**UNITED STATES SPECIAL OPERATIONS COMMAND
19.3 Small Business Innovation Research (SBIR)
Direct to Phase II Proposal Submission Instructions**

**Introduction:**

The United States Special Operations Command (USSOCOM) 19.3 Direct to Phase II proposal submission instructions cover Direct to Phase II proposals only and change/append the Department of Defense (DoD) instructions for Phase II submissions as they apply to USSOCOM Direct to Phase II requirements. All Direct to Phase II proposals must be prepared and submitted through the DoD SBIR/STTR electronic submission site: <https://sbir.defensebusiness.org>.

A thorough reading of the “Department of Defense Small Business Innovation Research (SBIR) Program, SBIR 19.3 Program Broad Agency Announcement (BAA)” prior to reading these USSOCOM instructions is highly recommended. These USSOCOM instructions explain certain unique aspects of the USSOCOM SBIR Program that differ from the DoD Announcement and its instructions. The Offeror is responsible for ensuring that their proposal complies with the requirements in the most current version of these instructions. Prior to submitting your proposal, please review the latest version of these instructions as they are subject to change before the submission deadline.

These USSOCOM instructions explain USSOCOM specific aspects that differ from the DoD Announcement and its instructions.

 **Table 1: Consolidated SBIR Topic Information**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Topic** | **Technical Volume (Vol 1)** | **Additional Info. (Vol 5)** | **Period of Performance** | **Award Amount** |
| *Direct to Phase II*SOCOM193-D003 | Not to exceed 10 pages | 15-page PowerPoint  | Typically 18 months | Typically $1,000,000 to $1,500,000 |
| *Direct to Phase II*SOCOM193-D004 | Not to exceed 10 pages | 15-page PowerPoint  | Typically 18 months | Typically $1,000,000 to $1,500,000 |

SBIR Phase II awards may be issued under the authority of 10 United States Code § 2371b as a Prototype Other Transaction Agreement (OTA) rather than a contract under the Federal Acquisition Regulations (FAR). Successful completion of the prototype under an OTA may result in a follow-on production OTA or contract. Firms interested in having an OTA may download the template at [https://www.socom.mil/SOF-ATL/Pages/sbir-19-3.aspx](https://www.socom.mil/SOF-ATL/Pages/SBIR-BAA-20-1Cycle-Archive.aspx)

**Technical Inquiries:**

During the Pre-release Period of the DoD SBIR 19.3 Program BAA, all questions must be submitted in writing either by e-mail to sbir@socom.mil or to the online SBIR/STTR Interactive Topic Information System (SITIS). All questions and answers submitted to SITIS will be released to the general public. USSOCOM does not allow inquirers to talk directly or communicate in any other manner to the topic authors (differs from Section 4.15.c. of the DoD SBIR 19.3 Program BAA instructions). **All inquiries must include the topic number in the subject line of the e-mail.**

During the Open Period, follow the instructions in section 4.15.d of the DoD SBIR 19.3 Program BAA Instructions.

***Site visits will not be permitted during the Pre-release and Open Periods of the DoD SBIR 19.3 Program BAA.***

**Direct to Phase II Topics SOCOM193-D003 and SOCOM193-D004 Proposal Submission:**

Potential Offerors shall submit Direct to Phase II proposals following the same instructions as for Phase II per section 7.0 of the DoD SBIR 19.3 BAA Instructions via the following link: <https://sbir.defensebusiness.org>

USSOCOM does not provide Discretionary Technical and Business Assistance funds in its Direct to Phase II awards.

**Topics SOCOM193-001 and SOCOM193-D003 are both titled “Novel ISR Payloads Hosting on Nanosatellite Bus.”** SOCOM193-D003 is a Direct to Phase II topic allowing firms to submit Phase II proposals for new ideas that do not require a feasibility study. Otherwise submit to the Phase I topic SOCOM193-001 per Phase I instructions.

