

**SPECIAL OPERATIONS FORCES ACQUISITION, TECHNOLOGY, AND LOGISTICS
DIRECTORATE OF SCIENCE AND TECHNOLOGY (SOF AT&L-ST)
APPENDIX _F_
TO
BROAD AGENCY ANNOUNCEMENT
USSOCOM-BAAST-2015**

1.0 Introduction: USSOCOM's Science and Technology Directorate's (SOF AT&L-ST) vision is to Discover, Enable, and Transition technologies to provide an asymmetric advantage for Special Operations Forces (SOF). SOF AT&L-ST has identified two specific technology Areas of Interest to accelerate the delivery of innovative capabilities to the SOF warfighter.

2.0. General Information:

2.1. Agency: USSOCOM.

2.2. Program Office: Science and Technology Directorate (SOF AT&L-ST).

2.3. Addendum Title: SOF AT&L-ST Appendix __F_ to USSOCOM-BAAST-2015

2.4. BAA Number: USSOCOM-BAAST-2015

2.5. Closing Date: This BAA will remain open until June 1, 2015, unless superseded, amended, or cancelled. White papers may be submitted any time during this period subject to the submission process described in this BAA.

2.6. Contracting Point of Contact (POC) and Technical POC:

Contracting POC:

Primary: Ms. Diane Davis, Phone 813-826-7061, Email diane.davis@socom.mil

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Technical POC:

Mr. Patrick Carley, Phone 813-826-5584, Email patrick.carley@socom.mil

2.7. Technology Areas of Interest:

USSOCOM is interested in receiving white papers from all responsible sources from industry, academia, individuals, and Government laboratories capable of providing the design, construction, and testing of SOF related technologies. The intent is to accelerate the delivery of innovative capabilities to the SOF warfighter. It is an interactive process designed to assess the viability of technologies while simultaneously refining user requirements.

Specific technologies for this Appendix __F_ include:

2.7.1 Biomedical

2.7.1.1 Occupational and Environmental Health (OEH) Surveillance. Systems and devices

to augment current service provide occupational health, Industrial hygiene and water quality analysis capabilities and provide field presumptive analysis. Handheld, field hardened and environmentally stable, real time and near real time monitoring capabilities for onsite identification, quantification, and analysis of contaminants in media (such as soil, air, and water) that could pose an acute or chronic Occupational and Environmental Health (OEH) hazard to Special Operations Forces (SOF) personnel such as industrial contaminants, foodborne pathogens, toxins, agents, and biological material exposures. Systems must be small, extremely portable, require limited or no external power, self-contained and stable in extreme environmental conditions. Systems must have the ability to communicate with typical SOF computer and network architectures for download, transmission, and archiving of results. Systems must require minimal initial and support training based on the expected education and training level of the target user population.

2.7.1.2 Tactical Combat Casualty Care (TCCC) Tactical Portable Oxygen Generator.

Provide patient oxygen system that is light/safe enough to be carried and utilized at the point of injury.

2.7.2 Command, Control, Communications, and Computers (C4)

2.7.2.1 Low Visibility/Low Profile/Conformal/Multi-Spectral Antennas. Provide antenna designs combining broad banded (omnidirectional), performance, and fixed or vehicle site applicability, but are visually difficult or impossible to distinguish from their mounted platform. Provide ability to support X, C, Ku or Ka bands, and UHF (300-500MHz) and maintain positive actual gain (> 5 dB) across the frequency span. Weight should be < 10 lbs and capable of radiating at least 50 Watts (Threshold)/100 Watts (Objective) continuous with impedance at 50 ohms (< 10dB) over the frequency span.

2.7.2.2 Low Profile/Low Visibility Phased Array Radio Detection and Ranging (RADAR).

Provide a phased array, surface-search RADAR designed for small maritime craft operating in the commercial frequency band(s) that exhibits reduced visibility via low-profile and/or conformal shaping making it visually difficult or impossible to distinguish from its mounted platform. Range detection, range resolution, field of view, array scan angle and azimuth performance capability will meet or exceed current established Naval Special Warfare (NSW) phased array performance parameters. Should provide high permeability accompanied with low loss/permittivity in order to mount the antenna directly on a ground plane.

2.7.3 Human Performance

2.7.3.1 Optimizing Human Performance at High Altitude and/or Under Stress. a) Enhanced capability to optimize human performance under stressors of high altitude (>10K feet) during prolonged dismounted operations. b) Development of systems that support the improvement in human performance under stressful conditions.

2.7.4 Mobility

2.7.4.1 Armored Vehicle Extrication. SOF requires a capability to safely and rapidly recover personnel and equipment from damaged or disabled armored vehicles. The proposed

solution shall be a tool or system of tools that specifically address lifting the vehicle, removing portions of the vehicle and breaching the vehicle's armor without injuring the occupants. The solution system shall be transportable, deployable and operable by (1) man. It shall be deployable in less than 5 minutes, once out of stowage, and have the ability to breach and gain multiple access points. Finally, it shall have the capability of removing armored hinges and breaching M1129A1 armor or equivalent.

