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 1160402BB Special Operations (SO) Advanced Technology Development/S200

COST (Dollars in Millions)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	Cost to Complete	Total Cost
PE 1160402BB	148.964	133.815	29.935	29.544	27.419	27.663	30.150	35.200	Cont.	Cont.
S200, SO SPECIAL TECHNOLOGY	148.964	133.815	29.935	29.544	27.419	27.663	30.150	35.200	Cont.	Cont.

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 (SOF) 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:

	FY06	FY07	FY08	FY09
Previous President's Budget	143.111	80.402	19.735	16.251
Current President's Budget	148.964	133.815	29.935	29.544
Total Adjustments	5.853	53.413	10.200	13.293
Congressional Reductions		-6.500		
Congressional Increases	12.252	62.930		
Reprogrammings	-3.172			
Other Program Adjustments			10.200	13.293
SBIR Transfer	-3.227	-3.017		

Funding:

FY06: Net increase of $5.853 million is due to a DD 1415-1 Prior Approval Reprogramming (No. FY 06-17 PA) submitted to Congress to support a critical O&M GWOT shortfall (-$3.172 million), transfer to the Small Business Innovative Research (SBIR) account (-$3.227 million), and the internal reprogramming of Congressional adds into this Program Element for proper execution ($12.252 million).

FY07: Net increase of $53.413 million includes SBIR transfer (-$3.017 million), Section 8106 reduction (-$0.519 million), Congressional mark to the Psychological Operations Modernization program ($-5.981 million), and $62.930 million for the following Congressional adds:

- Portable Power Source ($3.250 million)
- Advanced Multi Purpose Micro Display System ($1.000 million)
- Fuel Cell Power System ($2.400 million)
- Field Experimentation ($1.000 million)
- Satellite Synthetic Aperture Radar ($3.600 million)
- Transliteration and Genealogical Search ($1.000 million)
- Language Teletraining System ($1.100 million)
- Partnership for Def Innovations WIFI ($1.080 million)
- Field Deployable Digital Holograph ($2.000 million)
- Improved Materials Fireproof Clothing ($1.500 million)
- Airborne PSYOP Modernization ($1.500 million)
- Waterfront Intrusion Detection ($1.500 million)
- Shortwave Infrared Technologies ($1.100 million)
- Autonomous Navigation Sensor Suite ($1.500 million)
- Countersniper & Surveillance Detection ($2.000 million)
- Improved Info Transfer for SOF ($7.000 million)
- Multimode Radar LPI/LPD ($2.400 million)

- A-160 UAV Program ($6.400 million)

- Aircraft EW Mounting System ($4.800 million)
- UAV Situational Awareness ($1.000 million)
- Shock Mitigating Seats ($1.300 million)
- Mobile Electrical Power-Energy Harvest ($1.000 million)
- Improved SOFT Fast Rope Kit ($1.500 million)
- High Altitude Airship ($1.000 million)
- Remote Video Weapon Sight ($1.800 million)
- Life Cycle Support for UAV ($2.200 million)
- Army DRAMA/Composer Integration ($1.500 million)
- Target Location, Identification and Engagement ($1.600 million)
- TTL System for High Value Targets ($1.000 million)
- Snapshot Synthetic Aperture Radar ($2.900 million)

FY08: Increase of $10.200 million is due to the Department adding funds to pursue advanced development and prototyping of Tagging, Tracking and Locating (TTL) capabilities that have proven to be feasible and operationally useful in technical demonstrations performed under Program Element 1160401BB ($8.900 million) and an increased effort in a classified program ($1.300 million).

FY09: Increase of $13.293 million continues the TTL advanced development and prototyping ($12.800 million) and the classified effort ($0.493 million).

Schedule: None.

Technical: None.

Exhibit R-2a, RDT&E Project Justification	Date: FEBRUARY 2007
Appropriation/Budget Activity RDT&E BA # 3	Special Operations Special Technology Project S200

Cost ($ in millions)	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Special Operations Special Technology	148.964	133.815	21.035	16.744	11.919	11.662	12.150	12.200
RDT&E Articles Quantity								

A. Mission Description and Budget Item Justification: This project conducts rapid prototyping, Advanced Technology Demonstrations (ATDs), and Advanced Concept Technology Demonstrations (ACTDs). It provides a means for demonstrating and evaluating the utility of emerging/advanced technologies in as realistic an operational environment as possible by 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 capabilities 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 for SOF weapons systems.

- SOF Sustainment/Warrior ATDs. Exploit emerging technologies to conduct ATDs that provide SOF with increased survivability and performance. Exploit emerging technologies 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) ACTD. The ATL ACTD was started in FY 02 through funding provided by Deputy Under Secretary of Defense Adanced Systems Concept and the Joint Non-Lethal Weapons 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 warfighter. A directed energy weapon has an inherent performance capability (i.e., extremely precise covert strike, selectable effects and lethality, and 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 warfighter and conduct a military utility assessment of this weapon system.