**Topic SOCOM193-D004 titled “Canine Remote Physiologic Monitoring”** is only a Direct to Phase II topic allowing firms to submit Phase II proposals for new ideas that do not require a feasibility study.

**Proposal Volumes:**

**Volume 1: Cover page required per DoD instructions.**

**Volume 2: Technical Volume**

The Technical Volume shall not exceed 10 pages and will include all required items under section 7.0 of the DoD SBIR 19.3 instructions.

Offerors must provide documentation to satisfy the Phase I feasibility requirement as specified in the direct to Phase II topic. The documentation shall be included as a Feasibility Appendix to the Phase II technical proposal and is not included in the 10-page limit. Offerors are required to provide sufficient information to determine, to the extent possible, the scientific, technical, and commercial merit and feasibility of ideas submitted, and that this work was performed by the Offeror and/or the Principal Investigator. **If the Offeror fails to demonstrate the scientific and technical merit, feasibility, and/or the source of the work, USSOCOM will not continue to evaluate the Offeror's proposal.**  Refer to the topic’s Phase I description under the Direct to Phase II topic to review the minimum requirements needed to demonstrate feasibility.

The technical proposal shall include a Statement of Work (SOW) with the planned tasks and descriptions to meet the Statement of Objectives (SOO) and Contract Data Requirement Lists (CDRLs) DD Forms 1423. Do not upload the SOO or CDRLs with your proposal. The SOO, CDRLs, and Section K will be provided upon e-mail request sent to sbir@socom.mil or may be downloaded from [https://www.socom.mil/SOF-ATL/Pages/sbir-19-3.aspx](https://www.socom.mil/SOF-ATL/Pages/SBIR-BAA-20-1Cycle-Archive.aspx). These are provided to help the Offerors consider the required work/deliverables when developing the proposal. If an Offeror is selected for award, the Offeror will be required to submit a separate non-proprietary SOW with the planned tasks and descriptions from the proposal and all other sections of the SOO to attach to the resulting contract. The SOW attached to the contract shall include no proprietary information, data, or markings.

The identification of foreign national involvement in a USSOCOM SBIR topic is needed to determine if a firm is ineligible for award on a USSOCOM topic that falls within the parameters of the United States Munitions List, Part 121 of the International Traffic in Arms Regulation (ITAR). A firm employing a foreign national(s) (as defined in paragraph 3.5 entitled “Foreign Nationals” of the DoD SBIR 19.3 Announcement) to work on a USSOCOM ITAR topic must possess an export license to receive a SBIR Phase II contract.

**Volume 3: Cost Volume**

Offerors must complete the cost volume using the Phase II Cost Proposal Form posted on the USSOCOM section of the submission site. Offerors can contact the SBIR Help Desk at SBIRHelpdesk@u.group or 1-800-348-0787 for assistance in obtaining the Cost Proposal Form or may be downloaded from [https://www.socom.mil/SOF-ATL/Pages/sbir-19-3.aspx](https://www.socom.mil/SOF-ATL/Pages/SBIR-BAA-20-1Cycle-Archive.aspx). The Cost Proposal information (PDF format) shall be appended to and submitted in Volume 3. Those recommended for award shall submit the original cost proposal in Excel format.

 Cost proposal information should include the itemized listing (a-h) specified below. The cost proposal information must be at a level of detail that would enable contracting personnel to determine the purpose, necessity, and reasonability of each cost element. The itemized listing may be placed in the “Explanatory Material” section of the on-line Cost Proposal form, or as the last page(s) of the Cost Proposal Upload. The Contracting Officer may request additional information to support cost analysis in accordance with Federal Acquisition Regulation (FAR) 15.404-1(c) if needed.

 a. Special Tooling and Test Equipment and Material: The inclusion of equipment and materials will be carefully reviewed relative to need and appropriateness of the work proposed. The purchase of special tooling and test equipment must, in the opinion of the Contracting Officer, be advantageous to the Government and relate directly to the specific effort. They may include such items as innovative instrumentation and/or automatic test equipment.

