

UNITED STATES SPECIAL OPERATIONS COMMAND

Proposal Submission

The United States Special 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 extreme temperature environments; water depth and atmosphere pressure proof; transportable by aircraft, ship and submarine, and deployable by airdrop; LPI/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 therefore 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 an introduction to a portion of the problems encountered by the SOF in fulfilling its mission.

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

United States Special Operations Command
Attn: SOKS/SBIR Program, Topic No. SOCOM94-____
2408 Florida Keys Avenue
MacDill Air Force Base, Florida 33621-5316

The proposals will be processed, then distributed to the appropriate technical office for evaluation. Inquiries 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: Ms. Paulette Widmann
2408 Florida Keys Avenue
MacDill Air Force Base, Florida 33621-5316
Telephone: (813) 840-5443

The USSOCOM has identified four technical topics for this, the second of two SBIR solicitations to be released during FY 1994 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. No direct communication with the topic author is possible. No additional technical information is available during the solicitation period. The only source for technical information is the Defense Technical Information Center (DTIC). Please refer to Section 7.1 in this solicitation for further information on DTIC.

Firms are encouraged to submit a proposal for an option 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 any 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.

**US SPECIAL OPERATIONS COMMAND
FY 94.2 SBIR TOPIC INDEX**

MATERIALS

SOCOM 94-005 Adhesives

LASER, OPTICS AND POWER SYSTEMS

SOCOM 94-006 Wavelength Independent Human Laser Eye Protection

SOCOM 94-007 Fiber Optic Cable Communications Adapter for Tactical Radios

SURVIVABILITY AND HARDENING

SOCOM 94-008 Engine Infra-red (IR) Signature Suppression

SUBJECT/WORD INDEX TO THE U.S. SOCOM TOPICS

<u>SUBJECT/WORD</u>	<u>TOPIC NO.</u>
Adapter	007
Adhesives	005
Agile	006
Bonding, adhesive	005
Communications, secure	007
Communications, tactical	007
Construction	005
Engine shielding	008
Engine suppression	008
Fiber optic	007
IR signature reduction	008
Laser	007
Laser eye protection	006
Laser protective devices	006
Materials, bonding dissimilar	005
Material, low-weight	008
Suppression	008
Technology, tunable laser	006

U.S. SOCOM FY94.2 TOPICS

SOCOM 94-005 TITLE: Adhesives

CATEGORY: Exploratory Development; Materials

OBJECTIVES: Develop family of adhesives to bond similar and dissimilar materials for repair and construction.

DESCRIPTION: A multi-approach program to explore the use of adhesives for quick attachment of sensors, munitions, and other equipment onto unprepared surfaces in less than ideal environments. The surfaces may be stationary or moving, above or below fresh, salt, and brackish water, overhead horizontal or vertical plane structures, and exposed to environmental elements (e.g. fouled ship hulls, fouled mines, and barnacle covered surfaces). The bonding/adhesive materials will also be used for field expedient repairs of wood and wood products, metal, composites, plastics, and fabrics. The family of adhesives will also be used for general construction.

Phase I: Identify products and methods for developing quick curing/setting adhesives that bond dissimilar materials onto unprepared surfaces when underwater and in less than ideal environmental conditions.

Phase II: Develop durable, easily applied, low volume adhesives that can be used for:

a. Expedient and reliable repairs of the outer skins of rotary/fixed winged aircraft, hulls and engines of boats/ground vehicles, and other equipment when deployed in hostile environments without logistic support.

b. Bonding of dissimilar materials, e.g., materials used in office buildings, housing, load bearing and bridging type construction, wood products, metal, composites, plastics, and fabrics.

COMMERCIAL POTENTIAL: The potential for use of improved adhesives throughout industry and military is limitless. Adhesives having better properties than existing materials will have markets in the construction, aerospace, automotive and electronics industries. Adhesives which could be used to repair machinery or equipment without taking the system off-line would have high utility.

SOCOM 94-006 TITLE: Wavelength Independent Human Laser Eye Protection

CATEGORY: Exploratory Development; Laser, Optics and Power Systems

OBJECTIVES: Enhance the capability to protect human eyes from lasers operating at any wavelength.

DESCRIPTION: USSOCOM is interested in enhanced capabilities to protect human eyes from lasers operating at unknown wavelengths and in the spectral region from 400-900nm. Candidate concept shall be evaluated for laser attenuation, impact on operator (pilot and ground crews), cockpit and equipment compatibility, and environmental durability. Selected technologies shall be implemented into laser protective devices capable of providing protection from damage and transient effects when irradiated by a laser. Potential concepts to be explored include, tunable filters, liquid limiters, sacrificial filters, and optical switches.

Phase I: During this phase the offeror will demonstrate the feasibility of an exploratory concept (preferably advanced from holographic and dye technology) and identify the material design and technology needs that must be matured for a protection device(s) demonstration.

Phase II: Optimize, fabricate, and demonstrate feasibility of phase I eye protection device design concept. Testing will include optical performance, laser rejection efficiency, and environmental stability. Also, these devices will be examined for compatibility with the operator's equipment, and cockpit lighting, operator performance impact, and acceptability.

COMMERCIAL POTENTIAL: This technology will have many applications in all electronic and engineering fields that pertain to lasers. This application will provide needed safety devices for worker protection.

SOCOM 94-007 TITLE: Fiber Optic Cable Communications Adapter for Tactical Radios

CATEGORY: Engineering Development; Lasers, Optics and Power Systems.

OBJECTIVE: To design, develop, and field test a fiber optic cable communications adapter for standard US tactical VHF radios.

DESCRIPTION: Design, develop, and field test a small, lightweight (four pounds or less, minus cable and cable reel), diode laser powered fiber optic cable communications transceiver that attaches to the radio frequency (RF) antenna connector of standard US VHF tactical radios. The laser transmitter is modulated by the RF energy of the tactical radio. Additional required power is obtained from the radio battery. The adapter is attached between the radio antenna connection and to a 5 kilometer reel of monofilament optical cable to provide secure point-to-point tactical communications during military operations requiring stealth and security.

Phase I: Develop and fabricate one prototype for lab testing.

Phase II: Based upon lab test results, refine design, and test under tactical field conditions. Provide estimated production costs for 25 and 100 units.

COMMERCIAL POTENTIAL: Adapters for commercial radios and walki-talki radios for use in areas of high co-channel interference, EMI, or in areas where RF communications are prohibited.

SOCOM 94-008 TITLE: Engine Infra-red (IR) Signature Suppression

CATEGORY: Exploratory Development; Survivability and Hardening

OBJECTIVES: Develop a light weight, low drag engine IR suppression for SOF aircraft.

DESCRIPTION: Primary emphasis is the proposed system must be light weight and low drag. SOF aircraft are very large, slow moving and can not accept more weight and drag unless balanced weight reductions are made. A need exists to suppress the non-visual signature of SOF aircraft in the IR frequencies. The aircraft engines on the C-130, H-47s, H-53s, H-60s, and M-VX need exploratory IR suppression techniques.

Phase I: During this phase the offeror will analyze the specific design restrictions and expand on their suppression concept showing specifically the low weight and drag elements for SOF C-130 aircraft with the goal to include other aircraft.

Phase II: Optimize and develop a low cost working prototype that demonstrates the Phase I concept.

COMMERCIAL POTENTIAL: Commercial airline industry would use this technology if it is low cost.