The steps toward assessing the military utility of a high-energy laser weapon are:

a. Demonstrate weaponization of the sealed-exhaust Chemical Oxygen Iodine Laser in a modular system, capable of employment 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.

- Psychological Operations (PSYOP) "Global Reach" ACTD. Seeks technologies that will transform current PSYOP capabilities through two major objectives: 1) Exploit technologies capable of disseminating PSYOP product to reach target audiences across a variety of media into denied areas to include ranges up to 800 Nautical Miles (NM), and 2) Automate and improve PSYOP planning and analytical capability through technologies that are integrated into SOF planning systems (Cultural Analysis, Targeting, Theme Development, Media & Product Selection, Distribution & Dissemination, Measures of Effectiveness).

- PSYOP Modernization. This initiative will explore emergent technologies available in the marketplace to modernize the PSYOP Broadcast System (POBS), the PSYOP Print System (POPS), and Next Generation Loudspeaker System.

• Standoff Precision Guided Munition (SOPGM) ACTD. The objective of the SOPGM ACTD is to evaluate the military utility of adding a precision guided munitions capability to the AC-130 Gunship. The SOPGM is based on a modified Army Viper Strike munition. The assessment will be based on ground and flight demonstrations and extended user evaluations of a SOPGM weapon system employed from an AC-130 against representative gunship targets. The ACTD will provide an Initial Proof-of-Concept (IPOC) of the SOPGM weapon system and an interim Military Utility Assessment (MUA).

• Tagging, Tracking, and Locating Technologies (TTL). This is a new project created to implement the USSOCOM Director, Defense Research & Engineering (DDR&E) TTL Science & Technology (S&T) Roadmap and the TTL Quick Look Capabilities Assessment. Pursue advanced development and prototyping of TTL capabilities that have been proven to be feasible and operationally useful in Special Operations Special Technology Development.

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

• Surveillance Augmentation Vehicle. Integrate ultra-wide band intrusion detection sensors that can be deployed to provide an ad-hoc network for image/data/voice communications and the ability to cordon an area to protect and monitor any intrusions or device tampering.

• Advanced Multi-Purpose Micro-Display System. Integrate highly efficient display component technology into several SOF applications.

• Mark V Patrol Boat Replacement Craft Prototype. Develop composite combatant craft design/fabrication techniques.

• Rotary Wing Unmanned Aerial Vehicle (UAV). Enhance intelligence gathering and dissemination capabilities for urban and complex terrain environments.

• Dual Band Universal Night Sight (DUNS). Demonstrate integrated image and long-wave infrared fused system within the same aperture.

• Dominant Vision. Explore advanced situational awareness and fusion technologies to enhance various platforms' ability to navigate and identify targets through adverse weather and obscured visual situations.

• Synthetic Aperture Radar Millimeter Forward Looking Infrared Radar (FLIR). Provide a ground map plan position indicator view that can be changed to a high resolution image using synthetic aperture radar techniques.

- Long Range Biometric Target Identification System. Provide a deployable system to positively identify personnel, in all light conditions, at objective ranges to 500 meters.

- Army DRAMA/COMPOSER Integration & Development. Evaluate advanced protocols to make more efficient use of network bandwidth and prioritization schemes.

- TTL. Pursue advanced development and prototyping of TTL capabilities that have been proven to be feasible and operationally useful in Special Operations Technology Development.

- Autonomous Navigation Sensor Suite. Reduce the size, weight, power and cost of sensors associated with unmanned systems through novel materiels and manufacturing techniques.

- C-130 Advanced Tactical Airborne C4ISR System (ATACS). Demonstrate the ability to rapidly equip any C-130 aircraft with sophisticated sensors, processing, communications and self-defense capabilities through standardized hardware, software, and resource interfaces.

- Airborne PSYOP Modernization. Develop paper like electronic PSYOP leaflet with embedded electronics.

- Counter-Sniper & Surveillance Detection System. Research and develop tactical, mobile, and unmanned sniper detection systems that utilize optical detection and location techniques.

- Digital Camera Rifle Scope. Enhance unmanned ground system sensor optics for improved situational awareness.

- Field Experimentation Program for SOF (FEPSO). Prototype and evaluate manned-unmanned platform and sensor networks to articulate new concepts of operation and employment for SOF.

- Integrated Cyber Command & Control. Develop network security for SOF tactical networks using modified Commercial Off-the-Shelf (COTS) products.

- Improved Materials for Fireproof Clothing. Develop new and revolutionary flameproof textile materials for SOF applications.

- Improved SOF Fast Rope Kit. Improve the safety of CV-22 fast rope operations using high performance materials and structures.

