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RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)					DATE FEBRUARY 2003					
APPROPRIATION / BUDGET ACTIVITY RDT&E, DEFENSE-WIDE / 3			R-1 ITEM NOMENCLATURE / PROJECT NO. PE 1160402BB Special Operations (SO) Advanced Technology Development							

COST (Dollars in Millions)	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	Cost to Complete	Total Cost
PE1160402BB	17.804	79.550	67.017	48.925	71.386	54.962	20.346	21.534	Cont.	Cont.
S200, SO SPECIAL TECHNOLOGY	17.804	79.550	67.017	48.925	71.386	54.962	20.346	21.534	Cont.	Cont.

Note: In FY 2002 and 2003 this program element was budgeted for in Budget Activity 7. Beginning in FY 2004, this program element has been moved into Budget Activity 3.

A. Mission Description and Budget Item Justification:

This program element conducts rapid prototyping and Advanced Technology Demonstrations. It provides a means for demonstrating and evaluating emerging/advanced technologies in as realistic an operational environment as possible by Special Operations Forces users. Evaluation results are included in a transition package which assists in the initiation of or insertion into an acquisition program. The program element also addresses projects that are a result of unique joint, special mission, or area-specific needs for which a few-of-a-kind prototypes must be developed on a rapid response basis, or are of sufficient time sensitivity to accelerate the prototyping effort of a normal acquisition program in any phase.

B. Program Change Summary:

	<u>FY02</u>	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>
Previous President's Budget	10.982	62.276	62.593	42.023
President's Budget	17.804	79.550	67.017	48.925
Total Adjustments	6.822	17.274	4.424	6.902
Congressional Program Reductions		-7.500		
Congressional Rescissions		-2.034		
Congressional Increases		28.900		
Reprogrammings	6.373			
SBIR	-0.449	-2.092		

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<p>Funding:</p> <p>FY02</p> <ul style="list-style-type: none"> - Received \$8.581 million of FY02 Defense Emergency Response Funds for Air Robotics Technologies (Pointer Unmanned Aerial Vehicle). - Reflects a \$7.000 million adjustment for congressionally added programs that were more appropriately executed in different Program Element (PE) within the following projects: <ul style="list-style-type: none"> - Surface Planing Wet Submersible from PE 1160404BB (\$3.700). - Rotary Wing UAV from PE 1160404BB (\$6.700). - Aircraft Defensive System to PE 1160404BB (-\$2.000). - Electronic Digital Compass System to PE 1160404BB (-\$1.400). <p>FY03</p> <ul style="list-style-type: none"> - Reflects \$28.900 million for Congressionally added programs as follows: <ul style="list-style-type: none"> - Robot Reconnaissance & Surveillance (\$1.000) - Rotary Wing UAV (\$22.100) - Foreign Language Translator (\$1.000) - Adaptive Deployable Sensor Suite (\$4.800) <p>FY04</p> <ul style="list-style-type: none"> - Program increases as follows: <ul style="list-style-type: none"> - C4IAS ATDS (\$.586) - Mobility ATDS (\$.572) - Weapons ATDS (\$.439) - Sustainment ATDS (\$.639) 	

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<p>- TEI (\$.100) - PSYOP (\$2.950) Program reduction due to revised economic assumptions (\$-912)</p> <p>Schedule: None.</p> <p>Technical: None.</p>			

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Special Operations Special Technology Project S200

Cost (\$ in millions)	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Special Operations Special Technology	17.804	79.550	67.017	48.925	71.386	54.962	20.346	21.534
RDT&E Articles Quantity								

Note: In FY 2002 and 2003 this program element was budgeted for in Budget Activity 7. Beginning in FY 2004, this program element has been moved into Budget Activity 3.

