Exhibit R-2, RDT&E Budget Item Justification: PB 2012 United States Special Operations Command	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 1160402BB: *Special Operations Advanced Technology Development*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	71.549	30.806	35.242	-	35.242	39.684	40.390	41.104	41.849	Continuing	Continuing
S200: *SO Advanced Technology Development*	71.549	30.806	35.242	-	35.242	39.684	40.390	41.104	41.849	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element conducts rapid prototyping and Advanced Technology Demonstrations (ATDs). ATDs provide a means for demonstrating and evaluating the utility of 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 includes FY 2010 Overseas Contingency Operations funding for SOF Combat Identification efforts and 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 ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	56.727	30.806	32.710	-	32.710
Current President's Budget	71.549	30.806	35.242	-	35.242
Total Adjustments	14.822	-	2.532	-	2.532
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	15.735	-			
• SBIR/STTR Transfer	-0.913	-			
• Other Adjustments	-	-	2.532	-	2.532

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Project: S200: *SO Advanced Technology Development*		
Congressional Add: *Partnership for Defense Innovation Wi-Fi Laboratory Testing and Assessment Center*	2.788	-
Congressional Add: *Field Experimentation Program for Special Operations*	1.593	-
Congressional Add: *Advanced Distributed Aperture System (ADAS)*	1.036	-
Congressional Add: *Affordable Miniature Foliage Penetration (FOPEN) Radar for Special Operations Craft - Riverine*	2.788	-

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Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2010	FY 2011
Congressional Add: *Optical Surveillance Equipment*	1.992	-
Congressional Add: *Chemical, Biological, Radiological and Nuclear (CBRN) Detection Unmanned Aircraft*	1.593	-
Congressional Add: *Antennas and other Carbon Nano Tube (CNT) Devices for Intelligence/Special Military*	2.987	-
Congressional Add: *Tiger Moth Air-Launched Off Board Sensing Small Unmanned Aerial System*	1.593	-
Congressional Add: *Intelligence, Surveillance, and Reconnaissance Global Sensor Architecture*	1.593	-
Congressional Add: *Increased Helicopter Situational Awareness and Survivability*	9.959	-
Congressional Add: *Helicopter Cable Warning and Obstacle Avoidance*	1.195	-
Congressional Add Subtotals for Project: S200	29.117	-
Congressional Add Totals for all Projects	29.117	-

Change Summary Explanation

Funding:

FY 2010 Net increase of $14.822 million is due to a reprogramming to higher command priorities (-$.043 million), reprogramming actions for Foliage Penetration Reconnaissance, Surveillance, Targeting and Engagement Radar ($3.583 million), FY 2010 Overseas Contingency Operations Prior Approval Reprogramming Action for Urgent Theater Technology Developent (FY10-24-PA dated 20 September 2010) to support SOF Combat Identification projects ($11.000 million), Small Business Innovative Research reduction (-$.913 million), and the following congressional add: Helicopter Cable Warning and Obstacle Avoidance ($1.195 million).

FY 2011 None.

FY 2012 Increase of $2.532 million is due to REITS resources transferred from PE 1160401BB, Special Operations Technology Development, to reflect the proper budget activity.

Schedule: None.

Technical: None.

Exhibit R-2A, RDT&E Project Justification: PB 2012 United States Special Operations Command			DATE: February 2011
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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
S200: *SO Advanced Technology Development*	71.549	30.806	35.242	-	35.242	39.684	40.390	41.104	41.849	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides for rapid prototyping, Advanced Technology Demonstrations (ATDs) and Joint Capability Technology Demonstrations. It is a means for demonstrating and evaluating the utility of emerging/advanced technologies in operationally relevant environments with Special Operations Forces (SOF) users. This project integrates emerging technologies and presents them in technology demonstrations, in conjunction with joint experiments and other assessment events. Evaluation results often facilitate the initiation of new programs and the insertion of appropriate technologies to acquisition programs. The element also addresses unique, joint special mission or area-specific needs for which a few rapid prototypes must be developed on a responsive basis, or are of sufficient time sensitivity to accelerate prototyping efforts of a normal acquisition program in any phase. Sub-projects include:

• Rapid Exploitation of Innovative Technologies (REITS). This sub-project supports both top-down and bottom-up approaches for USSOCOM Components, Theater Special Operations Commands and Special Operations Task Forces to articulate innovative technology recommendations. Concepts, ideas, and needs will be submitted to HQ USSOCOM for review and/or approval as appropriate. The tenets promote speed, evolution, collaboration, and engagement between the SOF user and the technical problem solver. Individual projects or ideas can be submitted from every echelon of command. Initial evaluation clears new ideas for distribution to industry, academia, laboratories or SOF in-country mobile technology repair complexes that have the capability to augment or build solutions in-place. The USSOCOM directive, "Rapid Technology Support to Special Operations" outlines the processes to identify, assess and exploit emerging innovative technologies for SOF in the following Capability Areas: 1) Command, Control, Communications, and Computers (C4), Intelligence, Surveillance and Reconnaissance (ISR), and Sensors; 2) Mobility, Power, and Energy; 3) SOF Warrior Survivability; and 4) Weapons and Munitions. Technical activities in these areas will provide new operational capabilities and will mature technologies to better shape future SOF procurements.