2.7.4.2 Multi-Terrain Vehicle. SOF requires a ground mobility platform that is small, agile and truly "All Terrain" to enhance survivability and operational capability while providing opportunities for tactical surprise. In order to be able to negotiate difficult terrain without substantial stop or reconfigure, a technology which provides novel modes of locomotion (ex. hybrid tracked/wheeled systems, in-hub wheel motors or ground engagement without surface contacting) shall be employed. The vehicle must be able to navigate mountain, desert, jungle, river/lakes, swamp, snow and urban environments and be transported in standard US/allied air and maritime assets. The vehicle must also be able to transport a minimum of (1) combat-loaded SOF operator (approximately 300lbs) approximately 150 miles and be multi-fuel capable.

2.7.4.3 Transparent Ballistic Protection. Small-arms ballistic protection at weights low enough for vehicle windscreen protection. Objective is single and complex curvilinear shapes; must not impede visual acuity in all weather conditions day/night.

2.7.5 Optics

2.7.5.1 Undetectable Aiming Laser. Small arms aiming laser that provides an operator with aiming capability but is undetectable to an enemy force with a night vision capability.

2.7.5.2 Advanced Sensors. Onboard aircraft sensors that can find, maintain target chain of custody, and identify targets in complex urban terrain and/or in heavily forested/jungle operating environments.

2.7.6 Other

2.7.6.1 Automated Interview Transcription. Provide a man-portable system that automatically captures and transcribes interviews, debriefings and/or interrogations for further analysis, assessment and validation in support of unconventional warfare missions. The system should provide real-time translation from native language to English.

2.7.7 Power and Energy

2.7.7.1 Undersea Manned Power System. Provide a safe and reliable, air-independent power system capable of being used on multiple SOF undersea manned mobility platforms with growth potential for broader DOD vehicle applications (USMC HMMWV). The system must be capable of preventing, controlling and halting thermal propagation, conflagration and explosion, testable to DOD and U.S. Navy high energy safety and environmental standards (MIL-STD-810G, NAVSEA S9310-AQ-SAF-010, NAVSEA SG270-BV-SAF-010 apply). The system requires a specific energy in excess of 130 Wh/kg and energy density in excess of 200 Wh/l. The system must have a standard form factor permitting

assembly into larger form usable across a variety of undersea platforms (SEAL Delivery Vehicle (SDV), Dry Submersible Technology Demonstrator (S351), and Shallow Water Combat Submersible (SWCS)). The system software must be able to function across multiple platforms and must be testable to Joint and DOD standards (DoD Joint Software Systems Safety Engineering Handbook, DoD Directive 8500.01).

2.7.7.2 Portable Power for Extended Casualty Evacuation (CASEVAC). a) Provide portable power systems in support of extended CASEVAC aboard aircraft (e.g. U28A, C145A, and C146A) operating in a nonstandard aviation (NSAv) role. b) Provide portable power systems in support of patient transport and care to include maritime and ground vehicles.

2.7.8 Protection

2.7.8.1 Advanced Tactical Standalone (TSA) Body Armor. Priority a: Defeat a single shot of 7.62x51mm M993 at 3050-3100 ft/s, single shot of 7.62x54R API B32 at 2850-2900 ft/s, and 2 shots (4" spacing) of 7.62x39mm API BZ at 2400-2450 ft/s. Backface deformation of less than 44.0mm for all threats. Areal density goals of <6.5 pounds per square foot (psf) (T) and <6.0 psf (O). Priority b: Defeat a single shot of 7.62x54R API B32 at 2850-2900 ft/s, and 2 shots (4" spacing) of 7.62x39mm API BZ at 2400-2450 ft/s. Backface deformation of less than 44.0mm for all threats. Areal density goals of <5.5 psf (T) and <5.0 psf (O).

2.7.8.2 Adaptive Fibers. A need exists for adaptive thermal insulation that provides protection over a wide range of operational temperatures with a single, or at most, couple of garments with less bulk and weight. Traditional systems rely on layering for effectiveness. This results in bulky, complex clothing systems that impede physical performance. An ideal solution is a system with self-regulating or variable loft capabilities to control the insulation characteristics of the garment. Thermal transfer would be regulated not only based on the external environment, but also on the internal environment - effectively regulating body temperature by balancing the ratio of body heat generation with heat absorption, and limiting heat loss as well as heat buildup.