A. Mission Description and Budget Item Justification: This project conducts rapid prototyping and Advanced Technology Demonstrations (ATDs). It provides a means for demonstrating and evaluating the utility of emerging/advanced technologies in as realistic an operational environment as possible by Special Operations Forces (SOF) users. This project integrates efforts with each other and conducts technology demonstrations in conjunction with joint experiments and other assessment events. Evaluation results are included in a transition package, which assists in the initiation of or insertion into an acquisition program. The project also addresses unique joint, special mission, or area-specific needs for which a few-of-a-kind prototypes must be developed on a rapid response basis, or are of sufficient time sensitivity to accelerate the prototyping effort of a normal acquisition program in any phase. Efforts include:

- SOF Command, Control, Communications, Computers, and Intelligence (C4I) ATDs. Exploit emerging technologies to conduct ATDs that provide SOF with a robust C4I capability to ensure uninterrupted information exchange, influence situations to support mission accomplishment, and reduce an adversary's ability to use information. Exploit emerging technologies to conduct ATDs that provide SOF with increased sensory performance. Exploit emerging technologies to locate and track targets or items of interest. Exploit emerging technologies to produce new and improved capabilities in information operations and psychological operations.
- SOF Mobility ATDs. Exploit emerging technologies to conduct ATDs that provide SOF with survivable mobility operations in high threat areas and with enhanced situational awareness. Exploit emerging technologies to conduct ATDs that provide SOF mobility assets with a reduction in logistic support requirements. Exploit emerging technologies to rapidly deploy and extract SOF personnel and craft. Exploit technologies to allow reconnaissance and conduct direct action in high threat areas using unmanned systems. Exploit technologies to reduce cost or enhance the performance of existing SOF platforms.
- SOF Weapons ATDs. Exploit emerging technologies to conduct ATDs that provide SOF with multi-role/multi-purpose weapons and demolitions with a broader range of potential effects and increased accuracy. Demonstrate capabilities of smart munitions and fire-and-forget capability. Exploit technologies to increase standoff from threat weapons systems. Decrease cost and logistic support requirements

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for SOF weapons systems.

- SOF Sustainment Advanced Technology Demonstration (ATD). Exploit emerging technologies to conduct ATDs that provide SOF with increased survivability and performance. Exploit emerging technologies and to counter the threat of electro-optical devices, and devices that detect human presence, and to enhance individual operator capabilities.
- Technology Exploitation Initiative. Exploit emerging technologies to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas.
- Advanced Tactical Laser (ATL) Technology Demonstration (ACTD). The ATL ACTD was started in FY 02 through funding provided by DUSD (AS&C) and the Joint Non-Lethal Directorate. The intent of the ATL ACTD is to evaluate the military utility of a tactical directed energy weapon on the battlefield to provide direct support to the war fighter. A directed energy weapon has an inherent performance capability (i.e. extremely precise covert strike, selectable effects and lethality, multi-axis engagement) that has the potential to enhance the effectiveness of SOF operators. The ATL ACTD will develop and employ a modular, high-energy laser weapon system on a C-130 platform, capable of conducting ultra-precision strike engagements to enhance mission accomplishment of the war fighter. The steps toward demonstrating the utility of a high-energy laser weapon to conduct ultra-precision strike missions for the war fighter are:
 - a. Demonstrate weaponization of the sealed-exhaust Chemical Oxygen Iodine Laser in a modular system, capable of deployment on a C-130.
 - b. Demonstrate the ability to acquire and engage tactical targets in an air-to-ground system test.
 - c. Utilize joint/service exercises to the fullest extent possible, focusing on matching the objectives of the ACTD with those of the desired exercises and demonstrations.
- At the completion of the ACTD, leave behind one fully-operational laser system consisting of the laser and beam director, surveillance and acquisition sensors to support employment of the laser system, software, an operator workstation and portable ground support equipment. The system will include documentation required to operate and maintain the ATL system Design, build and demonstrate military utility of directed energy weapon on a C-130 aircraft.
- Psychological Operations Technology Demonstration (ACTD). Design, fabricate and demonstrate military utility of space based and advanced global reach broadcasts.

