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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE FEBRUARY 2004				
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSE-WIDE / 2			R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160401BB Special Operations Technology Development						

COST (Dollars in Millions)	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Cost to Complete	Total Cost
PE1160401BB	17.914	19.274	13.109	13.710	14.440	15.272	17.494	Cont.	Cont.
S100, SO TECHNOLOGY BASE DEV	17.914	19.274	13.109	13.710	14.440	15.272	17.494	Cont.	Cont.

Note: In FY 2003 this program element was budgeted for in Budget Activity 7. Beginning in FY 2004, this program element has been moved into Budget Activity 2.

A. Mission Description and Budget Item Justification

This program element enables USSOCOM to conduct studies and develops laboratory prototypes for applied research and advanced technology development, as well as leverage other organizations' technology projects that may not otherwise be affordable within MFP-11. Applying small incremental amounts of investments to DOD, other government agencies, and commercial organizations allows the Commander, USSOCOM to influence the direction of technology development or the schedule against which it is being pursued, and to acquire emerging technology for Special Operations Forces. This project provides an investment strategy for USSOCOM to link technology opportunities with USSOCOM capability deficiencies, capability objectives, technology thrust areas, and technology development objectives.

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RDT&E, DEFENSE-WIDE / 2	PE 1160401BB Special Operations Technology Development			
B. Change Summary Explanation:				
		FY2003	FY2004	FY2005
Previous President's Budget		18.006	9.715	13.142
Current President's Budget		17.914	19.274	13.109
Total Adjustment's		-.092	9.559	-.033
Congressional Program Reductions			-.211	
Congressional Rescissions		-.028		
Congressional Increases			10.225	
Reprogrammings		-.064		-.033
SBIR Transfer			-.455	
FY03				
Decrease of \$.064 million reflects USSOCOM realignment of resources to support higher command priorities.				
FY04				
Reflects \$10.225 million for Congressionally added programs as follows:				
- SPIKE Urban Warfare System (\$3.000)				
- Sensors for Autonomous Navigation (\$2.550)				
- Automated Assembly (\$2.550)				
- Image Fusion Common Aperture System Development (\$2.125)				
FY05				
Decrease of \$.033 million is based on current inflation factors.				
Schedule: None.				
Technical: None.				

Exhibit R-2a, RDT&E Project Justification		Date: FEBRUARY 2004
Appropriation/Budget Activity RDT&E BA # 2	Special Operations Technology Development/Project S100	

Cost (\$ in millions)	FY03	FY04	FY05	FY06	FY07	FY08	FY09
SOF Technology Base Development	17.914	19.274	13.109	13.710	14.440	15.272	17.494
RDT&E Articles Quantity							

Note: In FY 2003 this program element was budgeted for in Budget Activity 7. Beginning in FY 2004, this program element has been moved into Budget Activity 2.

A. Mission Description and Budget Item Justification: This project conducts studies and develops laboratory prototypes for applied research and advanced technology development, as well as leverages other organizations' technology projects that may not otherwise be affordable within MFP-11. Applying small incremental amounts of investments to DOD, other government agencies, and commercial organizations allows the Commander USSOCOM to influence the direction of technology development or the schedule against which it is being pursued, and to acquire emerging technology for Special Operations Forces (SOF). This project provides an investment strategy for USSOCOM to link technology opportunities with USSOCOM capability deficiencies, capability objectives, technology thrust areas, and technology objectives. Efforts include:

- SOF Command, Control, Communications, Computers, and Intelligence (C4I) Technologies. Exploit technologies that provide SOF with improved situational awareness and communications in all environments. Develop technologies to provide significant improvements to SOF's capability to accurately detect and track threats or targets. Exploit and demonstrate technologies that provide enhanced sensors and command and control. Develop technologies to provide new and improved capabilities in information operations and psychological operations.
- SOF Mobility Technologies. Exploit technologies to improve the performance and survivability, and reduce the detectability of SOF mobility assets. Exploit and develop technologies to provide SOF the capability to conduct ground, air, and sea mobility operations in denied areas. Exploit and develop technologies to enhance logistics support, reduce cost and improve the performance of SOF mobility platforms.

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- **SOF Weapons Technologies.** Exploit technologies to provide SOF with standoff capabilities for targeting and locating personnel and equipment. Exploit technologies to discriminate targets and provide real-time active decision-making capabilities. Exploit technologies that enhance logistics, reduce cost and enhance performance of SOF weapons and munitions. Exploit technologies to provide multipurpose, adaptable weapons applicable to SOF platform and missions.
- **SOF Sustainment Technologies.** Exploit technologies to increase SOF's survivability and performance. Exploit technologies to improve the human endurance and sensory performance without interfering with normal sensory functions. Exploit and develop technologies to counter the threat of electro-optical devices, devices that detect human presence, and enhance individual operator capabilities.
- **Concept Exploration Studies.** Explore and validate concepts for projects being continued or initiated in support of the USSOCOM desired operational capabilities.
- **Technology Development Exploitation.** Exploit technologies to meet critical SOF capability objectives. Requirements in these areas may be advertised to industry and government research and development agencies via broad area announcements and calls for white papers.

