Expanded details of the potential solution that was provided in the Spiral 1 Solution Submission.
b. A live demonstration of the potential solution utilizing relevant and/or analogous data.
c. Should the solution require assistance with testing, validation and/or capacity for scaling within the USAF, identification of the magnitude, type and scale of assistance

required for follow on activities.

d. Rough Order of Magnitude (i.e., bottom-line estimated price) of the solution provided in Spiral 1.

e. The Solution Submission will identify all Intellectual Property (IP) in the technology, all owners and licensors thereof, and associated restrictions on the Government's use of that IP.

f. The Oral Brief should be able to address detailed Q&A from DoD Stakeholders, including both Technical and Operational subject matter experts.

g. The purpose of the showcase is to provide networking opportunities with government/non-government community interested in solution submissions. Information presented will only impact evaluations if content at the showcase is not consistent with content of solutions submission and oral demonstrations.

Each offeror will be allowed a specified amount of time for their oral demonstration. The timeframe will include time for questions & answers.

EVALUATION CRITERIA FOR SPIRAL 2:

Oral Presentation evaluation criteria is listed below, with each being of equal importance. Spirals shall be evaluated/scored on the following factors:

a. Responsiveness of the solution in addressing the Challenge mission focus areas;

b. The Technical Merit of the proposed solution adequately addresses the Challenge mission focus area and demonstrates feasibility for the Government to pursue the proposed solution;

c. The Rough Order of Magnitude will be considered for affordability determinations only.

NOTE: Spiral 2 demonstrations may be recorded for Government evaluation purposes.

COMMERCIAL SOLUTION PROPOSAL (CSP) CONTENT AND EVALUATION FOR SPIRAL 3:

Offerors invited to participate in Spiral 3 will be provided a CSP, which will detail instructions to offerors and explain the basis for evaluation.

WHAT'S NEXT

The submission period opens on 02/28/2023 and ends on 04/18/2023 at 4:59 PM Pacific Time.

- Submissions shall be made at afwerxchallenge.com, and all required fields must be completed in order to be accepted.
- Communication to all successful and unsuccessful challenge participants will be sent via email.
- The showcase will take place as an online or in-person event. Offerors selected to participate will receive notification via email. The showcase is an excellent opportunity to meet individuals, teams, and enterprises selected to attend. Another

evaluation will be completed at the showcase via private pitches and public discussions with evaluators on the virtual showcase website.

- All dates are subject to change. We'll communicate any changes via sam.gov and afwerxchallenge.com.

GOVERNMENT CONTRACTING TERMS & CONDITIONS

Future contracting opportunities related to the **ACE Common Aviation Support Equipment Challenge** will be posted to any/all government points of entry such as sam.gov, sbir.gov, afwerxchallenge.com, etc.

- This Call falls under Commercial Solutions Opening (CSO) FA2280-23-S-C001. A copy of the CSO can be obtained by searching for the FA2280-23-S-C001 at sam.gov. This Call and subsequent awards shall comply with all requirements of the CSO.
- In the event of a conflict between information contained on afwerxchallenge.com and the Air Force solicitation on sam.gov, the CSO on sam.gov shall control.
- The announcement of AFWERX events, considered to possess high potential for further efforts, may be made at afwerxchallenge.com. FAR-based contracting instruments, Other Transaction (OT) for Prototype Projects 10 USC 4022, to include follow-on production OTs, and Prize Competitions 15 USC 4025 may support the accomplishment of these events.
- All announcements made at both sam.gov (formerly fbo.gov) and afwerxchallenge.com website(s) are considered to satisfy the reasonable effort to obtain competition per 15 USC 3719 (e) and 10 USC 4022 (b)(2).
- Possibilities exist to work with existing prime contractors on USAF contracts through submissions provided in response to this Challenge.
- All FAR-based actions will follow post-award synopsis procedures per FAR subpart 5.3 accordingly.
- Subject Matter Experts advising the government team may include firms contracted by other participating DoD branches (U.S. Army, U.S. Marine Corps, U.S. Navy, and U.S. Coast Guard). These firms are contracted to provide advisory and assistance services to USAF or other DoD branches. These firms are an important supporting element in ongoing efforts; however, they may be asked to provide limited advice on potential solutions. It is the responsibility of participating firms to protect their intellectual property or other proprietary information as necessary.

- Notice to Offeror(s): The government reserves the right to cancel this open call, either before or after the closing date. If the government cancels this open call, the government has no obligation to reimburse an offeror for any costs.
- The submission deadline is noted in the section labeled “What’s Next?” The submission deadline is controlled by the AFWERX Challenge server time and is not dictated by local participant computer time. AFWERX Challenge shall not be held responsible for discrepancies in computer times, delays due to internet connectivity, server performance due to large numbers of participants utilizing the software simultaneously, or other factors outside of AFWERX Challenge’s control. No exceptions will be made for late submissions regardless of the reason. It is advisable to complete submissions well in advance of the submission deadline.
- This Call may result in the award of prototype projects, which include not only commercially available technologies fueled by commercial or strategic investment, but also concept demonstrations, pilots, and agile development activities that can incrementally improve commercial technologies, existing government-owned capabilities, and/or concepts for broad defense and/or public application(s). The Government reserves the right to award a FAR Part 12 procurement contract or an Other Transaction (OT) under 10 USC 4022 agreement, including prototype and follow-on production, or no contract instrument at all, as a result of this Call. Consistent with 10 USC 4022, awards of follow-on production contracts must be made through the use of competitive procedures unless the award of an initial OT provides for a follow-on production contract and the OT participant successfully completed the prototype project.
- In accordance with Section 5.8 of the CSO, non-Government advisors may participate as non-scoring members during evaluations. For this Call, non-government advisors include Collaboration.ai LLC and theDifference.
- Foreign-Owned businesses may independently submit a solution or do so as part of a teaming arrangement with one or more United States-Owned businesses. Foreign participation is subject to small business and domestic sourcing restrictions and incentives in this CSO, or as may be imposed in the future by the President pursuant to the Defense Production Act, 50 U.S.C. 50 U.S.C. 4501, et. seq., or the Department of the Air Force. The ability of Foreign- Owned businesses to obtain a contract award or OTA based upon a submission may depend upon the ability of the Foreign-Owned business to

obtain necessary clearances and approvals to obtain proscribed information, and the ability to comply with U.S. laws, regulations, and contractual terms.

- Agency-level protests submitted under Spiral 1 or Spiral 2 shall be submitted to Sandi Brubaker, Contracting Officer, at sandi.brubaker@afwerx.af.mil. Agency-level protests submitted under Spiral 3 shall be submitted to Doug McCreary, Contracting Officer, at douglas.mccreary.1@us.af.mil.