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Additionally, the project executes the following efforts added by Congress:

- Surface Planing Wet Submersible. Demonstrate future mobility for Naval Special Warfare with a craft incorporating both surface planning and subsurface wet submersible characteristics.
- Rotary Wing Unmanned Aerial Vehicle. Congressional add to provide intelligence gathering and dissemination capabilities for urban and complex terrain environments.
- Robot Reconnaissance & Surveillance. Evaluate emerging ground robotic platforms and payloads for special operations utility.
- Foreign Language Translator. Develop, demonstrate, and evaluate advanced hand-held voice-response translation device with on-board high-speed processing and speech algorithms.
- Adaptive Deployable Sensor Suite. Fabricate and evaluate network-based sensors and sensor architectures.

B. Accomplishments/Planned Program

	FY02	FY03	FY04	FY05
SOF Command, Control, Communications, Computers, and Intelligence (C4I) ATDs	2.237	2.477	1.789	7.228
RDT&E Article Quantity				

FY02 Continued the development of Antenna Enhancements high bandwidth receiver/transmitter conformal antennas for SOF platforms; Low Probability of Intercept/Detection (LPI/D) Imagery Forwarding to demonstrate a self-forming, self-queuing, networked communications link for SOF applications; Night Vision Electro-Optic to enhance night vision capability in lightweight systems; high bandwidth communications and sensor improvements for Robotics; and Burst Communications and LPD Antenna/Periscope for maritime platforms permitting multi-band LPI/D communications. Completed LPI/D Imagery Link demonstrating a short range, high data rate communications link; and Tactical Personal Computer to demonstrate advanced wearable computer technology for SOF special reconnaissance and combat control team applications. Initiated Special Tactics Man-packable Integrated Global Broadcasting System/Joint Broadcasting System (GBS/JBS) to provide a lightweight, man-packable, integrated GBS/JBS receiver system for quick reaction communications use by special tactics personnel.

FY03 Continue development and evaluation of FY02 efforts. Continue development of Antenna Enhancements; Low Probability of

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Intercept/Detection (LPI/D) Imagery Forwarding; Night Vision Electro-Optic Enhancements; Communications for Robotics; Burst Communications and LPD Antenna; and Global Broadcasting System/Joint Broadcasting System.

FY04 Continue the development and evaluation of FY03 efforts. Continue to exploit emerging technologies to conduct Advanced Technology Demonstrations (ATD) that provide SOF with a robust C4I capability to ensure uninterrupted information exchange, influence situations to support mission accomplishment, and reduce an adversary's ability to use information. Continue to exploit emerging technologies to conduct ATDs that provide SOF with increased sensory performance. Continue to exploit emerging technologies to locate and track targets or items of interest. Planned efforts include the Enhanced Tactical Antenna Suite.

	FY02	FY03	FY04	FY05
SOF Mobility ATDs	1.824	1.064	2.405	3.121
RDT&E Article Quantity				

FY02 Continued the development of SOF Robotics to leverage air, ground, and maritime robotics technology for SOF evaluations to determine operational utility; Sea, Air, Land Delivery Vehicle (SDV) Airdrop to assess and develop the capability to airdrop an SDV; and Vehicle Camouflage System for an easy on/off camouflage system for SOF vehicles providing mission ready advanced camouflage.

FY03 Continue development and evaluation of FY02 efforts. Continue SDV Airdrop and SOF Robotics. Complete Vehicle Camouflage system.

FY04 Continue development and evaluation of FY03 efforts. Exploit emerging technologies to conduct ATDs that provide SOF mobility assets with a reduction in logistic support requirements. Exploit emerging technologies to rapidly deploy and extract SOF personnel and craft. Exploit technologies to allow reconnaissance and conduct direct action in high threat areas using unmanned systems. Exploit technologies to reduce cost or enhance the performance of existing SOF platforms.