- Mobile Electric Power Utilizing Energy Harvesting. Rapidly prototype and field small, lightweight generators and other power concepts to power multiple voltages required by Special Operations electronics with little logistical support.

- Magnum Universal Night Sight (MUNS). Enhance the MUNS performance by reducing weight and power requirements.

- SOF Personnel and Equipment Survivability Activity. Design and evaluate approaches to minimize the detectability and maximize survivability and recoverability of SOF personnel and equipment.

- Special Operations Airborne Intelligence and Reconnaissance Program. Develop roll-on/off and plug-and-play system for C-130's that provide real-time command and control, micro-target detection, intelligence gathering and improvised explosive device detection.

- Special Operations Portable Power Source. Research and develop Solid Oxide Fuel Cell (SOFC) technology for SOF power needs.

- Satellite Synthetic Aperture Radar. Design, develop, assemble, and test components for a synthetic aperture radar satellite in space applications for SOF.

- Smart Sight Remote Video Weapon. Develop an advanced video-based sighting system that interfaces with standard small arms to provide remote sighting capabilities for low-visibility/obstructed view targeting environments. Integrate video images and weapons sighting systems in head mounted display.

- SOF Unmanned Vehicle Targeting. Develop concepts and architectures for rapid unmanned vehicle SOF targeting.

- Three Dimensional Imaging Technology Development. Provides significantly enhanced level of detail to determine specific target discrimination data via 3-D imaging.

- UAV Certification and Support. Characterize the capability and develop operational employment concepts for a rotary-wing UAV.

- UAV Synthetic Aperture Radar. Develop on-board processing so that only a low data rate bit map is transmitted via either low data

rate satellite link or UHF digital radio to the war fighter.

- Urban Tactical Warfare Planning Tool. Design and develop a simulator tool that aids in the development of urban warfare training, tactics, and doctrine, and is compatible with the SOF Special Reconnaissance Simulator.

- Waterway Threat Detection Sensor System. Research and develop a lightweight sonar system for the detection of swimmers, unmanned underwater vehicles, mines and ships.

- Advanced MK V Craft Prototype Development. Demonstrate rapid construction and assembly techniques for high speed vessels.

- Modular Computing Technology. Develop rugged hand-held computers with a form-factor between personal digital assistants and laptops.

- Nanotech Integration Team. Use nanotechnologies to prototype low-power micro/nano-sensors.

- Target Location, ID and Engagement. Targeting and timely intelligence collection for UAVs and other unmanned systems.

- Fuel Cell Power Systems. Develop lightweight nickel-metal hydride fuel cell.

- Transliteration and Genealogical Search. Allow continued test and evaluation of Foxhound software.

- Language Teletraining System. Develop internet-based training technologies.

- Partnership of Def Innovations WIFI. Establish a wireless battlefield network research and testing facility.

- Field Deployable Digital Holograph. Develop full color high speed technology to include RGB laser evolution.

- Shortwave Infrared Technologies. Improve electro-optic shortwave infrared sensor sensitivity and integrate multi-spectral data.

- Life Cycle Support for Unmanned Systems. Explore concepts and technologies for the automated life-cycle support of unmanned ground systems.

- Improved Info Transfer for SOF. Apply real-time knowledge management tools using information technologies and cognitive science to meet urgent Special Operations intelligence requirements.

- Multimode Radar LPI/LPD. Develop millimeter wave LPI/LPD radar.

- Aircraft Electronic Warfare (EW) Mounting System. Demonstrate advanced countermeasure technologies to provide contingency aircraft self-protection capability.

- UAV Situational Awareness System. Integrates UAV autonomous flight control system to fly in controlled airspace.

- Shock Mitigating Seat for NSW RIB. Develop a shock mitigating seat for the RIB.

- TTL for High Value Targets. Investigate the microencapsulation, dispersal, and remote detection of quantum dot technology for SOF specific high-value target applications.

- High Altitude Long Endurance Airships. Develop a fully-automated synthesis device for producing electronically and optically active nanostructures for high altitude electronics and sensors.

B. Accomplishments/Planned Program

	FY06	FY07	FY08	FY09
SOF C4I ATDs	2.315	3.313	2.796	2.867
RDT&E Article Quantity				

FY06 Continued development and evaluation FY05 efforts. Continued to exploit emerging technologies to conduct 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. Continued to exploit emerging technologies to conduct ATDs that provide SOF with increased sensory performance. Continued to exploit emerging technologies to locate and track targets or items of interest. Transitioned SEAL Delivery Vehicle Advanced Reconnaissance System ATD into acquisition program management.
Initiated Network Security Technologies project.
FY07 Continue development and evaluation of FY06 efforts. Continue to exploit emerging technologies to conduct 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. Transition Network Security Technologies demonstration project into the Classification Stateless Trusted Environment. Initiate C4 technology projects to address identified C4 capability gaps.