 b. Direct Cost Materials: Justify costs for materials, parts, and supplies with an itemized list that includes item description, part number, quantities, and price.

 c. Other Direct Costs: This category of costs includes specialized services such as machining or milling, special testing or analysis, and costs incurred in obtaining temporary use of specialized equipment. Proposals that include leased hardware must provide an adequate lease vs. purchase justification or rationale.

 d. Direct Labor: For each individual, include the number of hours, hourly rate, and labor overhead and/or fringe benefits. Identify key personnel by name if possible and labor category.

 e. Travel: Travel costs must relate to the needs of the project. Travel must be in accordance with the Federal Travel Regulation (FTR).

 1. Per Diem Rates can be obtained at: http://www.gsa.gov/perdiem

 2. Costs shall be allowable only if the following information is documented –

 (i) Date and place (city, town, or other similar designation) of the expenses;

 (ii) Purpose of the trip; and

 (iii) Name of person on trip and that person’s title or relationship to the contractor.

 f. Cost Sharing: Cost sharing is permitted. However, cost sharing is not required, nor will it be an evaluation factor in the consideration of a proposal. Please note that cost share contracts do not allow fees.

 g. Subcontracts: Involvement of university or other consultants in the planning and/or research stages of the project may be appropriate. If the Offeror intends such involvement, describe in detail and include information in the cost proposal. The proposed total of all consultant fees, facility leases or usage fees, and other subcontract or purchase agreements may not exceed one-half of the total contract price or cost, unless otherwise approved in writing by the Contracting Officer.

 Support subcontract costs with copies of the subcontract agreements. The supporting agreement documents must adequately describe the work to be performed (i.e., cost proposal) or provide a statement of work with a corresponding detailed cost proposal for each planned subcontract.

 h. Consultants: Provide a separate agreement letter for each consultant. The letter should briefly

state what service or assistance will be provided, the number of hours required and hourly rate.

**Volume 4: Company Commercialization Report**

Required by DoD but not evaluated by USSOCOM.

**Volume 5: Supporting Documents**

Potential Offerors shall submit a slide deck not to exceed 15 PowerPoint slides.

**Volume 6: Fraud, Waste and Abuse Training**

Required by DoD but not evaluated by USSOCOM.

**Direct to Phase II Evaluations:**

USSOCOM evaluates Direct to Phase II proposals using the evaluation criteria specified in section 8.0 of the DoD 19.3 SBIR Announcement with the following exceptions:

1. Feasibility determination. The Feasibility Appendix to the Phase II proposal will be evaluated first to determine that the Offerors demonstrated they have completed research and development to establish the feasibility of the proposed Phase II effort based on the criteria outlined in the topic description**. USSOCOM will not continue evaluating the Offeror's related Phase II proposal if it determines that the Offeror failed to demonstrate that feasibility** has been established **or** the Offeror failed to demonstrate work submitted in the feasibility documentation was substantially performed by the Offeror and/or the Principal Investigator. Refer to the Phase I Topic description included in the Direct to Phase II topic to review the minimum requirements that need to be demonstrated in the feasibility documentation.
2. The technical evaluation will utilize the Evaluation Criteria provided in Section 8.0 of the DoD SBIR 19.3 BAA. The Technical Volume and slide deck will be reviewed holistically. The technical evaluation is performed in two parts:

 Part I: The evaluation of the Technical Volume will utilize the Evaluation Criteria provided in Section 8.0 of the DoD SBIR 19.3 BAA. Once the evaluations are completed, all Offerors will be notified as to whether they were selected to present their slide deck portion of their proposal.

Part II: Selected Offerors will receive an invitation to present their slide deck (30-minute presentation time / 30-minute question and answer) to the USSOCOM evaluation team, on 19-20 November 2019 at the SOFWERX facility. All selected firms will be reimbursed up to $2,000 to offset presentation costs. This presentation will be evaluated by a panel against the criteria listed under Section 8.0 of the DoD SBIR 19.3 BAA. Notifications of selection/non-selection will be completed within the following five business days.

