Exhibit R-2, RDT&E Budget Item Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	R-1 Item Nomenclature: Combating Terrorism Technology Support - PE 0603122D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Total PE Cost	116.717	143.949	65.768	78.821	82.321	84.913	88.700
Combating Terrorism Technology Support/P484	116.717	143.949	65.768	78.821	82.321	84.913	88.700

A. Mission Description and Budget Item Justification: Combating Terrorism Technology Support (CTTS). This program develops technology and prototype equipment that address needs and requirements with direct operational application in the national effort to combat terrorism. Projects support antiterrorism, counter terrorism, intelligence, and terrorism consequence management activities to: conduct tactical operations; protect military forces, civilian personnel, installations, infrastructure elements, and the general populace from terrorist attack; detect, neutralize, and mitigate the effects of conventional and unconventional devices; conduct surveillance and tracking of terrorists; conduct threat and incident assessments; and process and disseminate information. The program integrates Defense advanced development efforts with government-wide and international efforts to combat terrorism. The Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (OASD (SO/LIC)) oversees and is responsible for execution of the CTTS Program, which addresses defense, interagency, and international combating terrorism technology requirements.

B. Program Change Summary:

	FY2005	FY2006	FY2007
Previous President's Budget	46.719	55.301	66.624
Current President's Budget	116.717	143.949	65.768
Total Adjustments	69.998	88.648	-.856
Additional appropriation, Title IX		25.000	
Congressional program reductions			
Congressional rescissions			
Congressional increases	53.266	65.575	
Reprogrammings	21.290		
SBIR/STTR Transfer	-2.102		
Other program adjustments	-2.456	-1.927	-.856

C. Other Program Funding Summary: NA

D. Acquisition Strategy: NA

E. Performance Metrics:

Combating Terrorism Technology Support - PE 0603122D8Z	
Long Term Strategies: Obtain adequate funding to support critical shortfalls; prioritize proposals that are deemed acceptable and allocate funding accordingly; establish outreach programs with the interagency to leverage institutional knowledge and expertise; utilize cooperative research and development (R&D) agreements with the United Kingdom, Canada and Israel to leverage technology investments; and initiate full cooperative R&D programs with two new foreign partners.	
Performance Indicator and Rating:	
FY 2005 Target	• 70% of currently funded research projects completed on time and within budget • 5% increase in the number of research projects accepted • Continue threat/technology solutions workshop program
FY 2005 Rating	ON TARGET
FY 2006 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Initiate pilot cooperative R&D program with new foreign partners • Continue threat/technology solutions workshop program
FY 2007 Target	• 70% of currently funded research projects are completed on time and within budget • 5% increase in the number of research projects accepted • Expand pilot R&D programs with two new foreign partners to full cooperative programs • Continue full R&D programs with existing and new foreign partners
Basis of FY 2005 to Date Performance Rating	Currently the number of funded research projects are on track to be completed per the target
Verification	The CTTS Program utilizes a database to track the status of the projects. Quarterly program reviews are conducted to assess project status. In addition, an annual report is produced that assesses the status of current projects and the ability to accept new projects.
Validation	Completed research products increase the capabilities of the DoD to effectively detect, deter, and defend against terrorist attacks; thus the Department's personnel and interests at home and abroad are safer from terrorism.

Exhibit R-2a, RDT&E Budget Item Justification				February 2006			
Appropriation/Budget Activity RDT&E.DW/BA3	Project Name and Number Combating Terrorism Technology Support - PE 0603122D8Z						
Cost ($ in millions)	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010	FY2011
Combating Terrorism Technology Support	116.717	143.949	65.768	78.821	82.321	84.913	88.700

A. Mission Description and Budget Item Justification: P484, Combating Terrorism Technology Support (CTTS). This program develops technology and prototype equipment that address needs and requirements with direct operational application in the national effort to combat terrorism. Projects are distributed among 13 mission categories: Joint Improvised Explosive Device Defeat; Blast Effects and Mitigation; Chemical, Biological, Radiological, and Nuclear Countermeasures; Explosives Detection; Improvised Device Defeat; Infrastructure Protection; Investigative Support and Forensics; Physical Security; Training Technology Development; Special Projects; Surveillance, Collection, and Operations Support; Tactical Operations Support; and VIP Protection. This program is a non-system, advanced technology development effort that demonstrates the utility or cost reduction potential of technology when applied to combating terrorism requirements. It includes technology development and proof-of-principle demonstrations in field applications and coordination to transition from development to operational use.