FY08 Continues development and evaluation of FY07 efforts. Continues to 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. Continues to exploit emerging technologies to conduct ATDs that provide SOF with increased sensory performance. Continues to exploit emerging technologies to locate and track targets or items of interest. Continues C4 technology projects to address identified C4 capability gaps.

FY09 Continues development and evaluation of FY08 efforts. Continues to 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. Continues to exploit emerging technologies to conduct ATDs that provide SOF with increased sensory performance. Continues to exploit emerging technologies to locate and track targets or items of interest. Continues C4 technology projects to address identified C4 capability gaps.

	FY06	FY07	FY08	FY09
SOF Mobility ATDs	2.326	2.528	2.259	2.219
RDT&E Article Quantity				

FY06 Continued development and evaluation of FY05 efforts. Exploited emerging technologies to conduct ATDs that provide SOF mobility assets with a reduction in logistic support requirements. Exploited emerging technologies to rapidly deploy and extract SOF personnel and equipment. Exploited technologies to allow reconnaissance and conduct direct action in high threat areas using unmanned systems. Exploited technologies to reduce cost or enhance the performance of existing SOF platforms.

FY07 Continue development and evaluation of FY06 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 equipment. 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. Complete SEALION ATD. Transition Stiletto ATD to acquisition program management. Initiate mobility technology projects to address identified mobility capability gaps.

FY08 Continues development and evaluation of FY07 efforts. Exploits emerging technologies to conduct ATDs that provide SOF mobility assets with a reduction in logistic support requirements. Exploits emerging technologies to rapidly deploy and extract SOF personnel and equipment. Exploits technologies to allow reconnaissance and conduct direct action in high threat areas using unmanned systems. Exploits

technologies to reduce cost or enhance the performance of existing SOF platforms. Continues mobility technology projects to address identified mobility capability gaps.

FY09 Continues development and evaluation of FY08 efforts. Exploits emerging technologies to conduct ATDs that provide SOF mobility assets with a reduction in logistic support requirements. Exploits emerging technologies to rapidly deploy and extract SOF personnel and equipment. Exploits technologies to allow reconnaissance and conduct direct action in high threat areas using unmanned systems. Exploits technologies to reduce cost or enhance the performance of existing SOF platforms. Continues mobility technology projects to address identified mobility capability gaps.

	FY06	FY07	FY08	FY09
SOF Weapons ATDs	1.939	1.924	1.688	1.527
RDT&E Article Quantity				

FY06 Continued development and evaluation of FY05 efforts. Continued 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. Exploited technologies to increase standoff from threat weapons systems. Decreased cost and logistic support requirements for SOF weapons systems.

FY07 Continue development and evaluation of FY06 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. Initiate Enhanced Signature Suppression for Light Weight Machine Guns. Initiate weapons/munitions technology projects to address identified weapons/munitions capability gaps.

FY08 Continues development and evaluation of FY07 efforts. Continues 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. Continues weapons/munitions technology projects to address identified weapons/munitions capability gaps. Completes Enhanced Performance Long Range Ammunition.

FY09 Continues development and evaluation of FY08 efforts. Continues 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. Continues weapons/munitions technology projects to address identified weapons/munitions capability gaps. Completes Enhanced Signature Suppression for Light Weight Machine Guns.

	FY06	FY07	FY08	FY09
SOF Sustainment/Warrior ATDs	1.578	2.285	2.071	2.034
RDT&E Article Quantity				

FY06 Continued development and evaluation of FY05 efforts. Continued to exploit emerging technologies to conduct ATD's that provide

SOF with increased survivability, performance and countermeasures technologies. Continued Advanced Technology Underwater Breathing Apparatus (AT-UBA) project to develop a tactical diving system specifically designed to meet the needs of SOF operations from the seal delivery vehicle, advanced seal delivery system and dry deck shelter mobility platforms. Continued evaluation of alternative power sources. Completed Underwater Adhesives Project. Transitioned Battery Recharging initiatives.

FY07 Continue development and evaluation of FY06 efforts. Continue to exploit emerging technologies to conduct ATDs that address identified capability gaps associated with increased survivability, performance and countermeasures technologies. Continue evaluation of alternative power sources. Complete evaluation of Night Vision Electro-Optics Enhancement Project and Wide Field of View Goggles. Complete AT-UBA ATD. Complete Military Free Fall Navigation ATD.

FY08 Continues development and evaluation of FY07 efforts. Continues to exploit emerging technologies to conduct ATDs that address identified capability gaps associated with increased survivability, performance and countermeasures technologies. Continues evaluation of alternative power sources.

FY09 Continues development and evaluation of FY08 efforts. Continues to exploit emerging technologies to conduct ATDs that address identified capability gaps associated with increased survivability, performance and countermeasures technologies. Continues evaluation of alternative power sources.