1. The Cost Volume (Volume3) evaluation:

USSOCOM evaluates Phase II proposals using the evaluation criteria specified in section 8.0 of the DoD 19.3 SBIR Announcement. USSOCOM’s Phase II SBIR contracts are typically $1 million - $1.5 million. Resulting awards may be a fixed price OTA prototyping agreements and a successful prototype may lead to follow on production. Resulting awards may also be FAR based Cost-Plus Fixed Fee contracts. A Defense Contracts Audit Agency approved accounting system will be required to issue a Cost-Plus Fixed Fee contract.

Additionally, input on technical aspects of the proposals may be solicited by USSOCOM from non-Government consultants and advisors who are bound by appropriate non-disclosure requirements.  Non-Government personnel will not establish final assessments of risk, rate, or rank Offeror’s proposals.

These advisors are expressly prohibited from competing for USSOCOM SBIR awards.  All administrative support contractors, consultants, and advisors having access to any proprietary data will certify that they will not disclose any information pertaining to this announcement, including any submission, the identity of any submitters, or any other information relative to this announcement; and shall certify that they have no financial interest in any submission. Submissions and information received in response to this announcement constitutes the Offeror’s permission to disclose that information to administrative support contractors and non-Government consultants and advisors.

**Selection Notifications**:

The Government Contracting Officer notifies the Offeror by e-mail of selection/non-selection for award. The e-mail notification will only be sent to the Corporate Official (Business) identified by the Offeror.

**Informal Feedback:**

A non-selected Offeror can make a written request, within 30 calendar days of receipt of notification of non-selection, for informal feedback. USSOCOM will provide informal feedback within 30 calendar days of an Offeror’s written request rather than a debriefing as specified in paragraph 4.10, entitled "Debriefing," of the DoD SBIR 19.3 Announcement.

**USSOCOM SBIR Program Point of Contact:**

Inquiries concerning the USSOCOM SBIR Program should be addressed to sbir@socom.mil.

**USSOCOM SBIR Direct to Phase II 19.3 Topic Index**

|  |  |
| --- | --- |
| SOCOM193-D003 | Nanosatellite Payloads for Tactical Intelligence, Surveillance, and Reconnaissance  |
| SOCOM193-D004 | Canine Remote Physiologic Monitoring |

|  |  |
| --- | --- |
| SOCOM193-D003 | TITLE: Nanosatellite Payloads for Tactical Intelligence, Surveillance, and Reconnaissance |

TECHNOLOGY AREA(S): Electronics, Sensors, Space Platforms

ACQUISITION PROGRAM: Technical Collection and Communications and Joint Threat Warning Systems

OBJECTIVE: The objective of this topic is the development of innovative payloads that can be hosted onboard a nanosatellite bus, for the advancement of USSOCOM capabilities in rapid intelligence collection, surveillance, and reconnaissance.

DESCRIPTION: USSOCOM is interested in improving its capabilities in intelligence collection, surveillance, and reconnaissance from spaceborne platforms. Although existing national assets and commercial services can provide ISR data to USSOCOM users, USSOCOM desires more abundant capabilities for rapid collection and dissemination of actionable data. A constellation of ISR satellites is envisioned. Since costs (developmental, procurement, and launch) are all generally correlated with spacecraft size, building such a constellation with traditional large spacecraft would be cost-prohibitive. Thus, it is advantageous to reduce the size of the spacecraft as much as possible.

Nanosatellites, and particularly CubeSats, have become increasingly popular in the last decade. Although many of the first missions were academic or experimental in nature, more recent missions have demonstrated the feasibility of using these platforms for actual operational capabilities. Certain missions that would have traditionally been performed by larger spacecraft can be transitioned to these smaller platforms, resulting in numerous benefits.