	FY02	FY03	FY04	FY05
SOF Weapons ATDs	.842	.795	2.403	3.325
RDT&E Article Quantity				

FY02 Continued the development of the Anti-Materiel Payload Rifle. Completed Advanced Sniper Weapon Fire Control System and Active Denial Technology. Initiated Remote Standoff Capable/Remote Operated Small Arms Mount to increase effectiveness and operator survivability.

FY03 Continue development and evaluation of FY02 efforts. Continue development of Small Arms Mount and Anti-Materiel Payload Rifle.

FY04 Continue development and evaluation of FY03 efforts. Continue to exploit emerging technologies to conduct ATDs that provide SOF with multi-role/multi-purpose weapons and demolitions with a broader range of potential effects and increased accuracy. Exploit technologies

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to increase standoff from threat weapons systems. Decrease cost and logistic support requirements for SOF weapons systems. Planned efforts include new NSW Combatant Craft Weapons.					
		FY02	FY03	FY04	FY05
SOF Sustainment ATDs		1.647	1.084	2.090	1.468
RDT&E Article Quantity					
<p>FY02 Completed development and evaluation of FY01 efforts. Continued the development of Intrusion Sensor System to detect and characterize local threats (miniature/multi-sensor system); Battery Recharging System, Equipment Waterproofing Technologies for underwater operations; and Underwater Adhesive Technologies to demonstrate advanced adhesive technologies for emplacing underwater demolitions; and initiated Military Free Fall Advanced Navigation System for high altitude, high opening insertion.</p> <p>FY03 Continue development of FY02 efforts. Continue Intrusion Sensor System, Military Free Fall Advanced Navigation System, and countermeasures technologies. Complete and transition Equipment Waterproofing, Underwater Adhesives Technologies, and Battery Recharging System. Initiate development of alternative power sources.</p> <p>FY04 Continue development and evaluation of FY03 efforts. Continue to exploit emerging technologies to conduct Advanced Technology Demonstrations that provide SOF with increased survivability, performance and countermeasures technologies. Planned efforts include evaluation of alternative power sources, a Phrase Translation System for a handheld system for use by SOF operators in a tactical environment, Accurate Tactical Navigation, Geological Survey Kit, and Night Vision Compatible Head Mounted Display.</p>					
		FY02	FY03	FY04	FY05
Technology Exploitation Initiative (TEI)		.330	.580	.600	.750
RDT&E Article Quantity					
<p>FY02 Exploited emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas. Initiated Shot Counter Project for Small Arms Life Extension and evaluated Polymer Cased Ammunition Technology.</p> <p>FY03 Exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas. Initiate SOF Visualization to develop and demonstrate C3 software tools.</p> <p>FY04 Exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas.</p>					

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		FY02	FY03	FY04	FY05
Surface Planing Wet Submersible		3.602			
RDT&E Article Quantity					
FY02 This initiative was a Congressional Plus-Up. Designed, fabricated and evaluated a six-man surface planing wet submersible to determine its benefits to future Naval Special Warfare mobility. The Special Warfare Littoral Warfare Craft (LWC)-6/Surface Planing Wet Submersible Boat is a hybrid Sea, Air, and Land Delivery Vehicle and LWC. The craft can transit at planing speeds to the operational area, transition to a free-flooding submersible capable of conducting wet submersible missions, and return to surface operations to depart the area.					
		FY02	FY03	FY04	FY05
Rotary Wing Unmanned Aerial Vehicle (UAV)		6.522	21.022		
RDT&E Article Quantity					
FY02 This initiative was a Congressional Plus-Up. Developed a long endurance UAV that will provide intelligence gathering and dissemination capabilities for urban and complex terrain environments. Continued the reduction in size, weight and power requirements of the current prototype and enhanced the detection algorithms of the system. FY03 This initiative was a Congressional Plus-Up. Fabricate four additional air vehicles (two Maverick and two Hummingbird) payloads and Miniature Ground Control Stations. Conduct maturation flight tests and participate in Joint Exercises.					
		FY02	FY03	FY04	FY05
Robot Reconnaissance & Surveillance			.952		
RDT&E Article Quantity					
FY03 This initiative was a Congressional Plus-Up. Evaluate emerging ground robotic platforms and payloads for special operations utility.					
		FY02	FY03	FY04	FY05
Foreign Language Translator			.952		
RDT&E Article Quantity					
FY03 This initiative was a Congressional Plus-Up. Develop, demonstrate, and evaluate advanced hand-held voice-response translation device with on-board high-speed processing and speech algorithms.					

