**SMALL BUSINESS INNOVATION RESEARCH**

**phase ii statement of objectives**

**for**

**Micro raman technology**

**TOPIC SOCOM213-D005**

**21 July 2021**

I. **INTERNATIONAL TRAFFIC AND ARMS REGULATION:** The technology within this topic is restricted under the International Traffic in Arms Regulation (ITAR), which controls the export and import of defense-related material and services. Offerors must disclose any proposed use of foreign nationals, their country of origin, and what tasks each would accomplish in the statement of work in accordance with section 5.4.c.(8) of the solicitation. Additionally, Offerors will describe compliance mechanisms offerors have in place or will put in place to address any ITAR issues that arise during the course of agreement administration.

II. **BACKGROUND**:

Special Operations Forces (SOF) Warfighters conduct Identity Intelligence Operations (I2O) in support of the U.S. Special Operations Command (USSOCOM) Find, Fix, Finish, Exploit, Analyze, and Disseminate (F3EAD) cycle. The USSOCOM Sensitive Site Exploitation (SSE) Program provides SOF operators the capability to perform rapid collection and analysis of forensic evidence on the tactical objective, as well as advanced exploitation at forward operating bases. It provides SOF with the necessary intelligence to make time-critical decision at the tactical level while also information operational and strategic level decisions and planning.

III. **OVERALL OBJECTIVE**:

The objective of this Statement of Objectives is to develop and demonstrate two innovative micro Raman Spectrometers integrated on a cellular phone or Android Tactical Assault Kit platform through the creation of an inexpensive, spectroscopic technique which relies upon inelastic scattering of photons to provide the SOF Operators low-visibility scientific grade cellular phone or ATAC based attachment for quick stand-off identification of chemicals; bringing laboratory grade science to the tactical edge.

IV. **Requirements**

A. **General:** The Contractor shall deliver two (2) micro Raman technology Spectrometer prototypes that utilize non-destructive chemical analysis techniques that are employed to provide detailed information about chemical structure, phase and polymorphy, crystallinity and molecular interactions.

1. **Detailed Requirements**: PROTOTYPE DELIVERABLES - SPECIFIC OBJECTIVES:

The Contractor shall design, develop, fabricate, test, and deliver two (2) micro Raman technology Spectrometer prototypes that meet or exceed the below performance parameters:

A. Capability to accurately identify/analyze trace explosives, narcotics, chemical warfare agents, and other toxic chemicals with ≥ 0-14 pH range, T (Threshold) = O (Objective), to include but not limited to the following chemicals (T=O):

• Explosives: RDX, PETN, TNT, Semtex, TATP, NG, ammonium nitrate, H2O2, DNT, Tetryl, TATP, EGDN, HMTD, Urea nitrate.

• Drugs: Cocaine, heroin, THC, methamphetamine, amphetamine, MDA, MDEA, MDMA, PCP, Fentanyl, LSD.

• Chemical warfare agents: Nerve and blister agents such as tabun, sarin, soman, cyclosarin, VX and Vx, any of the Nitrogen mustards or Sulfur agents.

• Toxic industrial chemicals: Hydrogen cyanide (HCN), phosgene, SO2, NH3, chlorine, and acids.

B. Handheld miniaturized device, 2 kg (T), 1 kg (O), including batteries, with operating time of 12 hours (T), 48 hours (O).

C. The device shall use existing US Government standard chemical libraries, T=O. The onboard database should be capable of holding ≥ 75,000 entries (T=O).

D. The device shall be designed to quickly identify samples for further collection and analysis, provide an alert indication to the operator upon positive identification, and the results must be readily interpretable by the operator T=O. This device is not intended to provide the “confirmatory identification”. It is intended to provide the operator a quick indication of whether the substance is a chemical of interest which can then be take back to the Exploitation Analysis Center for further detailed analysis with more sophisticated equipment.

E. The tactical device shall be reliable, designed for remote field-forward operations, and easily maintained in the field without having to be returned to CONUS if the sensor is contaminated or saturated, T=O.

F. The system shall be modular and easily reconfigurable in the field to support particle and vapor chemical analysis modes, T=O.