There are, however, also technical tradeoffs and challenges in hosting payloads on nanosatellites rather than larger platforms. The payload must have a smaller volume and be shaped appropriately. Available power is limited, both instantaneously and orbit-averaged. Thermal regulation, attitude control, onboard processing, and communication data-rates are all typically poorer on smaller spacecraft than their larger counterparts.

The purpose of this SBIR topic is to advance the state-of-the-art of technologies for small satellite ISR data production and delivery, acknowledging both the mentioned challenges and the harsh space environment. The desired outcome is high TRL (technology readiness level) packaged ISR payloads for nanosatellites. Resulting payloads should demonstrate novel capabilities or significant advantages over spacecraft ISR payloads currently available on this size scale.

In terms of the missions themselves, USSOCOM is interested in ISR data of various forms. Broadly, USSOCOM is interested in detecting, geolocating, identifying, and/or characterizing objects of interest. Objects of interest include adversaries, their weapons, their equipment, their vessels/vehicles, and the terrain/structures of the environment itself (note that both terrestrial and maritime environments are applicable). Collection methods could include, as one example, analyzing imagery in the visible band (this is already the most prolific and mature of nanosatellite missions). Additional utility might be achieved by expanding imagers into the infrared regime or improving spectral resolution. Other techniques might be able to derive actionable intelligence from RF signals, by either actively probing (e.g. synthetic aperture radar) or passively collecting, enabled by advancements in antennas and software-defined radios. Other methods of remote sensing, such as those used on scientific missions, might offer unexplored utility when applied to USSOCOM ISR applications. These descriptions are non-exhaustive, and suggestions for ISR methods not-listed might also be appealing.

So long as the proposed effort is developmental in nature, there are multiple avenues that could be followed in achieving the desired outcome of producing packaged nanosatellite ISR payloads that advance the state-of-the-art. The following are all within scope of this topic:
• Innovating with novel sensors or designs to produce nanosatellite ISR payloads for which fundamental merits have been demonstrated, but there are no operational heritages.
• Miniaturization of larger ISR payloads to the nanosatellite form factor.
• Repurposing of existing technologies or payloads to meet USSOCOM-specific ISR needs. This could include, for example, development of novel software processing techniques to derive new conclusions from common sensors, or hardware modifications to enhance collection capabilities on USSOCOM-peculiar targets.
• Adaptation of payloads used on ground, sea, or airborne platforms to the nanosatellite platforms. Developments would need to account for the challenges unique to nanosatellite platforms, including reduced Size Weight and Power of the new platforms, the challenges of the space environment, and the greatly increased ranges between the sensors and targets.
• Fusion of data between two or more bundled sensors, to enable exploitation of data in ways not possible on prior payloads with singular sensors.

Emphasis is placed upon rapid tactical operation. The envisioned CONOPs would have a user (in the tactical theatre) issuing an ISR request to the constellation, the satellites autonomously performing data collections as necessary, and then quickly downlinking the results back to the user. Although payload developers are not responsible for the communications infrastructure itself, they should be mindful of the quantities of data that their payloads produce, especially since ISR sensors are typically able to produce large quantities of data in excess of downlink capabilities. If possible, mitigation of the downlink requirements is desirable, for example by extracting and downlinking only key conclusions rather than the entirety of the raw data.

USSOCOM does not pose strict requirements for the usage of any particular satellite host bus, but preference is given to selecting a commercial host bus that follows CubeSat design standards and is 6U in size (ref 1). Similarly, the term “nanosatellite” typically refers to spacecraft with gross mass in the range of 1 kg to 10 kg, but host spacecrafts larger in size will also be considered for this topic (up to 30 kg gross mass). If multiple design options exist for the size of the payload, then the trade space of size versus performance should be presented. USSOCOM will work with the vendor during the SBIR effort to identify a host bus that can both support the payload and allow for high-volume constellation deployment.