2.7.9 Sensitive Site Exploitation (SSE)

2.7.9.1 Document and Media Exploitation (DOMEX) Tool. SOF needs a DOMEX tool that can provide a comprehensive yet simple interface to extract and analyze electronic media (hard drives and memory cards/sticks). On-site extraction must be performed with a thumb drive that rapidly provides a summary of relevant data on a target computer or storage device. Setup of the thumb drive and analysis of extracted data should be performed on a ruggedized tablet with large buttons and intuitive, simple interface that can be trained in under two hours. The kit must also provide the capability to rapidly (< 1 hour) make a forensic image of a 1 TB hard drive.

2.7.9.2 Handheld Rapid DNA Device. SOF requires a Rapid DNA device to be used as a screening or confirmatory tool in order to positively eliminate and exclude persons supporting rapid on-site operations. The device should be a ruggedized, hand-held and not weighing more than (3lbs). The device should be small enough to fit in a small

backpack – not more than 5.5x2.5x0.5, similar to the size of a cellular phone. Device should be designed to get a 16 loci profile as 16 loci is considered a profile used for definitive and confirmatory purposes. Reagents must be room-temperature only and stable for a minimum of 3 months. The device should include an on-board watchlist that allow matching to positively identify individuals of interest. Training should take less than 2 hours and full profiles should be produced in less than 2 hours.

3.0 Submission Instructions for - Appendix __F_ to Broad Agency Announcement USSOCOM-BAAST-2015.

3.1 Technology Development Cost and Schedule: Offerors are advised to consider a limit of not more than \$1 million total cost of development and not more than 18 months to complete all efforts for each submission under Appendix __F_. Offerors may exceed this amount, but they may or may not be considered for award due to cost and schedule constraints and/or other statutory or regulatory requirements.

3.2 White Paper Submission and Review Periods: The Appendix _F_ will open on **May 1, 2015** and close on **June 1, 2015 at 11:59 p.m. EST**. USSOCOM SOF AT&L-ST intends to conduct scientific and peer reviews within 30 days of the closure of this addendum. At the end of the review, USSOCOM will notify Offerors whether their white papers were selected for submission of a proposal in July 2015.

3.3 Criteria, Relative Importance, and Method for Selecting Proposals for Award:

3.3.1. Review Method: The Government will review each white paper and select the Offerors that have the greatest potential to meet the needs of USSOCOM technology requirements based on the areas stated in USSOCOM-BAAST-2015 Appendix __F_. Initially, a determination will be made if each Offeror is technically qualified and has a comprehensive understanding to undertake the development of the technology based on the information stated in the white paper. The Government will determine the most technically competent and capable of the qualified Offerors using the criteria below.

3.3.2. Review Criteria: The Government will review the Offeror's capability to meet the technology requirements using the following specific criteria listed in descending order of importance:

3.3.2.1. Relevance: The Government will review the Offeror's description of the technology and the USSOCOM unique technology need that it meets for the technical challenges listed in **paragraphs 2.7 - 2.7.2** of this USSOCOM-BAAST-2015 Appendix _F_. The Offeror's facilities and equipment will be reviewed to assess its capability to conduct complete development of the technology, construction of a prototype or prototypes, and proof testing to assure maturity readiness.

3.3.2.2. Innovative or Revolutionary Technology: The Government will assess the Offeror's capability to satisfy the technical challenges and design objectives by reviewing the Offeror's unique, innovative, or revolutionary approach; technical risk and mitigation plan; the ability to achieve technology maturity; and other technical data/information conveyed.

3.3.2.3. Price/Cost: The Government will make a determination of the fairness and reasonableness for the proposed price/cost. The Offeror will be assessed whether the technology development can be successfully completed from the costs stated by the Offeror.

3.3.2.4. Schedule: The Offeror's schedule will be evaluated based on the reasonable level of effort and complexity of the technology; the resources, facilities, and equipment available; and the allocation of time per major task.

3.3.3. Notification of Selection: All Offerors submitting white papers will be contacted by the Government, either with written correspondence informing them that the effort proposed is not of interest to the Government, or with a request for a formal cost and technical proposal by a specified date.

3.4 Document Submissions - General: All Offeror documents, to include white papers, technical proposals, statements of work, and cost proposals, shall be submitted in electronic format and in accordance with BAAST 2015 paragraph 4.2 “White Paper Content and Format”. Offerors may submit their documents in Microsoft Word, Excel, or Adobe Acrobat. Quad charts or briefing presentations may be submitted in Microsoft Power Point. All Offeror’s submitting white papers shall complete requisite data fields for USSOCOM-BAAST-15- Appendix _F__ at the following URL:

<http://www.socom.mil/sordac/Pages/BAAHome.aspx>.

If you experience problems uploading attachments, you are still required to complete requisite data fields and then email attachments to ST@socom.mil. Subject line of email should state, “**White Paper-Topic Area –BAA15-Company Name.**” Upon notification of white paper selection, Offerors have 30 calendar days to prepare and submit a proposal in accordance with the format and instructions in Appendix B of USSOCOM-BAAST-2015.