B. Accomplishments/Planned Program

ADDITIONAL APPROPRIATION – Title IX, HRept 359.109 FY06 Appropriation

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	0.000	25.000	0.000

FY 2006 Plans: A current-year Congressional Addition to develop and field critical operational capabilities to counter and protect against terrorist chemical, biological, and explosive threats employed against military and civilian targets.

JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT TASK FORCE (JIEDD TF)

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	20.000	0.000	0.000

FY 2005 Accomplishments: Identified international technologies likely to appear in improvised devices in the near future. Examined hardening methods for handheld and benchtop explosives detectors planned for use in harsh outdoor environments. Investigated approaches for identifying acoustic and vibrational signatures of vehicles potentially carrying an improvised explosive device (IED). Developed preliminary plans for a suite of counter-IED training tools that satisfy warfighter training needs. Identified parameters for assessing blast data to determine the frequency, severity, and entrance locations of blast injuries. Established plans to leverage law

enforcement models in developing tactics, techniques, and procedures for eradicating networks. Analyzed approaches for establishing an international weapons intelligence program that provides deployable IED training for indigenous resources. Identified models for developing a persistent on-demand surveillance system to support operational mission planning and execution.

BLAST EFFECTS AND MITIGATION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	13.806	6.574	3.900

FY 2005 Accomplishments: Conducted a series of test of bridge structural components providing strength to suspender rope bridges against terrorist explosive devices. Demonstrated a robust model to predict close-in blast effects on bridge towers. Initiated a commercial off the shelf testing project to validate new polymer technologies used to retrofit existing buildings. This technology is now in use by Federal agencies. Designed fortifications for forward operating bases to enhance the survivability of personnel from blast. Commissioned a dynamic blast simulator to validate and characterize new materials used in building components.

FY 2006 Plans: Apply blast simulator test data for walls, columns and other structural elements of buildings to validate computer models and full-scale field test data. Populate a computer mapping system and database to identify vulnerabilities of current body armor. Refine advanced high-fidelity instrumentation for measuring the tactical performance of improvised explosives at close distances. Design, test, and field advanced material blast shield walls for checkpoints, entry control facilities, and overhead protection. Design and develop construction of a configurable half-scale urban city used to develop simplified, yet high-fidelity modeling codes to predict effects of terrorist bombings. Publish a best practices blast mitigation guide to be used by bridge owners and Federal and state agencies. Publish design guidance to practicing engineers on types of steel connections that will survive a blast environment. Investigate the effects of enhanced terrorist explosives on aircraft luggage containers and baggage.

FY 2007 Plans: Refine and provide critical blast information to military, industrial, and civil engineers by performing experiments in a configurable urban city test facility. Field laptop software system to aid in designing field fortifications at forward operating bases. Begin evaluation of advanced composite building materials for rebuilding of urban areas damaged by insurgency operations. Promulgate engineering guidance and designs incorporating commercial technologies to protect critical U.S. infrastructure including: tunnels, train/subway stations, ports, electrical power sub-stations, dams, bridges, and border crossings. Investigate homemade terrorist explosive mixtures and their effects on buildings and infrastructure. Test and verify the capability of commercial materials as new products emerge.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR COUNTERMEASURES

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.460	14.466	5.000

FY 2005 Accomplishments: Conducted user evaluations of advanced protective clothing for incident response personnel and tactical Self-Contained Breathing Apparatus (SCBA) for tactical response units. Conducted live-agent testing of the personal hydration Chemical, Biological, and Radiological (CBR) filtration system. Delivered the final building disinfection byproducts database. Completed testing of the advanced high-volume air sampling systems for Biological Warfare (BW) and Chemical Warfare (CW) agents. Developed and tested the CW and BW water collection and detection system. Validated improved handheld BW immunoassays. Designed a food security test kit for personnel protection at high-threat overseas government facilities. Evaluated viral suppression methods using a model system. Demonstrated dual use of a polymer system for capture of radioactive particles and for dust suppression.

Tested the first building-scale installation of the fiber-optic-based Distributed Chemical Sensor system. Performed efficacy and toxicity testing of the Electrostatic Decontamination System to meet EPA requirements. Deployed initial lessons-learned database from agricultural bioterrorism exercises and natural outbreak responses for use by the agricultural responder community.