PROPOSALS ACCEPTED: Offerors have the option of pursuing either a Phase I award, or a Direct to Phase II award. Direct to Phase II awards are intended to fund efforts for which prior research and development have demonstrated designs with maturity comparable to that of the outcome of a Phase I effort. Direct to Phase II proposals are expected to include feasibility documentation, as described below in the “Feasibility Documentation” section, in lieu of performing a Phase I effort.

PHASE I: For the Phase I effort, offerors shall conduct a feasibility study to assess the art of the possible to satisfy the requirements specified in the above “Description” section. As an outcome of this feasibility study, offerors should include a concept of operations and analyze/quantify potential data that can be provided. Offerors should also include a preliminary payload design and address all viable system design options with respective specifications. Offerors should justify the scientific and technical merit of the technology, especially for components that are innovative or otherwise higher-risk.

Tasking under this phase could include:
• Identify basic scientific principles for the proposed payload, applications to USSOCOM needs, and notional CONOPs.
• Establish proof-of-concept of basic principles and applications, either analytically or experimentally.
• Formulate a preliminary payload design, including packaging and electronics that could feasibly be integrated with a nanosatellite host.
• Predict performance of the preliminary design by using analysis, modeling, simulation, tests and/or other tools.
• Estimate the system properties of payload, such as mass, volume, and shape.
• Estimate the requirements for integration with a host satellite, such as power requirements, attitude control requirements, thermal regulation requirements, computing requirements, and downlink requirements.
• Verify the integration compatibility of the preliminary design with potential commercial nanosatellite buses of the appropriate form factor.
• Describe the procedure and algorithms for processing the collected data. At minimum, describe any techniques that are strictly necessary for transforming the raw sensor data into a form that can be consumed by the user. Optionally, describe any more sophisticated techniques that could exploit the data stream to enhance the utility of the data, or reduce the quantity of data that must be downlinked.
• Define how operators would task the payload, receive payload data, and interpret such data. Wherever possible, automation is preferred, and it is desirable to maximize utility of the data while minimizing burden on the user.

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study (“Technology Readiness Level 3”) to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II: For the Phase II effort, offerors shall develop and demonstrate the prototype system determined to be the most feasible solution during the Phase I feasibility study. The objective of this phase is to advance the technology readiness of the payload as much as possible, by refining the payload design, building a prototype payload, and testing the prototype in a relevant environment. USSOCOM will coordinate with the vendor to identify a suitable nanosatellite host bus, and one outcome of this phase would be the integration of the prototype payload with hardware and software equipment representative of the selected host bus. Subject to USSOCOM funding and user interest, a flight demonstration mission will also be considered under the scope of this phase.

Tasking under this phase could include:
• Coordinate with USSOCOM to identify a suitable nanosatellite host bus. Modify payload design as necessary to ensure compatibility with the selected host bus.
• Perform further analysis, modeling, and simulation to optimize payload design and improve performance.
• Build a prototype payload.
• Test the prototype payload and verify its capability to collect mission data on a representative target. Evaluate measured performance characteristics versus expectations and make design adjustments as necessary.
• Develop software to control the payload, collect/process mission data, and interact with the host bus.
• Demonstrate operation of the prototype payload in a representative space environment. Validate the robustness of the payload to both the space environment and the launch environment, performing necessary tests (e.g. thermal vacuum, vibration) as guided by an appropriate standard (e.g. ref 2).
• Integrate the prototype payload with hardware and software equipment representative of the selected host bus. Integration equipment should be procured from the host bus vendor and could be either a flat-sat, a desktop development unit, or an engineering development unit.

