

SMALL BUSINESS INNOVATION RESEARCH

**PHASE II STATEMENT OF OBJECTIVES
FOR
CANINE IN-EAR HEARING PROTECTION**

SOCOM224-D006

14 July 2022

I. BACKGROUND:

Special Operations Forces Multi-Purpose Canines fulfill a number of critical battlefield missions, ranging from attack and sentry activities to olfactory detection of explosives or other contraband. Dogs' greater sensory acuity combined with their athleticism makes them indispensable in their roles which has been proven effective from a force protection standpoint. However, the use of Multi-Purpose Canines in combat situations necessarily exposes them to multiple battlefield threats that may lead to impaired athletic and sensory system performance.

One common hazard Multi-Purpose Canines experience is repeated and prolonged exposure to harmful noise frequencies. This exposure to hazardous noise impedes the dogs' ability to listen for sounds on the battlefield, take verbal directions from their handler, and causes permanent premature hearing loss. The only existing canine hearing protection devices currently commercially available are designed to attenuate broadband frequencies. They do not protect the dogs from the harmful frequencies and do not allow them to hear human speech, so are not an effective solution for Multi-Purpose Canines. Canine decontamination methods can also harm canine hearing and these efforts required the firms to also develop canine hearing protection.

This Phase II technology pursuit derives from and extends the canine hearing protection developed under the Army Research Office Phase II Small Business technology Transfer contract W81XWH-19-C-0047. The associated topic number is A17-132 titled, "Military Working Dog Hearing Protection / Active Communication System".

This Phase II effort requires the firm to pursue the following innovative research and development efforts:

II. OVERALL OBJECTIVE:

The objective of this topic is to develop applied research toward an innovated capability to optimize auditory performance of working dogs. This will be accomplished through development of an in-ear hearing protection device capable of providing the necessary protection while still allowing environmental awareness as well as effective communication between the dog and handler.

III. Requirements

A. General: The Contractor shall deliver twelve (12) canine in-ear hearing protection devices for Government follow on testing and demonstration.

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1. **Detailed Requirements:** The Contractor shall design, develop, fabricate, test, demonstrate, and deliver twelve (12) canine in-ear hearing protection prototypes that meet the following performance requirements:

- a. The ability to attenuate frequencies below 1000Hz.
- b. Allow dogs to retain the ability to hear within the frequency range of 2000-4000Hz.
- c. Capable of automatic gain control.
- d. Capable of automatic noise cancellation.
- e. Capable of receiving communication from a radio or other device utilized to remotely give commands to the MPC.
- f. Ability to operate in all environmental conditions.
- g. Will not interfere with natural ear movement so it will not affect MPCs ability to move their ears to maximize reception and help direct and amplify sound.
- h. Hearing protection material must not cause tissue reactivity or other harm to MPC ears.
- i. Available in variety of sizes to accommodate different size ears and MPCs; custom molding being required is acceptable
- j. Ability to be retained in the ear canal and maintain an adequate seal for providing hearing protection
- k. Meets a Technology Readiness Level 7 which is defined as "System prototyping demonstration in an operational environment (ground or space): System prototyping demonstration in operational environment. System is at or near scale of the operational system, with most functions available for demonstration and test. Well integrated with collateral and ancillary systems. Limited documentation available."

2. **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.

3. **SHIP TO ADDRESS:** The Contractor shall deliver all prototypes systems delivered under this contract to the following address:

W9024M
SOTF Clinic
ATTN: Paul Shows
Building O-1900 Lamont Road
Ft. Bragg, NC 28307
Telephone: 910-643-1422

4. **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:

Mandatory CDRLS:

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1. Monthly Progress Reports: See CDRL A001.
2. Business Plans: See CDRL A002.
3. Final Technical Report: See CDRL A003.
4. Financial Status Report: See CDRL A004. (Not included in Direct to Phase II topics)
5. Contractor Acquired Property: See CDRL A005. (Not included in Direct to Phase II topics)
6. Kick-Off/System Requirements Review: See CDRL A006.
7. Developmental Test Plan for Performance Validation: See CDRL A007.
8. Developmental Test Report for Performance Validation: See CDRL A008.
9. Preliminary Design Review: See CDRL A009.
10. Critical Design Review: See CDRL A0010.

IV. TESTS AND DEMONSTRATIONS: The Contractor shall conduct tests and demonstrations to validate that canine in-ear hearing protection devices meet or exceed all the requirements specified in this Statement of Objectives. (See CDRL A007 and CDRL A008).

A. The Contractor shall demonstrate that the canine in-ear hearing protection devices meets or exceed the performance of the requirements outlined above. (See CDRL A007 and CDRL A008).

V. ENVIRONMENTAL AND SAFETY: The Contractor shall ensure the canine in-ear hearing protection devices developed under this Statement of Objectives meets the following environmental and safety standards:

A. NPFC - MIL-HDBK-1860 BATTERIES, NON-RECHARGEABLE SELECTION AND USE OF, HANDBOOK FOR (20 February 1998).

VI. GOVERNMENT FURNISHED PROPERTY (GFP) / GOVERNMENT FURNISHED PROPERTY (GFE) / GOVERNMENT FURNISHED INFORMATION (GFI): The Government does not intend to provide any property, equipment or information during this Phase II effort. However, the Contractor shall include as part of their Phase II technical proposal any property, equipment or information the Contractor believes is needed to successfully complete the requirements specified in this Statement of Objectives.

VII. PERIOD OF PERFORMANCE: The maximum Period of Performance for this Phase II effort is eighteen (18) 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.

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

A. Phase II Kick-Off meeting shall be conducted in Tampa, Florida not later than thirty (30) calendar days after contract award. The Contractor shall provide the Government:

1. A Phase II Kick-Off Meeting Read-Ahead no less than seven (7) calendar days prior to the Phase II Kick-Off Meeting / System Requirements Review Meeting (See CDRL A006).
2. An initial Program Management Plan / Financial Status Report for accomplishing all objectives specified in this Statement of Work. (See CDRLs A001 and A004).

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3. Conceptual Design Drawings no less than ten (10) calendar days prior to the Phase II Kick-Off/System Requirements Review Meeting (See CDRL A006).

B. Preliminary Design Review (PDR) - This meeting shall be conducted at Tampa, FL, or other suitable location no more than ninety (90) calendar days after Phase II contract award. The Contractor shall provide teleconference capability for those participants unable to travel. 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 PDR (See CDRL A009).

2. A Detailed Design Report (See CDRL A009).

3. Trade off considerations for the design. (See CDRL A009).

4. Results of any testing to date. (See CDRL A005).

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

6. An assessment of other potential benefits / impacts of the canine in-ear hearing protection prototypes and a recommendation of any changes for consideration / incorporation into the subsequent design that will be provided to the Government at the follow-on Critical Design Review. (See CDRL A008).

C. Critical Design Review (CDR): This teleconference meeting shall be arranged by the Contractor one hundred eighty (180) days prior to the end of the contract completion date. 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 CDR (See CDRL A009).

2. A Detailed Design Report (See CDRL A009).

3. Trade off considerations for the design. (See CDRL A009).

4. Results of any testing to date. (See CDRL A008).

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

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

1. A briefing on the test verification (See CDRL A008).

2. An update of the progress to date. (See CDRL A001)

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

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.

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