	FY06	FY07	FY08	FY09
Technology Exploitation Initiative (TEI)	.382	.482	0.600	0.600
RDT&E Article Quantity				

FY06 Continued to exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas. Continued development of Night Vision Compatible Head Mounted Display technologies to increase the capabilities of SOF watercraft crewmen by displaying situation awareness information in night vision goggles.

FY07 Continue to exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas. Complete development of Night Vision Compatible Head Mounted Display technologies to increase the capabilities of SOF watercraft crewmen by displaying situation awareness information in night vision goggles

FY08 Continues to exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas.

FY09 Continues to exploit emerging technology to meet critical SOF requirements and encourage industry and government lab participation in identifying enhancements to SOF in critical areas.

Exhibit R-2a, RDT&E Project Justification	Date: FEBRUARY 2007
Appropriation/Budget Activity RDT&E BA # 3	Special Operations Special Technology Project S200

	FY06	FY07	FY08	FY09
ATL/ACTD	45.909	43.839		
RDT&E Article Quantity				

FY06 Continued the Military Utility Assessment. Completed the low-power flight test configuration build-up, integration and ground test and integrated the low-power system on the C-130 test aircraft. Conducted low-power flight tests. Continued high-power laser assembly, integration and subsystem tests. Demonstrated high-power laser "first light." Completed integration and test facilities modifications.
FY07 Complete high-power flight test laser module build-up, integration and ground test and integrate the entire ATL ACTD system on the C-130 host aircraft. Complete integrated ATL system ground verification tests. Conduct high-power flight tests and demonstrate system performance in the Design Reference Missions. Complete the Military Utility Assessment and deliver the system residuals required for operational forces to operate and maintain the ATL system in a potential extended user evaluation.

	FY06	FY07	FY08	FY09
PSYOP "Global Reach" ACTD	5.766	5.827	5.991	5.004
RDT&E Article Quantity				

FY06 Continued program management of the incremental design, engineering and technical integration of multiple technologies culminating with two Military Utility Assessments, one for a Spiral 2 FM broadcast payload and the second for a Spiral 3 FM broadcast payload. The Wind Supported Aerial Delivery System (WSADS) was utilized as the first UAV platform in a succession of other planned UAV platforms to include the Predator class vehicle and a High Altitude UAS (Global Observer or HALE). In addition, developed and demonstrated an airborne magnet-less loudspeaker system, along with air droppable loudspeakers on the WSADS UAV. Developed and demonstrated a tethered balloon broadcast system. Developed, demonstrated, and fielded a Short Messaging System dissemination tool. Continued development and spiral release of the PSYOP Planning and Analysis System (POPAS), which ultimately will be integrated into the SOF mission planning environment.
FY07 Continue management of the incremental design, engineering and technical integration of multiple technologies as the variants become more robust. Planned events include demonstrating advanced broadcast/rebroadcast payloads on Predator type UAV platforms, demonstration of TV payload; conducting an Extended User Evaluation (EUE) on WSADS UAV FM and loudspeaker broadcast payloads; transition WSADS FM broadcast payload; demonstration of electronic leaflets and media display systems; performing an EUE for Short Message Service for formal transition; and incremental fielding and software certification of advanced software for PSYOP Target Audience Analysis and PSYOP Worksheets, under the POPAS umbrella. These efforts will culminate in further military utility assessments for UAV payloads, scatterable media, and the PSYOP Planning and Analysis System.
FY08 Continue the development and demonstration of advanced broadcast/rebroadcast payloads on Predator and other UAS's, to include AM broadcast systems. Perform EUE on Predator B, UAV for FM, TV and loudspeaker broadcast payloads. Transition Predator B FM payload and WSADS UAV loudspeaker broadcast payloads. Continues POPAS development and incremental fielding and transition software/hardware.
FY09 Demonstrate and perform an EUE for the broadcast payloads on Predator type UAV platforms. Demonstrate and perform EUE for the

broadcast payload for High Altitude UAS (Global Observer or HALE). Both these EUEs will be in preparation for transition. In addition, transitions software/hardware for POPAS.

	FY06	FY07	FY08	FY09
PSYOP Modernization	8.996			
RDT&E Article Quantity				

FY06 Continued exploration of emergent technologies to modernize and extend USSOCOM PSYOP product reach.

	FY06	FY07	FY08	FY09
Classified	1.886	6.695	5.630	2.493
RDT&E Article Quantity				

FY06 Details provided under separate cover.
FY07 Details provided under separate cover.
FY08 Details provided under separate cover.
FY09 Details provided under separate cover.