Subject to USSOCOM funding and user interest, tasking under this phase could also include:
• Integrate a prototype payload with a flight unit of the selected host bus, in preparation for launch of a demonstration mission.
• Support on-orbit test, demonstration, and evaluation.
• Train government operators as required to command the payload, interpret mission data, and evaluate payload capabilities.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where there are requirements for timely collection of ISR data from spaceborne assets. A potential transition path could involve fielding of this payload on tens or hundreds of satellites in a coordinated multi-plane constellation, achieving frequent revisit rates and unprecedented data delivery latencies. Depending on the nature and specifics of the payload, the capabilities developed could also be used in other missions by commercial companies or other government organizations.

REFERENCES:

1. CubeSat Design Specification, California Polytechnic State University, http://cubesat.org/

2. NASA General Environmental Verification Standard (GEVS), GFSC-STD-7000, Rev A, Goddard Space Flight Center, https://standards.nasa.gov/standard/gsfc/gsfc-std-7000

KEYWORDS: USSOCOM, space, satellite, nanosatellite, cubesat, payload, imagery, remote sensing, ISR

|  |  |
| --- | --- |
| SOCOM193-D004 | TITLE: Canine Remote Physiologic Monitoring |

TECHNOLOGY AREA(S): Biomedical, Sensors

ACQUISITION PROGRAM: Multi-Purpose Canine

OBJECTIVE: The objective of this topic is to develop an innovative, novel approach for a remote physiologic monitoring capability to enhance Multi-Purpose Canine (MPC) care and capabilities through continuous health monitoring.

DESCRIPTION: The ability to provide continuous physiologic monitoring of an MPC at rest, as well as during high levels of performance in all environmental conditions will significantly improve their operational effectiveness, recovery, and overall care. As a part of this feasibility study, the proposers shall address all viable overall system design options with respective specifications on the key system attributes:
• The ability to remotely monitor the physiologic status of MPCs utilizing an implantable device for collection and transmission of data in real-time, under all environmental conditions.
• Implants must not cause tissue reactivity or other bodily harm to the MPCs

PHASE I: Conduct a feasibility study to assess what is in the art of the possible that satisfies the requirements specified in the above paragraph entitled “Description.”

The objective of this USSOCOM Phase I SBIR effort is to conduct and document the results of a thorough feasibility study (“Technology Readiness Level 3”) to investigate what is in the art of the possible within the given trade space that will satisfy a needed technology. The feasibility study should investigate all options that meet or exceed the minimum performance parameters specified in this write up. It should also address the risks and potential payoffs of the innovative technology options that are investigated and recommend the option that best achieves the objective of this technology pursuit. The funds obligated on the resulting Phase I SBIR contracts are to be used for the sole purpose of conducting a thorough feasibility study using scientific experiments and laboratory studies as necessary. Operational prototypes will not be developed with USSOCOM SBIR funds during Phase I feasibility studies. Operational prototypes developed with other than SBIR funds that are provided at the end of Phase I feasibility studies will not be considered in deciding what firm(s) will be selected for Phase II.

PHASE II: Develop, install, and demonstrate a prototype system determined to be the most feasible solution during the Phase I feasibility study on canine remote physiologic monitoring.

PHASE III DUAL USE APPLICATIONS: This system could be used in a broad range of military applications where remote physiologic monitoring is required. Other applications include various federal and state agencies, law enforcement, sporting, hunting, agility training, and veterinary medicine.

REFERENCES:

1. “Comparison of Non-invasive and Implanted Telemetric Measurement of Blood Pressure and Electrocardiogram in Conscious Beagle Dogs.” 14 Apr 2012

2. “Cardiac Monitoring of Dogs via Smartphone Mechanocardiography: A Feasibility Study.” 23 Apr 2019
https://www.ncbi.nlm.nih.gov/pubmed/31014339

3. “Environmental and Physiological Factors Associated with Stamina in Dogs Exercising in High Ambient Temperatures.” 11 Sep 2017

4. “Evaluation of Dry Electrodes in Canine Heart Rate Monitoring.” 30 May 2018
https://www.ncbi.nlm.nih.gov/pubmed/29848952

KEYWORDS: Dog, Canine, physiologic monitoring, electrocardiography, implantable device