G. The device shall have a standard SD memory card slot for report and data export, T=O.

H. The system shall not use light sources and projectors that interfere with the use of night-vision devices (T). Visual readouts and indicators must be compatible with night-vision devices. (O)

I. The device shall utilize a 785nm laser diode that delivers 0-200 mW into a 50-µm-core multimode fiber, has linewidth of less than 30 GHz, and has a long-term wavelength stability of a fraction of a wavenumber (cm-1). T=O.

J. The device shall be integrated on a cellular phone or Android Tactical Assault Kit platform. T=O.

K. Meets a Technology Readiness Level 6 (T), Technology Readiness Level 7 (O).

• Technology Readiness Level 6 is defined as “System/subsystem model or prototype demonstration in a relevant environment. Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology’s demonstrated readiness. Examples include testing a prototype in a high- fidelity laboratory environment or in a simulated operational environment.”

• Technology Readiness Level 7 is defined as “System prototype demonstration in an operational environment. Prototype near or at planned operational system. Represents a major step up from TRL 6 by requiring demonstration of an actual system prototype in an operational environment (e.g., in an air-craft, in a vehicle, or in space).”

3. **Unique Item Identification:** The Contractor shall include the DoD unique item identifications or a DoD recognized unique identification equivalent for the prototypes delivered. This includes a description and cost breakout as applicable. Information on unique item identifier types is at <http://www.acq.osd.mil/dpap/UID/uid_types.html>. The guide is at <http://www.acq.osd.mil/dpap/UID/guides.htm>. This is in accordance with DFARS 252.211-7003.

4. **Ship To Address:** The Contractor shall deliver all prototypes systems delivered under this contract to the following address:

SOFSA (DoDAAC: H92323)

5749 Briar Hill Road Building 102

(ATTN: SSE Program Office)

Lexington, KY 40516-9723

ATTN: Michelle Wolfinbarger (859-566-4808/5683)

5. **SHIPPING COSTS:** The Contractor shall pay all costs to ship all product deliverables to and from the validation testing /demonstration sites and to the final delivery location.

B. **DOCUMENT DELIVERABLES:** The Contractor shall provide the following documents to the respective specified addresses during the Phase II Period of Performance:

1. Kick-Off/System Requirements Review: See CDRL A001.
2. Monthly Progress Reports: See CDRL A002.
3. Developmental Test Plan for Performance Validation: See CDRL A003.
4. Developmental Test Report for Performance Validation: See CDRL A004.
5. Business Plans: See CDRL A005.
6. Final Technical Report: See CDRL A006.
7. Preliminary Design Review: See CDRL A007.
8. Critical Design Review: See CDRL A008.

V. **TESTS AND DEMONSTRATIONS:** The Contractor shall conduct tests and demonstrations to validate that handheld prototypes meet or exceed all the requirements specified in this Statement of Objectives. (See CDRL A003 and CDRL A004).

A. The Contractor shall demonstrate that the handheld prototypes meets or exceed the performance of the requirements specified in this Statement of Objectives. (See CDRL A003 and CDRL A004).

VI. **ENVIRONMENTAL AND SAFETY:** The Contractor shall ensure the prototypes developed under this Statement of Objectives meets the following environmental and safety standards:

A. While the prototypes are not required to meet MIL-STD-810G titled “Environmental Engineering Considerations and Laboratory Tests” dated 31 October 2008 requirements, it should be able to endure commercial shipping and nominal handling condition expected to be experienced in laboratory and field testing. (The Government does not intend to conduct MIL-STD-810G testing under this Phase II SBIR effort).

B. The Contractor shall provide technical support and documentation needed for the Government to obtain safety release approval for testing. Specifically, a Quad Chart, Safety Certifications (e.g. NIST Certifications), one-page product description, manuals and associated supplemental data.

VII. **GOVERNMENT FURNISHED PROPERTY (GFP) / GOVERNMENT FURNISHED PROPERTY (GFE) / GOVERNMENT FURNISHED INFORMATION (GFI):**

No GFP, GFE or GFI is needed to successfully complete the requirements specified in this Statement of Objectives.

VIII. **Period of Performance:** The maximum Period of Performance for this Phase II effort is twelve (12) months. The Contractor can propose a lessor Period of Performance if a lessor Period of Performance does not jeopardize the Contractor’s successful completion of the requirements specified in this Statement of Objectives.