	FY06	FY07	FY08	FY09
SOPGM	17.485	5.614		
RDT&E Article Quantity				

Phase 1 of the ACTD:
FY06 Completed SOPGM Initial Proof-of-Concept (IPOC) weapon system development, ground integration and test. (The SOPGM IPOC weapon system includes the Viper Strike munition, its launch canister, a Battle Management System (BMS), munition carriage assembly, aircraft, and integration components to support employment from the AC-130U.) Verified physical, functional, and communication interfaces between the SOPGM IPOC system and the aircraft. Successfully validated SOPGM launcher assembly and demonstrated the Viper Strike munition safely separates from the aircraft. Obtained Non-nuclear Munition Safety Board approval of the system design and received flight certification for conducting the SOPGM IPOC weapon system end-to-end demonstrations. Built mass-simulate munitions and instrumented SOPGM rounds and SOPGM all up rounds to support the IPOC demonstration flights. Initiated engineering and ordered long lead parts for an extended user evaluation (EUE) of the SOPGM IPOC weapon system. The EUE will be conducted after successful completion of the end-to-end system demonstrations to provide the warfighter an opportunity to refine SOPGM employment tactics in support of the Military Utility Assessment (MUA) and subsequent decisions on combat deployment in the Global War on Terror (GWOT).

FY07 Conduct the SOPGM IPOC flight demonstrations to validate end-to-end system performance and support an Initial MUA. Flight demonstrations will include joint operations with ground and 3rd party airborne platforms providing target designation. Following successful validation of the IPOC system in various test scenarios, the system will be turned over to the Air Force Special Operations Command (AFSOC) for an EUE. AFSOC will employ the SOPGM IPOC system in conjunction with training and other flight operations to refine tactics and collect data and operational experience to support an Interim MUA. The SOPGM ACTD Prime Contractor will provide system support throughout the EUE. AFSOC will use the results of the flight demonstrations and EUE operations to complete an Interim MUA to support decisions on proceeding into Phase 2 and strategies for transitioning to a combat-capable SOPGM system.

	FY06	FY07	FY08	FY09
TTL			8.900	12.800
RDT&E Article Quantity				

FY08 Initiates projects from the USSOCOM/DDR&E TTL project database that exploit and integrate TTL proven relevant technologies (nanotechnology, biotechnology, and chemistry) to provide and demonstrate military utility for capability enhancements such as significant reduction in form factor and packaging of TTL devices and systems; detection and identification of objects of interest at long distances, including development of new TTL modalities; novel techniques for data transmissions, sharing and processing, and supporting capabilities required for TTL system integration, reliability, usability, and employment. Projects will include leveraging and cooperative efforts with DOD, other government agencies, and industry.
FY09 Continue projects to exploit TTL technologies. Initiates projects identified from the updated USSOCOM/DDR&E Roadmap and support the Joint Chief of Staff TTL Quick Look Capability Assessment.

	FY06	FY07	FY08	FY09
Long Range Biometric Target Identification System	1.446			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued FY05 efforts. Provided a deployable system to positively identify personnel, in all light conditions, at ranges beyond 500 meters.

	FY06	FY07	FY08	FY09
Snapshot Synthetic Aperture Radar	.964	2.825		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued FY05 efforts. Demonstrated a radar array processor fabricated from COTS micro-processors.
FY07 This initiative is a Congressional add. Follow on to FY06, evaluate an 80 node processor array to perform real-time processing of

complex radar data in a cost efficient, supportable manner.

	FY06	FY07	FY08	FY09
Surveillance Augmentation Vehicle	1.735			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued FY05 efforts. Integrated ultra-wide band intrusion detection sensors that can be deployed to provide an ad-hoc network for image/data/voice communications and the ability to cordon an area to protect and monitor any intrusions or device tampering.

	FY06	FY07	FY08	FY09
Remote Video Weapon Site	1.446	1.753		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued FY05 efforts. Developed an advanced video-based sighting system that interfaces with standard small arms to provide remote sighting capabilities for low-visibility/obstructed view targeting environments.
FY07 This initiative is a Congressional add. Follow on to FY06, Transition video-based weapon sighting system developed under a USSOCOM SBIR.

	FY06	FY07	FY08	FY09
Advanced Multi-Purpose Micro-Display System	4.916	.974		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Integrated highly efficient display component technology into several SOF applications.
FY07 This initiative is a Congressional add. Follow on to FY06 to integrate micro-display and miniature electronics into heads-up displays.

	FY06	FY07	FY08	FY09
Mark V Patrol Boat Replacement Craft	1.446			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued FY05 efforts. Developed composite combatant craft design/fabrication techniques.

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	FY06	FY07	FY08	FY09
Autonomous Navigation Sensor Suite	2.294	1.461		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Effort to reduce the size, weight, power and cost of sensors associated with unmanned systems through novel materiels and manufacturing techniques.
FY07 This initiative is a Congressional add. Follow on to FY06, integrate stereo multi-spectral sensors for autonomous navigation and obstacle avoidance.

