

UNITED STATES SPECIAL OPERATIONS COMMAND
Proposal Submission

The United States Operations Command's (USSOCOM) missions include developing and acquiring unique special operations forces (SOF) equipment, material, supplies and services. Desired SOF operational characteristics for systems, equipments and supplies include: lightweight and micro-sized; reduced signature and low observable; built-in survivability; modular, rugged, reliable, maintainable and simplistic; operable in extremes temperature environments; water depth and atmosphere pressure proof; transportable by aircraft, ship and submarine, and deplorable by airdrop; LLPI/LPD jam resistant C3I, electronic warfare capable of disruption and deception; near real-time surveillance, intelligence and mission planning; highly lethal and destructive; low energy/power requirements; and compatible with conventional force systems. USSOCOM is seeking small businesses with a strong research and development capability and understanding of the necessity for consideration of these SOF operational characteristics for systems. The topics on the following pages represent a portion of the problems encountered by SOF in fulfilling its mission.

USSOCOM invites the small business community to send proposals directly to the following address:

United States Special Operations Command
Attn: SOAC/KB-SBIR Program, Topic No. SOCOM 97.1-00 __
2408 Florida Keys Avenue, 2nd Floor
MacDill Air Force Base, Florida 33621-5316

The proposals will be distributed to the appropriate technical office(s) for evaluation. Inquires of a general nature or questions concerning the administration of the SBIR program and proposal preparation should be addressed to :

United States Special Operations Command
Attn: SOSB/ Ms. Karen L. Pera
7701 Tampa Point Blvd.
MacDill Air Force Base, Florida 33621-5316

USSOCOM has identified 3 technical topics for the solicitation released during FY 97 by DOD, to which small businesses may respond. The topics listed are the only topics for which proposals will be accepted. The topics were initiated by USSOCOM technical offices that manage the research and development in these areas. Scientific and technical information assistance may be requested by using the DTIC SBIR Interactive Technical Information System (SITIS).

Firms are encouraged to submit a proposal for an optional task which would be performed during the period between Phase I completion and Phase II contract award. The optional task provides the opportunity to reduce the gap between Phase I and II. The maximum amount of SBIR funding used for an USSOCOM Phase I award is \$100,000. Proposals that include the option task shall not exceed \$70,000 for Phase I and \$30,000 for Phase I Option. Any option proposal must be submitted at the same time and place as the basic Phase I proposal and not be included in the basic Phase I proposal page limitation. The basic Phase I proposal shall be evaluated exclusive of the option task and must be proposed and priced separately. The option portion of the proposal shall not exceed 10 pages, not exceed \$30,000, not exceed three months in duration, and be evaluated using the same evaluation criteria as Phase I proposals. The transition option work shall be included as an option in the Phase I contract and evaluated for USSOCOM unilateral exercise at any time after Phase I award through the conclusion of the basic Phase I contract. Exercise of any option shall be at the sole discretion of USSOCOM and shall not obligate USSOCOM to make a Phase II award.

Selection of proposals for funding is based upon technical merit and the evaluation criteria included in this solicitation. As funding is limited, USSOCOM reserves the right to select and fund only those proposals considered to be superior in overall technical quality and most critical. As a result , USSOCOM may fund more than one proposal in a specific topic area if the technical quality of the proposals is deemed superior, or it may fund no proposals in a topic area.

**USSOCOM
FY 1997 SBIR TOPIC INDEX**

Human Systems Interface

SOCOM 97.1-001 Advanced Diving Systems/Components

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Surface Vehicles

SOCOM 97.1-003 Emerging Outboard Engine Technology

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USSOCOM SBIR 97.1 TOPIC DESCRIPTIONS

SOCOM 97.1-001 TITLE: Advanced Diving Systems/Components

CATEGORY: Engineering Development; C08, K05

OBJECTIVE: Develop an advanced diving system or new components for existing systems to provide Special Operations Force (SOF) Combat Swimmers with closed-circuit, mixed gas capability with extended endurance. Develop advanced sensors and other components to improve the functionality, performance and life cycle cost of existing SOF diving systems.

DESCRIPTION: SOF Combat Swimmers presently use the MK 16 and Draeger LAR V diving systems for training and real world missions. Although capable of adequately performing assigned SOF missions, these systems have not incorporated state of the art technologies in recent years. Improvements in SOF combat swimmer operational capability can be made by incorporating new technologies that provide improvements in functionality, performance and life cycle cost. New technologies, methods and improvements are sought in, but not limited to, the following areas: oxygen and carbon dioxide gas partial pressure sensing, carbon dioxide; scrubbing, diver display and alarms, automated decompression monitoring and down-loadable dive profile recording, improved closed circuit rig endurance, minimized electronics; and power requirements, low and no magnetic signatures, full face mask compatibility, Swimmer Delivery Vehicle compatibility, reduced operating and maintenance costs, minimal breathing resistance, operating in a wide range of water temperatures, and switching between breathing mixtures.