Additionally, these efforts were added by Congress:

- **Shoulder Fired Smart Round (SPIKE) Urban Warfare System.** Congressional add for a man-portable fire-and-forget rocket for anti-material use. Possible maritime platform applications.
- **Sensors for Autonomous Navigation.** Congressional add that will demonstrate a sensor suite for autonomous vehicle navigation.
- **Automated Assembly (of Electro-Optic Sensors and Devices).** Congressional add to apply reconfigurable robotic assembly techniques to improve design of components and assembly of electro-optic devices.
- **Image Fusion Common Aperture Systems Development.** Congressional add for development of a common aperture for the dual band systems (intensified and thermal).

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- Knowledge Superiority. Congressional add for knowledge superiority for transitional warfighter.
- Large Format Uncooled Infrared Sensors. Congressional add for development of larger format arrays to enhance surveillance systems.
- Imaging Auto Sensors For Autonomous Vehicles. Congressional add to incorporate unique microelectronics and opto-electronic processing in low cost micro-sensors.
- Shortwave Infrared Imagers. Congressional add to develop large area focal plane arrays and cameras for unattended sensors and navigation in difficult terrain.
- Night Vision Fusion & Rapid Transmission. Congressional add to integrate near infrared and long wave infrared sensors coupled to a covert long range communications device.

B. Accomplishments/Planned Program

	FY03	FY04	FY05
SOF Command, Control, Communications, Computers, and Intelligence (C4I) Technologies.	1.123	2.550	3.180
RDT&E Articles Quantity			

FY03 Continued development of FY02 efforts. Continued Color Night Vision Fusion, Reconnaissance Technologies, Undersea Master Communications Node, and Enhanced Situational Awareness. Completed PSYOP Extended-Range Broadcast and Man-Portable Counter Mortar System.

FY04 Continue development of FY03 efforts. Initiate Antenna Enhancements and Small Hand-held Night Vision Devices.

FY05 Continue development of FY04 efforts. Continue to exploit, develop and demonstrate technologies that provide SOF with improved situational awareness and communications in all environments, the capability to accurately detect and track threats or targets, provide enhanced sensors and command and control, and continue investigations of technology thrust areas. Planned efforts include illumination technologies for tagging and tracking.

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		FY03	FY04	FY05
SOF Mobility Technologies		1.502	2.161	3.080
RDT&E Articles Quantity				
<p>FY03 Continued development of FY02 efforts. Continue Night Vision Windshield, Small Versatile Maritime Craft, and Tactile Sensors. Completed Restricted Line-of-Site Personnel Locator and Conformal Load-Bearing Antenna.</p> <p>FY04 Continue development of FY03 efforts. Continue Night Vision Windshield, Small Versatile Maritime Craft, and Tactile Sensors. Initiate implementation of Hyperstereopsis for Improved Target Identification on AC-130 Gunships and Maritime Shock Mitigation.</p> <p>FY05 Continue development of FY04 efforts. Continue to exploit technologies to improve the performance and survivability, and reduce the detection of SOF mobility assets. Continue to exploit and develop technologies to provide SOF the capability to conduct ground, air, and sea mobility operations in denied areas and continue investigations of technology thrust areas. Continue to exploit and develop technologies to enhance logistics support, reduce cost and improve the performance of SOF mobility platforms.</p>				
		FY03	FY04	FY05
SOF Weapons Technologies		.881	.874	1.817
RDT&E Articles Quantity				
<p>FY03 Continued development of FY02 efforts. Continued the development of the SOF Demolitions Kit Enhancements and Universal Initiator. Completed Enhanced Small Arms Technology.</p> <p>FY04 Continue development of FY03 efforts. Continue Universal Initiator and SOF Demolitions Kit Enhancements.</p> <p>FY05 Continue development of FY04 efforts. Continue to exploit technologies to provide SOF with standoff capabilities for targeting and locating personnel and equipment. Exploit technologies to discriminate targets and provide real-time active decision-making capabilities. Exploit technologies that enhance logistics, reduce cost and enhance performance of SOF weapons and munitions. Exploit technologies to provide multipurpose, adaptable weapons applicable to SOF platforms and missions. Continue investigations of technology thrust areas.</p>				
		FY03	FY04	FY05
SOF Sustainment Technologies		.341	1.516	1.600
RDT&E Articles Quantity				
<p>FY03 Continued development of FY02 efforts. Continued Special Tactics Rappel/Fast Rope and GEO Survey Kit. Completed Active Noise Cancellation and Accurate Tactical Navigation System.</p>				

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FY04 Continue development of FY03 efforts. Initiate the Special Reconnaissance Simulator.
 FY05 Continue development of FY04 efforts. Continue to exploit technologies to increase SOF's survivability and performance. Continue to exploit technologies to improve the human endurance and sensory performance. Continue investigations of technology thrust areas.

