

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

FEBRUARY 2007

APPROPRIATION / BUDGET ACTIVITY  
RDT&E, DEFENSE-WIDE / 2

R-1 ITEM NOMENCLATURE / PROJECT NO.  
PE 1160407BB Special Operations Forces (SOF) Medical Technology Development/S275

COST (Dollars in Millions)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Cost to Complete	Total Cost
PE1160407BB	2.133	2.234	2.388	2.464	2.541	2.623	3.148	3.777	Cont.	Cont.
S275, SOF MEDICAL TECHNOLOGY	2.133	2.234	2.388	2.464	2.541	2.623	3.148	3.777	Cont.	Cont.

A. Mission Description and Budget Item Justification:

This program element provides studies, non-system exploratory advanced technology development, and evaluations. The focus is on medical technologies, centering on physiologic, psychologic, and ergonomic factors affecting the ability of Special Operations Forces (SOF) to perform their missions. Special operations requires unique approaches to combat casualty care, medical equipment, and other life support capabilities including life support for high altitude parachuting, combat swimming, and other SOF unique missions. This program provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, combat casualty procedures, and life support systems. The program supports the development and evaluation of biomedical enhancements for the unique requirements of all SOF in the conduct of their diverse missions.

B. Program Change Summary:

	<u>FY06</u>	<u>FY07</u>	<u>FY08</u>	<u>FY09</u>
Previous President's Budget	2.183	2.293	2.388	2.464
Current President's Budget	2.133	2.234	2.388	2.464
Total Adjustments	-0.050	-0.059		
Congressional Program Reductions		-0.009		
Congressional Increases				
Reprogrammings				
Other Program Adjustments				
SBIR Transfer	-0.050	-0.050		

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<p>Funding:</p> <p>FY06: Decrease is due to transfer to the Small Business Innovative Research (SBIR) account (-\$0.050 million).</p> <p>FY07: Decrease is due to SBIR transfer (-\$0.050 million) and Section 8106 reduction (-\$0.009 million).</p> <p>FY08: No change.</p> <p>FY09: No change.</p> <p>Schedule: None.</p> <p>Technical: None.</p>			

**Exhibit R-2a, RDT&E Project Justification**

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Cost (\$ in millions)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
SOF Medical Technology	2.133	2.234	2.388	2.464	2.541	2.623	3.148	3.777
RDT&E Articles Quantity								

**A. Mission Description and Budget Item Justification:** This project provides studies, non-system exploratory advanced technology development and evaluations. The focus is on medical technologies, centering on physiologic, psychologic, and ergonomic factors affecting the ability of Special Operations Forces (SOF) to perform their missions. Special operations requires unique approaches to combat casualty care, medical equipment, and other life support capabilities including life support for high altitude parachuting, combat swimming, and other SOF unique missions. This project provides guidelines for the development of selection and conditioning criteria, thermal protection, decompression procedures, combat casualty procedures, and life support systems. The project supports the development and evaluation of biomedical enhancements for the unique requirements of all SOF in the conduct of their diverse missions. This effort is defined by the following seven areas of investigation:

- **Combat casualty management will:** (1) review the emergency medical equipment currently used in the SOF community and compare it to currently available civilian technology, and provide field testing of emergency medical equipment in the adverse environmental conditions encountered by SOF; (2) evaluate current tactical combat casualty care doctrine to ensure consideration of the wide variety of tactical scenarios encountered, and apply the latest concepts in casualty care to these circumstances; (3) apply lessons learned from recent combat operations to enhance medical capabilities; and (4) develop CD-ROM and internet compatible automated programs to provide the capability to perform medical interviews in multiple foreign languages and support SOF medical personnel information needs while operating in austere locations.
- **Decompression procedures for SOF diving operations will:** (1) decrease the decompression obligation in SOF diving operations through the use of surface-interval oxygen breathing; (2) provide the basis for extended mission profiles; and (3) investigate pre-oxygenation requirements for high-altitude SOF parachute operations, as well as ground operations at extreme altitudes.
- **Exercise-related injuries will evaluate the effectiveness of applying sports medicine diagnostic, therapeutic and rehabilitative techniques in management of the traumatic and overuse injuries commonly encountered among SOF.**
- **Inhaled gas toxicology will evaluate the feasibility of using pharmacologic intervention to reduce or eliminate the possibility of central nervous system toxicity.**
- **Medical sustainment training techniques will:** (1) examine novel ways of providing and documenting medical sustainment training for SOF corpsmen and physicians; (2) provide capabilities to rapidly develop new protocol and equipment instructions; and (3) develop a system for

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constantly upgrading the expertise of SOF medical personnel by incorporating new research reports and clinical information into a CD-ROM based computer system that can be used by medical personnel in isolated duty circumstances.