Phase I: Investigate technologies and devices suitable for use in an existing or new SOF Combat Swimmer Diving System.

Phase II: Develop and test a prototype SOF Combat Swimmer Diving System or upgrades; to existing systems.

Phase III: Transition tested SOF Combat Swimmer Diving System/Components to limited production or Planned Product Improvements.

COMMERCIAL POTENTIAL: The commercial and recreational diving industry provide tremendous application for this technology to improve existing systems or to develop new systems that could aggressively create a niche commercial market and then support a larger recreational market.

SOCOM 97.1-002 TITLE: Helmsman's Recording Accelerometer

CATEGORY: Engineering Development; C08, K05

OBJECTIVE: Develop a Helmsman's Recording Accelerometer for console instrumentation on MSW RIB and MK V SOC to provide the craft helmsman with real time quantitative acceleration data and provide a record of craft accelerations to improve rough water operation and hull fatigue analysis.

DESCRIPTION: A Helmsman's Recording Accelerometer will provide the helmsman with valuable real time information on craft vertical accelerations when operating in rough water. This will assist the helmsman in choosing speeds and headings to reduce perceived roughness during SOF missions to reduce fatigue on passengers and the hull structure. The accelerometer recording will assist in post-mission analysis and in hull fatigue analysis to improve hull maintenance planning and for long-term analysis of hull structures. Technology related to this requirement include aircraft accelerometers and air-bag accelerometers.

Phase I: Investigate technologies and devices suitable for use in a Helmsman's Recording Accelerometer.

Phase II: Develop and test prototype Helmsman's Recording Accelerometer.

Phase III: Transition tested Helmsman's Recording Accelerometer design to limited production.

COMMERCIAL POTENTIAL: Application in commercial and recreational boating industry to provide real -time data to improve rough water operation and historical acceleration data for hull fatigue analysis.

CATEGORY: Advanced Development

OBJECTIVE: This topic focuses on expanding, adapting and applying emerging commercial engine technology to outboard engine applications. The objective is to produce outboard engines with improved power to weight and power to size ratios when compared to current and immediate future outboard engines.

DESCRIPTION: Special Operations Forces (SOF) are tasked to perform overt and covert missions including mine and countermine operations. Currently, combat rubber raiding crafts (CRRC) are used to transport personnel and equipment from the insertion site to the objective area. The distance traveled can be quite extensive and it is likely that minefields will be encountered while en route. SOF outboard engine inventory is currently comprised of two-cycle gasoline outboard engines. These in most cases have a weight/size to power ratio that makes the engine difficult to physically handle quickly and accurately. These engines often require more than one SOF operator to set up vice the desired single SOF operator.

This proposed Emerging Outboard Engine Technology topic is intended to pursue innovative ideas, concepts and techniques to develop a family (30 hp, 55 hp and 70 hp) of lightweight, compact multi-fuel, submersible outboard engines. These new lightweight compact outboard engines must have adequate power to propel and plane SOF inflatable and other applicable boats carrying the required crew with equipment and fuel in Sea State 2 or less. The weight/size of the engines must improve the performance of the various boats and enhance the operator's abilities to effectively and easily handle and operate them.

A successful development program will include the achievement of the following technical objectives:

- a. Demonstrate operation of outboard engines with power to weight/size ratios twice that (as an initial goal) of current outboard engines.
- b. Demonstrate reliability and longevity comparable to current engines.
- c. Incorporate high quality design and manufacturing practices/standards that produce quality engines and inhibit corrosion when operated in SOF mission environments.
- d. Demonstrate mechanical designs that are capable of being hand carried and mounted by a single SOF operator onto a boat transom with dimensional and angular requirements accepted in the boating industry.
- e. Other desirable outboard engine characteristics targeted for improvement are reduced heat, acoustic, and magnetic signatures, multi-fuel operation, improved fuel economy and reduced life cycle costs.

Phase I: Analyze outboard engine systems/concepts to prove that weight/size reduction of 50% (as an initial goal) is achievable. Conduct engineering demonstrations that produce the desired lightweight/compact outboard engine capabilities. The deliverable of this phase will be investigative engineering reports.

Phase II: Advanced development of the lightweight/compact outboard engine. Two prototypes (30 hp and 55 hp lightweight/compact outboard engines) will be fabricated and contractor tested to demonstrate the concept in a fully operational system. Both prototypes will be delivered to the government after contractor tests are reported to the government. Other deliverables will include engineering specifications and drawings, and test reports.

Phase III: Engineering development of lightweight/compact outboard engines. Detailed engine design, production engineering and logistic support of the family of engines will be completed. Several production representative engines will be produced, tested and delivered to the government for operational testing.

COMMERCIAL POTENTIAL: There is high potential for lightweight/compact outboard engines in the recreational boating industry for a number of reasons - increased fuel efficiency, ease of handling, ease of storage, and reduced cost of initial purchase and maintenance are examples.