RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)	DATE FEBRUARY 2005
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSE-WIDE / 2	R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160407BB Special Operations Forces (SOF) Medical Technology Development

COST (Dollars in Millions)	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	Cost to Complete	Total Cost
PE1160407BB	5.517	2.071	2.215	2.261	2.353	2.428	2.504	2.583	Cont.	Cont.
S275, SOF MEDICAL TECHNOLOGY	5.517	2.071	2.215	2.261	2.353	2.428	2.504	2.583	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. Current equipment and technology does not meet force requirements. The unique nature of 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:

	FY04	FY05	FY06	FY07
Previous President's Budget	5.182	2.162	2.171	2.211
Current President's Budget	5.517	2.071	2.215	2.261
Total Adjustments	0.335	-0.091	0.044	0.050
Congressional Program Reductions		-0.043		
Congressional Increases				
Reprogrammings	0.335		0.044	0.050
SBIR Transfer		-0.048		

Funding:

FY04
- Increase is a result of funds reprogrammed to support increased requirement for ongoing studies.

FY05
- Decrease reflects SBIR (-$0.048M) and Sectionals 8095, 8122. and 8135 (-$0.043M).

FY06
- Increase based on current inflation factors (+$.044M)

FY07
- Increase based on current inflation factors (+$.050M)

Schedule: N/A.

Technical: N/A.

Exhibit R-2a, RDT&E Project Justification	Date: FEBRUARY 2005
Appropriation/Budget Activity RDT&E BA # 2	SOF Medical Technology/Project S275

Cost ($ in millions)	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
SOF Medical Technology	5.517	2.071	2.215	2.261	2.353	2.428	2.504	2.583
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. Current equipment and technology does not meet force requirements. The unique nature of 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 constantly upgrading the expertise of SOF medical personnel by incorporating new research reports and clinical information into a CD-ROM based computer system which 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

	FY04	FY05	FY06	FY07
Ongoing Studies	1.571	.771	.884	.903
RDT&E Articles Quantity				

FY04 Completed ongoing studies as follows: Effects of Post-Stress Carbohydrate Administration on Recovery, Treatment Standards for Decompression Sickness (DCS)/Arterial Gas Embolism (AGE), Bronchoalveolar Lavage in Swimming Induced Pulmonary Edema (SIPE), Advanced Sea, Air, Land Delivery System (ASDS)/Underwater Breathing Appartus (UBA), SOF Mission Related Performance Measures Upgrade, Effects of Low-Grade Hypoxia at Night in SOF Aircraft Operations, Stress Fractures in BUD/S Training, and Polymer Splint. Continued ongoing studies as follows: Evaluation of HydroTech Aqua Heat System during SEAL Delivery Vehicle (SDV) Operations, Medical Support of High Speed Boat (HSB) Shock Mitigation, Computer-Assisted Thermal Protection Training in SOF, Hypoxic Exposures to Improve Performance at Altitude, SOF Performance Enhancing Drug Protocols, Cold Sterilization, Development of Algorithms for Remote Triage, Decompression Computer Diving Surveillance and Configuration Management Program, Tympanic Membrane Injuries, Evaluation of Nasal Ketamine for Pain Control, Comparison of Wavefront-Guided Photo-Refractive Keratectomy (PRK) and LASIK/LASER Epithelial Keratomileusis (LASEK), and Tactical Combat Casualty Care (TCCC) Technology Transition Initiative.
FY05 Complete ongoing studies as follows: Evaluation of HydroTech Aqua Heat System during SDV operations, Medical support of HSB Shock Mitigation, Computer-Assisted Thermal Protection Training in SOF, Decompression Computer Diving Surveillance and Configuration Management Program, Tympanic Membrane Injuries, Evaluation of Nasal Ketamine for Pain Control, and Comparison of Wavefront-Guided

RK and LASEK. Continue ongoing studies as follows: Hypoxic Exposures to Improve Performance at Altitude, SOF Performance Enhancing Drug Protocols, Cold Sterilization, Development of Algorithms for Remote Triage, and TCCC Technology Transition Initiative.
FY06 Complete ongoing studies as follows: Hypoxic Exposures to Improve Performance at Altitude, SOF Performance Enhancing Drug Protocols, Development of Algorithms for Remote Triage, Protocols and Techniques for New Equipment and Technologies within SOF, Prevention of Motion Sickness in SOF Operations, SOF Medical Training Presentations, and Evaluation of Surfactant® in the Treatment of Eustachian Tube Dysfunction and Middle Ear Squeezes. Continue ongoing studies as follows: Cold Sterilization, Visual Aberration in Post-Corneal Refractive Surgery Patients Using Panoramic Night Vision Goggles, Toxicity of Compounds Released During SOF Breaching Evolutions, and TCCC Technology Transition Initiative.
FY07 Complete ongoing studies as follows: Cold Sterilization, Visual Aberration in Post-Corneal Refractive Surgery Patients Using Panoramic Night Vision Goggles, Toxicity of Compounds Released during SOF Breaching Evolutions, and TCCC Technology Transition Initiative.

	FY04	FY05	FY06	FY07
New Studies	.674	1.300	1.331	1.358
RDT&E Articles Quantity				

FY04 Initiated new studies as follows: TCCC Technology Transition Initiative.
FY05 Initiate new studies as follows: Protocols and Techniques for New Equipment and Technologies within SOF, Prevention of Motion Sickness in SOF Operations, SOF Medical Training Presentations, Visual Aberration in Post-Corneal Refractive Surgery Patients Using Panoramic Night Vision Goggles, Evaluation of Surfactant® in Treatment of Eustachian Tube Dysfunction and Middle Ear Squeezes, and Toxicity of Compounds Released During SOF Breaching Evolutions. Complete new studies as follows: Efficacy of Oxygen Administration in the CASEVAC Phase of TCCC.
FY06 Initiate new studies as follows: Card Diagnostics, Tourniquets, Disease Non-Battle Injury Capability, Risk Factors for Musculoskeletal Impairments, Assess Mission Optimal Nutrient/Fluid Requirements, Rapid Identification of Chemical/Biological Hazards, Hyper and Hypobaric Studies, Fluid Resuscitation Studies, Medical Mission Analysis, and Patient Warming/Cooling Techniques.
FY07 Initiate new studies as follows: Patient Recovery/Location, Mission/Load Performance Factors, Ergogenics and Ergonomics, Identification of Preventable Injuries and Diseases, Develop Mission Essential Elements for Enroute Care, Update SOF/Joint Medical Doctrine and Procedures, Patient Visibility, Medical Regulating and Evacuation, Operational/Performance in Adverse Environment Studies, Barrier Cream and Topical Protectants, Alternative Field Medications.

Exhibit R-2a, RDT&E Project Justification	Date: FEBRUARY 2005
Appropriation/Budget Activity RDT&E BA # 2	SOF Medical Technology/Project S275

	FY04	FY05	FY06	FY07
Rebreather	3.272			
RDT&E Articles Quantity				

FY04 This initiative was a Congressional Plus-up. Continued development of underlying technologies that will support the Advanced Technology underwater breathing apparatus project.

C. Other Program Funding Summary. None.

D. Acquisition Strategy. N/A.