• C4, ISR, and Sensors Capability Area. Exploit emerging technologies to conduct ATDs that provide SOF with robust C4 and intelligence capabilities such as, but not limited to, ensuring uninterrupted information exchange, influencing situations to support mission accomplishments, reducing an adversary's ability to use information, increasing sensory performance, improving antenna technologies, and achieving near real-time data fusion for sensor systems.

• Mobility, Power, and Energy Capability Area. Exploit emerging technologies to conduct ATDs such as, but not limited to, providing SOF with durable, survivable mobility capabilities in high threat areas; enhanced situational awareness; reconnaissance and direct action in high threat areas using unmanned systems, improved power system technologies for signature reduction, longer endurance, or smaller size; and advanced energy storage for vehicles, sensors, and operational needs.

• SOF Warrior Survivability Capability Area. Exploit emerging technologies to conduct ATDs that provide SOF with increased survivability and performance to enhance individual operator capabilities including, but not limited to, ballistic protection, personal equipment, and night vision and optics systems.

• Weapons and Munitions Capability Area. Exploit technologies such as tunable weapons, reduce signature capability, and reduce size and weight.

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• Special Operations Special Technology Development Sub-Project. This sub-project integrates emerging technologies and presents them in technology demonstrations, in conjunction with joint experiments and other assessment events.

• Joint Task Force SWORD Sub-Project. Explore use of experimental technologies to provide emergent technologies to quick response task force deployments.

• Tagging, Tracking, and Locating (TTL) Technologies Sub-Project. Exploit emerging technologies as identified in the TTL users' Capabilities Based Assessments. Exploit emerging technologies to locate and track targets or items of interest. Pursue advanced development and prototyping of TTL capabilities that have been proven to be feasible and operationally useful.

• National to Theater Transition Sub-Project. Conduct additional testing required to transition items from national forces to theater forces.

• Combat Identification (CID), Overseas Contingency Operations (OCO). Radio Frequency (RF) patch provides an RF technology, ground-to-ground based, combat ID system that will reduce friendly fire casualties and increase combat effectiveness.

• Classified Sub-Project (provided under separate cover).

• Foliage Penetration Reconnaissance, Surveillance, Targeting and Engagement Radar (YMQ18A Unmanned Aerial Vehicle). Conductes planning, payload integration, air vehicle improvements, and training in support of multiple operational demonstrations to evaluate the military utility of the YMQ18A unmanned aerial vehicle.

The following technology activities were added by Congress for FY 2010:

• Partnership for Defense Innovation Wi-Fi Test Laboratory. Rapidly evaluated and integrated commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) secure wireless network technologies relevant to the SOF Warrior.

• Field Experimentation Program for Special Operations. Prototyped and evaluated manned-unmanned platform and sensor networks to articulate new concepts of operation and employment for SOF.

• Advanced Distributed Aperture System (ADAS) Hostile Fire Indicating System (HFIS). Developed and initiated acquisition of the ADAS HFIS.

• Affordable Miniature Foliage Penetrating Radar for Special Operations Craft-Riverine. Developed radar capable of penetrating the foliage in riverine and coastal environments at ranges consistent with mission parameters.

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• Optical Surveillance Equipment. This system will allow SOF to reproduce large-format/high-resolution calibration patterns used for performance analysis of surveillance systems in black and white, color, and multi-spectral bands.

• Chemical, Biological, Radiological, and Nuclear (CBRN) Detection Unmanned Aircraft. Assess the capability and feasibility of operating a highly developed CBRN Detection Payload integrated in a Vertical Take-off/Landing (VTOL) Unmanned Aerial Vehicle (UAV).

• Antennas and other Carbon Nano Tube (CNT) Devices for Intelligence/Special Military. Research, develop and demonstrate antennas and other devices for specialized intelligence and military communications.

• Tiger Moth Air-Launched Off Board Sensing Small Unmanned Aerial System (UAS). Demonstrate an inexpensive, compact UAV that can be launched from many types of vehicles (ground, sea and air) to enhance the capabilities and situational awareness of the warfighter.

• Intelligence, Surveillance, and Reconnaissance Global Sensors Architecture. Develop architecture to achieve near real-time data fusion for deployed sensor systems.