FY 2006 Plans: Test a small portable radio repeater system to maintain voice communication for first responders operating in underground environments. Operationally evaluate a food security test kit for personnel protection at high-threat overseas government facilities. Review initial designs for advanced personal protective equipment with improved heat stress management capabilities. Assess food-borne threat levels of selected biological agents. Design transportable gasifier for contaminated plant and animal matter. Design and evaluate a portable test kit for collective protection filters. Evaluate viral suppression method against transmission of viral particles. Optimize color-based sensor array for chemical agent detection. Field-test the hybrid chemical detection system for building collective protection. Design and develop a self-contained escape respirator for both chemical and smoke protection. Develop advanced alpha and beta radiation detector for water.

Field-test the fiber-optic-based Distributed Chemical Sensor system at a mass-transit location. Assess quality control methods for chemical agent sampling and decontamination. Improve prototype fuel-cell technologies and deliver next-generation fuel cell units for evaluation. Optimize fuel-cell technology for continuity of operations.

FY 2007 Plans: Complete field trials and certification of advanced personal protective equipment with improved heat stress management capabilities. Complete field tests for laboratory testing of a small personal toxic chemical and contact poison detector and dosimeter. Conduct modeling and initial user tests for toxic chemical release mitigation methods in an urban environment. Test and evaluate transportable biomass gasifier. Complete field-testing and user evaluation of the small portable radio repeater system. Design and develop in-building emergency responder tracking system. Initiate lab testing of color-based sensor array for chemical agent detection. Test and evaluate self-contained escape respirator for both chemical and smoke protection. Test and evaluate advanced alpha and beta radiation detector for water.

EXPLOSIVES DETECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	7.177	7.642	6.570

FY 2005 Accomplishments: Developed prototype system for screening bottles for explosives and hazardous materials. Determined feasibility of Nuclear Quadrupole Resonance (NQR) for detection of large vehicle bombs. Conducted feasibility studies to assess emerging technologies for standoff explosives detection. Conducted range testing of handheld explosive trace detectors against vehicle-borne improvised explosive device threats.

FY 2006 Plans: Evaluate prototype system for screening bottles for explosives and hazardous materials. Develop and evaluate NQR large vehicle bomb detection. Develop breadboard systems for standoff detection of explosives. Optimize existing explosive trace detectors to increase detection capability and hardening to withstand severe environmental conditions. Investigate methods to improve canine handler selection and training. Conduct comparative study of methods to optimize canine performance. Determine feasibility of laser photothermal acoustic interferometry for suicide bomber detection.

FY 2007 Plans: Evaluate breadboard systems for standoff detection. Implement canine optimization methods in operational pilot program. Examine alternatives to computed tomography X-ray systems for inspection of baggage and cargo. Field test explosive trace detectors with increased detection capability and hardening to withstand severe environmental conditions.

IMPROVISED DEVICE DEFEAT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.183	4.428	7.800

FY 2005 Accomplishments: Fielded a scalable Vehicle Borne Improvised Explosive Device (VBIED) disruptor system. Conducted field evaluation of rapidly deployable, multi-configuration Radio Frequency (RF) shielded enclosures as a means to isolate Radio-Controlled Improvised Explosive Devices (RCIEDs) from external influences. Completed characterization testing of the recoil reduction adapter for the Percussion Actuated Non-Electric (PAN) disruptor. Conducted testing and field demonstration of lightweight recoilless disruptors for small platforms for use against Improvised Explosive Devices (IEDs). Evaluated the effect of Electronic Countermeasures (ECM) equipment on selected bomb squad equipment and robotic platforms. Developed and field evaluated prototype tactical timed firing device to support Explosive Ordnance Disposal (EOD) operations. Evaluated commercially available robotic mounted intrusive camera system for visual inspection of suspect vehicle-borne IEDs (VBIED). Developed a prototype remote, robotically deployed disablement system capable of disrupting the firing system of VBIEDs.

FY 2006 Plans: Investigate technologies that can be incorporated into the protective components of the next generation bomb suit. Evaluate the feasibility of miniaturizing previously developed x-ray backscatter imaging system to provide a single sided imaging system for bomb squads. Transition a tactical timed firing device to commercial production. Perform an operational evaluation of the prototype remote, robotically-deployed disablement system and refine to meet user requirements. Develop a multiple IED disruption

system to be integrated with existing robotic platforms. Complete characterization of a select set of general disruption tools. Define specifications and develop the initial design for a low cost sensor detector kit. Develop a prototype power backup system for robotic platforms. Ensure x-ray targeting system compliancy with Joint Architecture for Unmanned Systems (JAUS) specifications and integration with other JAUS compliant components. Develop and evaluate an advanced aiming and standoff measurement device for disruptors.