	FY03	FY04	FY05
Concept Exploration Studies	.740	.667	.783
RDT&E Articles Quantity			

FY03 Continued to conduct concept studies to explore/validate projects which support USSOCOM desired operational capabilities. Completed Shock Mitigation Maritime Studies. Initiated Low Cost Autonomous Attack System AC-130 concept to address SOF aircraft using a small UAV for armed reconnaissance, Mission Configurable Modified SOF Combatant Craft Study and ASDS Optics Study.
 FY04 Continue to conduct concept studies to explore/validate projects which support USSOCOM desired operational capabilities.
 FY05 Continue to conduct concept studies to explore/validate projects which support USSOCOM desired operational capabilities.

	FY03	FY04	FY05
Technology Development Exploitation	.560	.418	.600
RDT&E Articles Quantity			

FY03 Continued to exploit technologies to meet critical SOF capability objectives. Initiated Virtual Periscope Study for algorithm development of above water data collection from below the surface, Technology Roadmaps for the technology thrust areas, and a multi-frequency underwater secure homing system for combat swimmers.
 FY04 Continue to exploit technologies to meet critical SOF capability objectives. Continue Technology Roadmaps for technology thrust areas. Initiate a study to evaluate a new and revolutionary flameproof textile material.
 FY05 Continue to exploit technologies to meet critical SOF capability objectives. Continue Technology Roadmaps for technology thrust areas.

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		FY03	FY04	FY05
Classified		1.186	1.206	2.049
RDT&E Articles Quantity				
FY03 Details provided under separate cover. FY04 Details provided under separate cover. FY05 Details provided under separate cover.				
		FY03	FY04	FY05
SPIKE Urban Warfare System		3.321	2.899	
RDT&E Articles Quantity				
FY03. This initiative was a congressional plus-up. Continued to develop technologies for SPIKE, and refine the guidance system for more accurate prosecution of hardened targets. Work continued to refine target tracking sub-system and warhead development. FY04. This initiative is a congressional plus-up. Continue development of FY03 efforts and work toward conducting live fire test.				
		FY03	FY04	FY05
Sensors for Autonomous Navigation			2.465	
RDT&E Articles Quantity				
FY04 This initiative is a congressional plus-up. This program will demonstrate a sensor suite for autonomous vehicle navigation across difficult terrain, both day and night, and in a wide range of environmental conditions.				
		FY03	FY04	FY05
Automated Assembly of Electro-Optic Sensors and Devices			2.465	
RDT&E Articles Quantity				
FY04 This initiative is a congressional plus-up. Improve design of components and assembly of electro-optic devices for robotic assemblies to reduce cost and enhance performance.				

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		FY03	FY04	FY05
Image Fusion Common Aperture Systems Development			2.053	
RDT&E Articles Quantity				
FY04 This initiative is a congressional plus-up. This development effort will be the first common aperture which allows a natural bore sight for the dual band systems (intensified and thermal).				
Knowledge Superiority		FY03	FY04	FY05
RDT&E Articles Quantity		1.612		
FY03 This initiative was a congressional plus-up. Improved methods and tools used to increase operational efficiency and performance while providing access to tactical data.				
Large Format Uncooled Infrared Sensors		FY03	FY04	FY05
RDT&E Articles Quantity		.949		
FY03 This initiative was a congressional plus-up. Developed larger format arrays to enhance surveillance systems. Issues to be addressed include uniformity of very thin layers over a large area, deposition and processing of thin micro-support structures, and understanding fundamental issues associated with semi-crystalline and amorphous infrared materials.				
Imaging Auto Sensors For Autonomous Vehicles		FY03	FY04	FY05
RDT&E Articles Quantity		1.614		
FY03 This initiative was a congressional plus-up. Developed and designed miniature sensor packages to incorporate parallel processing which significantly increases processing power that supports autonomous vehicles. This development explored low cost micro-sensors with a focused effort to incorporate unique microelectronics and opto-electronic processing.				

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Shortwave Infrared Imagers		FY03	FY04	FY05
RDT&E Articles Quantity		1.614		
FY03 This initiative was a congressional plus-up. Developed large area Short Wave Infrared focal plane arrays and cameras for unattended sensors and navigation in difficult terrain. Expanded the camera's capability by extension of the spectral response to full 1.0 to 2.0 micron spectral region and expansion of the array size to 480 x 640 and 960 x 1280 elements, providing a low cost, large area array for a wide range of systems.				
Night Vision Fusion & Rapid Transmission		FY03	FY04	FY05
RDT&E Articles Quantity		2.469		
FY03 This initiative was a congressional plus-up. Developed novel lens assemblies which are smaller and lighter and prototype night vision systems and assemblies for a variety of warfighter applications including reconnaissance, battlefield imaging, situational awareness, and night sights.				
C. Other Program Funding Summary: None.				
D. Acquisition Strategy: N/A.				