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Exhibit R-2, PB 2010 United States Special Operations Command RDT&E Budget Item Justification **DATE:** May 2009

APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE					
0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research					PE 1160407BB SOF MEDICAL TECHNOLOGY					
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	2.313	2.452	0.000						0	0
S275: SOF MEDICAL TECHNOLOGY	2.313	2.452	0.000						0	0

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 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 (\$ in Millions)

	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>
Previous President's Budget	2.327	2.459	2.495	
Current BES/President's Budget	2.313	2.452	0.000	
Total Adjustments	-0.014	-0.007	-2.495	
Congressional Program Reductions	0.000	-0.007		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	0.000		
Total Reprogrammings	0.000	0.000		
SBIR/STTR Transfer	-0.014	0.000		
medical technology efforts will be addressed under program element 1160401BB under the Rapid Exploitation of Innovative Technologies for SOF project.			-2.495	

Change Summary Explanation

Funding:

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<p>FY08: Decrease (-\$0.014 million) is due to an adjustment to the Small Business Innovative Research (SBIR) account.</p> <p>FY09: Decrease (-\$0.007 million) is due to Section 8101 reduction (-\$0.007 million).</p> <p>FY10: Decrease (-\$2.495 million): Beginning in FY10, medical technology efforts will be addressed under program element 1160401BB under the Rapid Exploitation of Innovative Technologies for SOF project.</p> <p>Schedule: None.</p> <p>Technical: None.</p> <p>Technical: None.</p>		

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APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 1160407BB SOF MEDICAL TECHNOLOGY					PROJECT NUMBER S275	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
S275: SOF MEDICAL TECHNOLOGY	2.313	2.452	0.000						0	0

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 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: (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

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<p>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.</p> <p>Thermal protection research into various ensemble clothing and devices that may potentially enhance SOF operator performance.</p> <p>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.</p>				
B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Combat Casualty Care Combat Casualty Care <i>FY 2008 Accomplishments:</i> Completed ongoing testing and field evaluation studies of the WA Propaq LT and wearable low-power plasma knife. Continued ongoing recombinant hemostatic agents studies for penetrating brain injury. Initiated new studies for SOCOM lab sets. <i>FY 2009 Plans:</i> Complete ongoing recombinant hemostatic agents studies for penetrating brain injury and SOCOM lab set. Initiate new studies to develop mission essential elements for enroute care.	0.235	0.479	0.000	
Diving Medicine Diving Medicine <i>FY 2008 Accomplishments:</i> Continued ongoing studies for intravenous perfluorocarbon and recompression therapy after the onset of severe decompression sickness	0.121	0.000	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
<p><i>FY 2009 Plans:</i> Complete ongoing studies for intravenous perfluorocarbon and recompression therapy after the onset of severe decompression sickness.</p>				
<p>Medical Informatics Medical Informatics</p> <p><i>FY 2008 Accomplishments:</i> Completed ongoing studies for SOF nutrition training material, advanced distant learning for 18D course of instruction and the history of the development of the SOF medic. Continued ongoing studies for SOF medical lessons learned</p> <p><i>FY 2009 Plans:</i> Complete ongoing studies for SOF medical lessons learned and initiate new studies to update SOF/Joint Medical Doctrine and Procedures.</p>	0.218	0.577	0.000	
<p>Performance Enhancements Performance Enhancements</p> <p><i>FY 2008 Accomplishments:</i> Completed ongoing studies for prevention of motion sickness and altitude decompression sickness risk assessment computer upgrade - staged in-light decompression. Continued ongoing studies for comparison of flight proficiency and risk taking behavior in aviators given dextroamphetamine or modafinil during extended operations and the effect of exogenous erythropoietin on acute mountain sickness symptoms in humans. Initiated new studies for anti-clotting agents, biomarkers and dynamical function tests for optimized health and performance, physical performance trainability limits on SOF standards used for recruitment and initial selection and metabolic markers to develop assays and optimize warfighter fitness.</p>	1.739	1.396	0.000	

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B. Accomplishments/Planned Program (\$ in Millions)			FY 2008	FY 2009	FY 2010
<p><i>FY 2009 Plans:</i> Complete ongoing studies for comparison of flight proficiency and risk taking behavior in aviators given dextroamphetamine or modafinil during extended operations, the effects of exogenous erythropoietin on acute mountain sickness symptoms in humans and anti-clotting agents. Continues ongoing studies for biomarker and dynamical function tests for optimized health and performance, physical performance trainability limits on SOF standards used for recruitment and initial selection and metabolic markers to develop sssays and optimize warfighter fitness. Initiate new studies for ergogenics and ergonomics, and operational performance in adverse environment studies.</p>					
C. Other Program Funding Summary (\$ in Millions)					
N/A					
D. Acquisition Strategy					
N/A					
E. Performance Metrics					
N/A					

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