FY 2007 Plans: Complete field testing of a multiple IED disruption system and power backup system for robotic platforms. Build and evaluate initial prototype of single sided imaging system. Design, model, and evaluate the performance of the next generation bomb suit components, with emphasis on the blast and ballistic mitigation panels. Finalize design and test a low cost sensor detector kit. Continue characterization of a select set of general disruption tools. Investigate compatibility issues with ECM equipment that degrades the performance of electronic equipment and robotic platforms used by bomb squads. Develop a tool kit to assist bomb technicians with suicide bomber vests and backpacks. Evaluate existing RF detection devices. Demonstrate plug-and-play capability by integrating JAUS compliant x-ray targeting system and components onto JAUS compliant robotic platform.

INFRASTRUCTURE PROTECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	2.172	2.443	3.250

FY 2005 Accomplishments: Published and distributed the *Securing Your Supervisory Control and Data Acquisition (SCADA) and Industrial Control System* pocket guide. Published and distributed a brochure on the threats of radio frequency weapons (RFW). Developed the software-based Virus Propagation Analysis Tool which is offered for licensing and commercialization. Posted for download from an internet website an open source security best practice guide and automated security configuration verification tool for Linux. Expanded the deployment of PipelineNet water modeling tools to twenty-five additional US cities.

FY 2006 Plans: Field test a secure means of data communication between commercial and military aircraft and air traffic controllers. Field blast engineers an enhanced database with expanded content on the effects of blast to critical infrastructure. Deliver tools for the assessment of data quality in semantic graphs and the data set generator to meet the needs of analysts and information analysis tool evaluators. Automate and deliver an existing cyber security assessment methodology for use by the Nuclear Regulatory Commission and power plant licensees. Study available commercial-off-the-shelf software (COTS) and government-off-the-shelf (GOTS) software tools for critical infrastructure interdependency modeling.

FY 2007 Plans: Commercialize a virtual cyber security testing capability. Publish best practices guide and a notional architecture for infrastructure interdependency modeling. Field a prototype early warning system for critical drinking water infrastructure. Test and deploy configuration-based network security technologies.

INVESTIGATIVE SUPPORT AND FORENSICS

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	4.494	4.133	3.800

FY 2005 Accomplishments: Fielded a counter-encryption tool based on distributive network processing. Transitioned a forensic device to extract stored data from a personal digital assistant and cellular phone to commercial end users. Distributed a software tool for identifying computer drives used to save files on computer storage media. Distributed an improved first responder-emergency software tool. Completed and fielded forensic references for improvised explosive device components and, commercial explosives. Fielded a quick screening booth for detection of deception. Developed a standardized method for assessing the quality of latent fingerprint developers.

FY 2006 Plans: Field a forensic tool to extract and store random access memory from computers. Field a tool for three dimensional crime scene modeling and imaging. Deliver a system for digital authentication of digital video recordings. Publish criteria for forensic document methodology reliability and error rates. Field a computer aided facial recognition software system. Distribute pocket fingerprint recording kits and a pipe bomb investigative reference. Distribute a two-way multifunctional encrypted radio. Evaluate several credibility assessment methods and a real time detection of threat system. Deliver a forensic mobile command post for federal law enforcement deployment. Publish reports on statistical analysis of friction ridge matching criteria. Field a standoff credibility assessment instrument using laser Doppler vibrometry.

FY 2007 Plans: Distribute a digital automotive imaging system on DVD format. Field a statistical verification of camouflage pattern matching. Distribute a system for automatic analysis of text for author attribution. Field new techniques for development of latent fingerprints on post-blast evidence. Improve the performance and scientific defensibility of dog teams by improving the absorption materials used for collecting human scent. Develop a technique for post-blast identification of urea nitrate. Improve the protocol for adsorption of TATP from the gas phase to assist in evidence collection from post-blast exhibits.