• Increase Helicopter Situational Awareness and Survivability. Continue to develop the Advanced Distributed Aperture System (ADAS) program (sensors, 3-D audio, and ADAS processor).

• Helicopter Cable Warning and Obstacle Avoidance. This system allows aircraft to perform evasive actions, significantly increasing the aircrew's probability of survival during a hostile fire engagement.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Title: Rapid Exploitation of Innovative Technology (REITS) for SOF Sub-Project ***FY 2012 Plans:*** Starting with FY 2012, REITS will be executed only in PE 1160402BB. Continue additional demonstrations and evaluations of C4I technologies; warrior survivability improvements; and mobility, power and energy and mobile technology repair center projects. Further develop and insert into existing programs advanced processing techniques and persistent surveillance. Continue advanced development of signature reduction technologies. Insert lightweight armor and materials into existing acquisition efforts. Continue to exploit technologies that reduce the load of the operator. Insert into existing programs advanced protection and visualization, and training systems.	-	-	10.310
Title: REITS Sub-Project - C4, ISR, and Sensors Capability Area ***FY 2010 Accomplishments:*** Continued the Harbor Intruder Joint Concept Technology Demonstration (JCTD). Developed a secure wireless headset. Developed and transitioned the Operational 3D JCTD. Initiated the Sea Tracker JCTD and Joint UAS Precision Targeting JCTD. ***FY 2011 Plans:***	2.752	6.329	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Develops advance processing techniques, persistent surveillance, advanced multi-function defined radios.			
Title: REITS Sub-Project - Mobility, Power and Energy Capability Area ***FY 2010 Accomplishments:*** Integrated the Combat Autonomous Mobility System into SOF mobility platforms for intelligence, surveillance and reconnaissance; developed a prototype Small Assault Vehicle Expeditionary (SAVE) Light Combatant Craft. Developed a multi-fuel outboard engine. Investigated application of graphite foam for heat transfer applications. Developed fuel cells for all environment capable variant. ***FY 2011 Plans:*** Pursues low-observable and counter low-observable technologies. Develops advanced lightweight armor and materials. Investigates multi-domain mobility platforms.	3.000	3.000	-
Title: REITS Sub-Project - SOF Warrior Survivability Technologies Capability Area ***FY 2010 Accomplishments:*** Continued shock and vibration mitigation activity and diver/crewman thermal protection technology. Investigated state of technology of transparent armor. Pursued use of superhydrophobics. ***FY 2011 Plans:*** Pursues technologies to reduce the load of the operator and provide advanced protection and visualization.	2.500	2.750	-
Title: REITS Sub-Project - Weapons and Munitions Capability Area ***FY 2010 Accomplishments:*** Optimized small arms signature suppression. ***FY 2011 Plans:*** Pursues precision guided munitions and tunable weapons technologies.	2.394	2.250	-
Title: Special Operations Special Technology Sub-Project ***FY 2012 Plans:*** Develop and insert technology into existing programs. Project technologies include, but are not limited to, reduced signature profiles; improved weapons, lightweight armor and materials; alternative power systems; "green" sustainable energy devices; long duration, reduced size, high output power supplies; and technologies that reduce the load of the operator.	-	-	6.835
Title: Joint Task Force SWORD Sub-Project ***FY 2011 Plans:***	-	0.199	0.199

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Explores the use of experimental technology to provide emergent technology to quick response task force deployments. ***FY 2012 Plans:*** Continue to explore the use of experimental technology to provide emergent technology to quick response task force deployments.			
Title: Tagging, Tracking, and Locating Technologies (TTL) Sub-Project ***FY 2010 Accomplishments:*** Continued projects from the USSOCOM/DoD TTL project databases that exploit and integrate TTL proven relevant technologies. Exploited emerging technologies to locate and track targets or items of interest. Project will include leveraging and cooperative efforts with DoD, other government agencies and industry. ***FY 2011 Plans:*** Continues projects from the USSOCOM/DoD TTL project databases that exploit and integrate TTL proven relevant technologies. Exploits emerging technologies to locate and track targets or items of interest. Projects will include leveraging and cooperative efforts with DoD, other government agencies and industry. ***FY 2012 Plans:*** Continue projects from the USSOCOM/DoD TTL project databases that exploit and integrate TTL proven relevant technologies. Exploits emerging technologies to locate and track targets or items of interest. Projects will include leveraging and cooperative efforts with DoD, other government agencies and industry.	11.920	12.369	13.919
Title: National to Theater Transition ***FY 2010 Accomplishments:*** Conducted additional developmental testing and evaluation required on various equipment items being transitioned to the SOF Theater Forces. Items included, but were not limited to, the .45 caliber automatic Colt pistol and the ground-launched Precision Strike Griffin Missile. ***FY 2011 Plans:*** Conducts additional testing and evaluation required on various equipment items being transitioned to the SOF Theater Forces. ***FY 2012 Plans:*** Conduct additional testing and evaluation required on various equipment items being transitioned to the SOF Theater Forces.	1.889	1.935	1.966
Title: Combat Identification (CID), Overseas Contingency Operations ***FY 2010 Accomplishments:***	11.000	-	-