IX. **MEETINGS AND REVIEWS**: The Contractor shall attend the following meetings and reviews:

**A. Phase II Kick-Off Meeting / System Requirements Review Meeting:** The Phase II Kick-Off Meeting shall be conducted in Tampa, Florida no later than thirty (30) calendar days after contract award. The Contractor shall provide the Government:

1. A Phase II Kick-Off Meeting / System Requirements Review Read-Ahead Briefing no less than seven (7) calendar days prior to the Phase II Kick-Off Meeting / System Requirements Review Meeting (See CDRL A001).

2. An initial Program Management Plan / Integrated Master Schedule for accomplishing all objectives specified in this Statement of Objectives. (See CDRL A002).

**B. Preliminary Design Review:** The Contractor shall propose a date for the Preliminary Design Review at the Contractor’s facility. The Contractor shall provide the Government:

1. A Preliminary Design Review and Materials Read-Ahead Briefing no less than ten (10) calendar days prior to the Preliminary Design Review (See CDRL A007).

2. System design, trade off considerations, projected system performance. (See CDRL A007).

**C. Critical Design Review:**  The Contractor shall propose a date for the Critical Design Review at the Contractor’s facility. The Contractor shall provide the Government:

1. A Critical Design Review and Materials Read-Ahead Briefing no less than ten (10) calendar days prior to the Critical Design Review (See CDRL A008).

2. System design, trade off considerations, projected system performance. (See CDRL A008).

3. Verification test approach. (See CDRL A003).

4. Results of any testing to date. (See CDRL A004).

5. Resolution to any Contractor/Government issues or concerns.

**D. Close-out Meeting:**  The Close-Out Meeting shall be conducted in the Tampa, Florida area no earlier than seven (7) calendar days prior to the conclusion of the Period of Performance. The Contractor shall provide the Government:

1. A briefing on the test verification.

2. An update of the progress to date.

3. Resolution to any contractor/Government issues or concerns.

**E. Monthly Status Teleconferences:** The Contractor shall conduct Monthly Status Teleconferences to provide technical status/progress, issues, and upcoming plans.

X. **NOTIFICATION:** The Contractor shall notify USSOCOM no less than thirty (30) calendar days prior to tests, demonstrations and reviews at the Contractor’s facilities to ensure USSOCOM representatives can attend should they desire to do so.

XI. **TRAVEL REQUIREMENTS:** The Contractor shall comply with the Federal Acquisition Regulation 31.205-46 (<http://www.gsa.gov/perdiem>) on proposing all travel related costs. The Contractor shall include the costs associated with the following travel requirements in the proposal:

A. Phase II Kick-Off Meeting: Tampa, Florida; one (1) overnight, no more than three (3) Contractor representatives.

B. Phase II Close-Out Meeting: Tampa, Florida; one (1) overnight, no more than three (3) Contractor representatives.

XII**. DISCLOSURE OF UNCLASSIFIED INFORMATION:**

A. On September 21, 2001, the Department of Defense designated Headquarters US Special Operations Command (USSOCOM) a sensitive unit, as defined by Title 10 United States Code (USC) Section 552 (10 USC 552). In keeping with this designation, unclassified information related to USSOCOM military technology acquisitions managed by USSOCOM or any of its component commands, will be designated Controlled Unclassified Information (CUI). As such, the contractor hereby unequivocally agrees that it shall not release to anyone outside the Contractor’s organization any unclassified information, regardless of medium (e.g., film, tape, document, Contractor’s external website, newspaper, magazine, journal, corporate annual report, etc.), pertaining to any part of this contract or any program related to this contract, unless the Contracting Officer has given prior written approval. Furthermore, any release of information which associates USSOCOM, Special Operation Forces (SOF), or any component command with an acquisition program, contractor, or this contract is prohibited unless specifically authorized by USSOCOM.

B. Requests for approval shall identify the specific information to be released, the medium to be used, and the purpose for the release. The Contractor shall submit its request to the Contracting Officer at least 45 days before the proposed date for release for approval. No release of any restricted information shall be made without specific written authorization by the Contracting Officer.

C. The Contractor shall include a similar requirement in each subcontract under this contract. Subcontractors shall submit requests for authorization to release through the prime contractor to the Contracting Officer.

D. The Contractor further understands that Title 18 USC Section 701 specifically prohibits the use of the USSOCOM emblem or logo in any medium (e.g., corporate website, marketing brochure, newspaper, magazine, etc.) unless authorized in writing by USSOCOM. Forward any requests to use the USSOCOM emblem or logo through the Contracting Officer.