- Thermal protection research into various ensemble clothing and devices that may potentially enhance SOF operator performance.
- Mission-related physiology will: (1) develop accurate measures to evaluate SOF mission-related performance; (2) delineate nutritional strategies designed to help personnel apply known nutritional concepts to optimize performance in mission and training scenarios; (3) evaluate potential ergogenic agents as they apply to enhancing mission-related performance; (4) study the safety and efficacy of various substances to increase performance in sustained operations; (5) study interfaces of new vision devices with refractive vision enhancements; and (6) study pharmacologic measures to prevent acute mountain sickness in high altitude SOF air and ground operations.

**B. Accomplishments/Planned Program**

	FY06	FY07	FY08	FY09
Ongoing Studies	1.019	.610	1.113	1.214
RDT&E Articles Quantity				

FY06 Completed ongoing studies as follows: Cold Sterilization, Toxicity of Compounds Released during SOF Breaching Evolutions, SOF Performance Enhancing Drug Protocols, Development of Algorithms for Remote Triage, Protocols and Techniques for New Equipment and Technologies Within SOF, and Evaluation of Surfactant® in the Treatment of Eustachian Tube Dysfunction and Middle Ear Squeezes. Continue ongoing studies as follows: TCCC Technology Transition Initiative, Prevention of Motion Sickness in SOF Operations, SOF Medical Training Presentations, and Visual Aberration in Post-Corneal Refractive Surgery Patients Using Panoramic Night Vision Goggles.

FY07 Complete ongoing studies as follows: TCCC Technology Transition Initiative, Prevention of Motion Sickness in SOF Operations, Visual Aberration in Post-Corneal Refractive Surgery Patients Using Panoramic Night Vision Goggles, SOF Medical Training Presentations, and SOF Nutrition Training Material for USSOCOM. Continue ongoing studies as follows: Advanced Distant Learning for 18D Course of Instruction, and Efficacy of DHEA Administration to Protect Soldiers Against Stress Induced Defects in Memory and Cognition.

FY08 Completes ongoing studies as follows: Recombinant Hemostatic Agents for Penetrating Brain Injury, SOF Medical Lessons Learned, Intravenous Perfluorocarbon and Recompression Therapy After the Onset of Severe Decompression Sickness, Comparison of Flight Proficiency and Risk Taking Behavior in Aviators Given Dextroamphetamine or Modafinil During Extended Operations, Efficacy of DHEA Administration to Protect Soldiers Against Stress Induced Defects in Memory and Cognition, and Advanced Distant Learning for 18D Course of Instruction.

FY09 Continues ongoing studies as follows: Ergogenics and Ergonomics, Develop Mission Essential Elements for Enroute Care, Operational/Performance in Adverse Environment Studies, and Update SOF/Joint Medical Doctrine and Procedures.

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	FY06	FY07	FY08	FY09
New Studies	1.114	1.624	1.275	1.250
RDT&E Articles Quantity				

FY06 Initiated new studies as follows: Efficacy of DHEA Administration to Protect Soldiers Against Stress Induced Defects in Memory and Cognition, Advanced Distance Learning for 18D Course of Instruction, SOF Nutrition Training Material for USSOCOM.

FY07 Initiate new studies as follows: Intravenous Perfluorocarbon and Recompression Therapy After the Onset of Severe Decompression Sickness, Recombinant Hemostatic Agents for Penetrating Brain Injury, SOF Medical Lessons Learned, and Comparison of Flight Proficiency and Risk Taking Behavior in Aviators Given Dextroamphetamine or Modafinil During Extended Operations. Complete new studies as follows: Trauma Injury and Mortality During Operations Enduring Freedom and Iraqi Freedom, Studies to Evaluate Commercially Available Warming Devices for the Development of Guidelines for the Use of Hypothermia Prevention Equipment on the Battlefield, Air Sickness Prevention in Medical Evacuation Personnel and Airborne Troops, Efficacy of Tactile Cues from a Limited Belt-Area System in Orienting Well-Rested and Fatigued Pilots in a Complex Flight Environment, Testing and Field Evaluations of the Welch Allyn (WA) Propaq LT for Use by SOF, and Altitude Decompression Sickness Risk Assessment Computer Risk Prediction Upgrade - Staged In-Flight Decompression.

FY08 Initiates new studies as follows: Ergogenics and Ergonomics, Develop Mission Essential Elements for Enroute Care, Operational/Performance in Adverse Environment Studies, and Update SOF/Joint Medical Doctrine and Procedures.

FY09 Initiates new studies as follows: Mission/Load Performance Factors, Identification of Preventable Injuries and Diseases, Barrier Cream and Topical Protectants, Medical Regulating and Evacuation, and Alternative Field Medications.

C. Other Program Funding Summary. None.

D. Acquisition Strategy. N/A.