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	FY02	FY03	FY04	FY05
Adaptive Deployable Sensor Suite		4.550		
RDT&E Article Quantity				
FY03 This initiative was a Congressional Plus-Up. Fabricate and evaluate network-based sensors and sensor architectures.				
	FY02	FY03	FY04	FY05
Advanced Tactical Laser (ATL) Advanced Concepts Technology Demonstration (ACTD)	.300	45.624	54.270	28.721
RDT&E Article Quantity				
<p>FY 02 Developed the Systems Engineering Management Plan and the Integrated Technical and Management Plan. These documents set the programmatic baseline for the Advanced Tactical Laser (ATL) Advanced Concepts Technology Demonstration (ACTD). Initiated analysis and testing which will lead to an FY03 System Baseline Review (SBR). The SBR preparation consists of design experiments, modeling and simulation, and design analysis/trade studies.</p> <p>FY03 Continue the development of the ATL ACTD system. Effort at the start of the fiscal year focused on completion of the SBR. The SBR will establish the technical baseline for the ATL system, allowing us to allocate performance requirements and system integration constraints to the various ATL ACTD system components. Begin design of the system hardware for the Laser device (i.e., fluid supply system, resonator cavity and optics, energy flow path elements), surveillance and beam control (i.e., acquisition system, laser beam turret, beam control mirrors and sensors and software) and the hardware/software for the operator workstation. In the fourth quarter, conduct a Preliminary Design Review (PDR) of the ATL hardware and software. The Preliminary Design Review is an intermediate review to verify that the subsystem components and requirements allocations will allow the ATL system to continue to meet program objectives. Extensive work will be accomplished to analyze and assess the ATL system lethality vs. the design reference mission targets. Materials testing and analysis will be accomplished.</p> <p>FY04 Complete the design and begin the build-up of the ATL ACTD system. Accomplish the subsystem and system Critical Design Reviews, the final reviews of the system component designs before assembly and check out. Procure long-lead components and begin acquisition and delivery of ATL ACTD system hardware and software. Begin the Military Utility Assessment using ATL simulations and component hardware testing in conjunction with military exercises.</p>				

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		FY02	FY03	FY04	FY05
Classified		0.500	0.450	0.460	1.370
RDT&E Article Quantity					
FY02 Provided under separate cover. FY03 Provided under separate cover. FY04 Provided under separate cover.					
		FY02	FY03	FY04	FY05
Defense Emergency Response Fund Plan:		8.581			
RDT&E Article Quantity					
FY02 Demonstration of air robotics technologies and subsequent fielding of prototypes (Pointer Unmanned Aerial Vehicle).					
		FY02	FY03	FY04	FY05
Psychological Operations (PSYOPS) Advanced Concepts Technology Demonstration (ACTD)				3.000	2.942
RDT&E Article Quantity					
FY04 Demonstrate single channel satellite radio receivers modified for air delivery. Develop Unmanned Aerial Vehicle payload to retransmit Psychological Operations (PSYOP) broadcasts in FM/TV bands. Conduct Limited Objective Experiments supporting PSYOP Global Reach Advanced Concepts Technology Demonstration.					
C. Other Program Funding Summary: None.					
D. Acquisition Strategy. None.					