	FY06	FY07	FY08	FY09
Army DRAMA/COMPOSER Integration & Development	1.639	1.461		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Evaluated advanced protocols to make more efficient use of network bandwidth and prioritization schemes.
FY07 This initiative is a Congressional add. Follow on to FY06, automate diagnostics and repair capability for Warfighter Information Network – Tactical (WIN-T) troubleshooting and performance management.

	FY06	FY07	FY08	FY09
C-130 Advanced Tactical Airborne C4ISR System (ATACS)	1.206			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Demonstrated the ability to rapidly equip any C-130 aircraft with sophisticated sensors, processors, communications and self-defense capabilities through standardized hardware, software, and resource interfaces.

	FY06	FY07	FY08	FY09
Counter-Sniper & Surveillance Detection System	2.049	1.948		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Researched and developed tactical, mobile, and unmanned sniper detection systems that utilize optical detection and location techniques.
FY07 This initiative is a Congressional add. Follow on to FY06, develop modular, retroreflective-based sniper detection device for handheld or mounted automated search/detection.

	FY06	FY07	FY08	FY09
Digital Camera Rifle Scope	.482			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Enhanced unmanned ground system sensor optics for improved situation awareness.

	FY06	FY07	FY08.	FY09
Dual Band Universal Night Sight (DUNS)	.965			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Demonstrated integrated image and long-wave infrared fused system within the same aperture.

	FY06	FY07	FY08	FY09
Field Experimentation Program For SOF (FEPSO)	.964	.974		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Prototyped and evaluated manned/unmanned platform and sensor networks to articulate new concepts of operation and employment for SOF.
FY07 This initiative is a Congressional add. Follow on to FY06, demonstrate the Zephyr High Altitude Long Endurance Airship for SOF persistent Intelligence Surveillance Reconasaince (ISR) applications.

	FY06	FY07	FY08	FY09
Advanced MK V Craft Prototype Development	1.737			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Demonstrated rapid construction and assembly techniques for high speed vessels.

	FY06	FY07	FY08	FY09
Integrated Cyber Command & Control.	.964			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Developed network security for SOF tactical networks using modified COTS products.

	FY06	FY07	FY08	FY09
Improved Materials for Fireproof Clothing	1.228	1.461		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Developed new and revolutionary flameproof textile materials for SOF applications.
FY07 This initiative is a Congressional add. Follow on to FY06, develop improved textile materials for thermal protection and fire retardency.

	FY06	FY07	FY08	FY09
Improved Special Operations Fast Rope Kit	1.639	1.462		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Improved the safety of CV-22 fast rope operations using high performance materials and structures.
FY07 This initiative is a Congressional add. Follow on to FY06, improve the safety of fast-rope operations using advanced design and materials.

	FY06	FY07	FY08	FY09
Dominant Vision	.965			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Explored advanced situational awareness and fusion technologies to enhance various platforms' ability to navigate and identify targets through adverse weather and obscured visual situations.

	FY06	FY07	FY08	
Mobile Electric Power Utilizing Energy Harvesting.	1.253	.974		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Rapidly prototyped and fielded small, lightweight generators and other power concepts to power multiple voltages required by Special Operations electronics with little logistical support.
FY07 This initiative is a Congressional add. Follow on to FY06, rapidly field miniature electrical generation devices to power the mobile devices and voltages required by SOF.

	FY06	FY07	FY08	FY09
Magnum Universal Night Sight	.964			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Enhanced the Magnum Universal Night Sight performance by reducing weight and power

requirements.

	FY06	FY07	FY08	FY09
Special Forces Personnel and Equipment Survivability Activity.	1.215			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Designed and evaluated approaches to minimize the detectability and maximize survivability and recoverability of SOF personnel and equipment.

	FY06	FY07	FY08	FY09
Special Operations Airborne Intelligence and Reconnaissance Program	1.639			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Developed roll-on/off and plug-and-play system for C-130's that provide real-time command and control, micro-target detection, intelligence gathering and improvised explosive device detection.

	FY06	FY07	FY08	FY09
SOF Portable Power Source	3.374	3.167		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Researched and developed Solid Oxide Fuel Cell technology for SOF power needs.
FY07 This initiative is a Congressional add. Follow on to FY06, Develop a 50 Watt solid-oxide fuel cell.

	FY06	FY07	FY08	FY09
Satellite Synthetic Aperture Radar	2.459	3.507		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Designed, developed, assembled, and tested components for a synthetic aperture radar satellite in space applications for SOF.
FY07 This initiative is a Congressional add. Follow on to FY06, demonstrate a radar array processor fabricated from commercial-off-the-shelf micro processors for space applications.

	FY06	FY07	FY08	FY09
SOF Unmanned Vehicle Targeting	1.639			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Developed concepts and architectures for rapid unmanned vehicle SOF targeting.