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B. Accomplishments/Planned Programs ($ in Millions)	FY 2010	FY 2011	FY 2012
Designed, developed, fabricated, tested, demonstrated performance and conducted a Producibility Demonstration for the Combat ID RF patch system.			
Title: Classified Sub-Project ***FY 2010 Accomplishments:*** Details provided under separate cover. ***FY 2011 Plans:*** Details provided under separate cover. ***FY 2012 Plans:*** Details provided under separate cover.	1.394	1.974	2.013
Title: Foliage Penetration Reconnaissance, Surveillance, Targeting and Engagement Radar (YMQ18A Unmanned Aerial Vehicle) ***FY 2010 Accomplishments:*** Integrated the Combat Autonomous Mobility System (CAMS) into SOF mobility platforms for Intelligence, Surveillance, and Reconnaissance. Developed a multi-fuel outboard engine. Investigated application of graphite foam for heat transfer applications. Investigated the combination of renewable and legacy power systems to meet future goals of providing sustainable power while reducing the logistical footprint required to sustain troops. Conducted planning, payload integration, air vehicle improvements, and training in support of multiple operational demonstrations to evaluate the military utility of the YMQ18A unmanned aerial vehicle.	5.583	-	-
Accomplishments/Planned Programs Subtotals	42.432	30.806	35.242

	FY 2010	FY 2011
Congressional Add: Partnership for Defense Innovation Wi-Fi Laboratory Testing and Assessment Center ***FY 2010 Accomplishments:*** Rapidly evaluated and integrated COTS and GOTS secure wireless network technologies relevant to the SOF Warrior.	2.788	-
Congressional Add: Field Experimentation Program for Special Operations ***FY 2010 Accomplishments:*** Effort focused on joint, coalition efforts exploiting emerging commercial communications, networks, and data handling solutions.	1.593	-
Congressional Add: Advanced Distributed Aperture System (ADAS)	1.036	-

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	FY 2010	FY 2011
FY 2010 Accomplishments: Added the Hostile Fire Indicating System capability to the ADAS.		
Congressional Add: Affordable Miniature Foliage Penetration (FOPEN) Radar for Special Operations Craft - Riverine ***FY 2010 Accomplishments:*** Developed a radar capable of penetrating the foliage in riverine and coastal environments at ranges consistent with mission parameters, and one that can operate in all light levels during any type of weather.	2.788	-
Congressional Add: Optical Surveillance Equipment ***FY 2010 Accomplishments:*** This system allowed SOF to reproduce large-format/high-resolution calibration patterns used for performance analysis of surveillance systems in black and white, color, and multi-spectral bands.	1.992	-
Congressional Add: Chemical, Biological, Radiological and Nuclear (CBRN) Detection Unmanned Aircraft ***FY 2010 Accomplishments:*** Assessed the capability and feasibility of operating an Advanced Developed CBRN Detection Payload integrated in a Vertical Take-off/Landing Unmanned Aerial Vehicle.	1.593	-
Congressional Add: Antennas and other Carbon Nano Tube (CNT) Devices for Intelligence/Special Military ***FY 2010 Accomplishments:*** Researched, developed, and demonstrated antennas and other devices for specialized intelligence and military communications.	2.987	-
Congressional Add: Tiger Moth Air-Launched Off Board Sensing Small Unmanned Aerial System ***FY 2010 Accomplishments:*** Developed an inexpensive, compact UAS that can be launched from many types of vehicles (ground, sea and air) to enhance the capabilities and situational awareness of the warfighter.	1.593	-
Congressional Add: Intelligence, Surveillance, and Reconnaissance Global Sensor Architecture ***FY 2010 Accomplishments:*** Developed architecture to achieve near real-time data fusion for deployed sensor systems.	1.593	-
Congressional Add: Increased Helicopter Situational Awareness and Survivability ***FY 2010 Accomplishments:*** Continued the development of the ADAS program (sensors, 3-D audio, and ADAS processor).	9.959	-
Congressional Add: Helicopter Cable Warning and Obstacle Avoidance	1.195	-

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	FY 2010	FY 2011
FY 2010 Accomplishments: Analyzed, refined, fabricated, coded, integrated, modeled, simulated, tested and evaluated the performance of the 94 GHz cable warning and obstacle avoidance system.		
Congressional Adds Subtotals	29.117	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A