	FY06	FY07	FY08	FY09
Three Dimensional Imaging Technology Development	3.114			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Researched and developed 3-D imaging technologies for insertion into visual augmentation systems for improved situational awareness, target detection and discrimination.

	FY06	FY07	FY08	FY09
UAV Certification and Support.	1.639			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. This project proposed to leverage the ongoing USSOCOM SOF SLED ACTD as the incubator for UAV flight certification.

	FY06	FY07	FY08	FY09
UAV Synthetic Aperture Radar	2.459			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Evaluated on-board processing so that only a low data rate bit map is transmitted via either low data rate satellite link or UHF digital radio to the war fighter.

	FY06	FY07	FY08	FY09
Urban Tactical Warfare Planning Tool	.964			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Designed and developed a simulator tool that aids in the development of urban warfare training, tactics, and doctrine, and is compatible with the SOF Special Reconnaissance Simulator.

	FY06	FY07	FY08	FY09
Rotary Wing UAV	6.755	6.235		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Continued the ongoing ACTD and operationalized current systems.
FY07 This initiative is a Congressional add.

	FY06	FY07	FY08	FY09
Waterway Threat Detection Sensor System.	1.639	1.461		
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Researched and developed a lightweight sonar system for the detection of swimmers, unmanned underwater vehicles, mines and ships.
FY07 This initiative is a Congressional add. Follow on to FY06, develop a lightweight sonar system for swimmer, unmanned underwater vehicle, and ship detection.

	FY06	FY07	FY08	FY09
Modular Computing Technology	.965			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Developed rugged hand-held computers with a form-factor between personal digital assistants and laptops.

	FY06	FY07	FY08	FY09
Nanotech Integration Team	2.219			
RDT&E Article Quantity				

FY06 This initiative was a Congressional add. Used nanotechnologies to prototype low-power micro/nano-sensors.

	FY06	FY07	FY08	FY09
Airborne PSYOP Modernization		1.461		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop and test (1) paper like programmable electronic PSYOP leaflet with embedded electronics, and (2) electronic leaflet target area analysis prediction tools.

	FY06	FY07	FY08	FY09
Aircraft EW Mounting System		4.678		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Demonstrate advanced countermeasure technologies to provide contingency aircraft self-

protection capability.

	FY06	FY07	FY08	FY09
Field Deployable Digital Holograph		1.948		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop full color high speed technology to include RGB laser evolution, film construction development, automated film handling and processing hardware design and development of 1 full color high speed holographic topography system.

	FY06	FY07	FY08	FY09
Fuel Cell Power Systems		2.338		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop a lightweight nickel-metal hydride fuel cell.

	FY06	FY07	FY08	FY09
High Altitude Long Endurance Airships		.974		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop a fully automated synthesis device for producing electronically and optically active nanostructures for high altitude airship electronics and sensors.

	FY06	FY07	FY08	FY09
USSOCOM Improved Information Transfer		6.820		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Apply real time knowledge management tools using information technologies and cognitive science to meet urgent Special Operations intelligence requirements.

	FY06	FY07	FY08	FY09
Language Teletraining System		1.072		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop internet-based training technologies.

	FY06	FY07	FY08	FY09
Life Cycle Support for Unmanned Systems		2.144		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Explore concepts and technologies for the automated life-cycle support of unmanned ground systems.

	FY06	FY07	FY08	FY09
Multimode Radar LPI/LPD		2.338		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop millimeter wave LPI/LPD radar.

	FY06	FY07	FY08	FY09
Partnership for Def Innovations WIFI		1.053		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Establish a wireless battlefield network research and testing facility.

	FY06	FY07	FY08	FY09
Shock Mitigating Seat for NSW Rib		1.266		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Transition a Phase II USSOCOM SBIR to develop a shock mitigating seat for the RHIB.

	FY06	FY07	FY08	FY09
Shortwave Infrared Technologies		1.072		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Improve electro-optic shortwave infrared sensor sensitivity and integrate multi-spectral data.

	FY06	FY07	FY08	FY09
Transliteration & Genealogical Search		.974		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Continue teat and evaluation of Foxhound software.

	FY06	FY07	FY08	FY09
Target, Location, ID and Engagement		1.559		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Develop persistent targeting and timely intelligence collection for UAVs and other unmanned systems.

	FY06	FY07	FY08	FY09
TTL System for High Value Targets		.974		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Investigate the micorencapsulation, dispersal, and remote detection of quantum dot technology for SOF specific high-value target applications.

	FY06	FY07	FY08	FY09
UAV Situational Awareness System		.974		
RDT&E Article Quantity				

FY07 This initiative is a Congressional add. Integrates UAV autonomous flight control system to fly in controlled airspace.

C. Other Program Funding Summary: None.

D. Acquisition Strategy. N/A.