PHYSICAL SECURITY

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.813	10.603	8.000

FY 2005 Accomplishments: Field tested and transitioned a portable, automated tester for walk-through metal detectors. Initiated a remotely operated, concealed weapons detection capability using magnetic anomaly detection. Developed and evaluated an enhanced mobile back-scatter x-ray screening system for detecting explosives in vehicles and intermodal cargo containers. Conducted a pilot test of a credentialing system integrating a fingerprint biometric device with a smart card reader to enhance entry point security without hindering throughput. Developed a draft merchant vessel inspection guide to consolidate existing tactics, techniques, and procedures for visit, board, search and seizure teams and security personnel. Deployed and evaluated a prototype smart video intrusion detection system providing enhanced situational awareness for perimeter and area security. Demonstrated and transitioned a

perimeter intrusion detection and tracking system using airport ground surveillance radar. Performed vehicle crash tests to support the development of a field guide for deployment of non-standard vehicle barriers in tactical and non-tactical applications. Designed and developed an integrated security system architecture using existing or new radars, optical devices, and security sensors, incorporating a rules-based alerting system with secure communications.

FY 2006 Plans: Conduct field tests and an operational evaluation of a remotely operated concealed weapons detection system using magnetic anomaly detection. Conduct field tests of automated license plate reading systems. Develop requirements for the operational demonstration of an integrated suite of explosive detection tools to meet the high-throughput requirements of vehicle and passenger ferries. Conduct operational assessment of an automatic under-vehicle inspection system. Publish a merchant vessel inspection guide to consolidate existing tactics, techniques, and procedures for Visit, Board, Search and Seizure teams and security personnel. Conduct inter-agency anti-terrorism technology workshop. Conduct assessment of remotely operated integrated vehicle and pedestrian access control system. Develop integrated forward-scatter and back-scatter x-ray screening system to detect concealed explosives and metallic items in vehicles. Develop and publish an updated vehicle inspection checklist to identify hidden explosives, contraband, and weapons in vehicles. Publish a user manual for emplacing non-standard vehicle barriers in tactical and non-tactical applications. Validate design parameters and component/subsystem test results necessary to field a prototype integrated security system architecture using existing and new radars, optical devices, and security sensors, and incorporating a rules-based alerting system with secure communications. Develop a test protocol for evaluating shallow tunnel detection equipment capabilities. Field test an improved long-range, optical intrusion detection, tracking, and assessment system. Design a command and control station to integrate 3-5 stand-alone optical intrusion detection, tracking, and assessment systems to reduce manpower requirements and false alarms while increasing situational awareness.

FY 2007 Plans: Evaluate next generation biometric identification technologies for inclusion in integrated access control systems. Conduct technology assessment of next generation weapons, explosives, and other contraband screening systems for facilities, public venues, and intermodal cargo terminals. Field test an automatic remote identification system for vehicle drivers. Field test a paint that will reveal evidence of tampering when subjected UV light. Conduct international maritime anti-terrorism security workshop. Conduct field test of an integrated suite of explosive detection tools to meet the high-throughput requirements of vehicle and passenger ferries. Conduct crash tests of non-standard installation techniques of vehicle security barriers and update existing vehicle barrier guide. Develop technology concept to detect physical intrusion in rail right-of-ways. Demonstrate a prototype integrated security system architecture using existing and new radars, optical devices, and sensors, and incorporating a rules-based alerting system with secure communications. Evaluate the command and control station integrating 3-5 stand-alone optical intrusion detection, tracking, and assessment systems to reduce manpower requirements and false alarms while increasing situational awareness.

SPECIAL PROJECTS

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	0.423	3.847	0

FY 2005 Accomplishments: Developed a Weapons Intelligence System capability for the U.S. military and provided management and technical support for counter IED practice to various US military and other Government organizations.

FY 2006 Plans: Facilitate interagency and international combating terrorism capability transfer across the public and private sectors. Conduct a detailed analysis of the current counterterrorism enterprise and recommend business based approaches to enhance strategic and operational capabilities. Develop an online, secure methodology to conduct low-level source and reporting operations in a hostile environment. Create a multi-language software suite that is able to run on various operating systems and report through secure message transfer (SMT) protocol.

FY 2007 Plans: Subcomponent efforts are being transitioned to a new Project within the SO/LIC Advanced Development Program (PE 0603121D8Z), Irregular Warfare Support, which will leverage ongoing research efforts of US Special Operations Command (USSOCOM), the Military Services, Defense agencies, and other federal agencies to analyze, modify, design, and demonstrate enduring technical and operational capabilities for counterterrorism and counterinsurgency.

SURVEILLANCE, COLLECTION, AND OPERATIONS SUPPORT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.666	20.259	8.536

FY 2005 Accomplishments: Increased channel capacity and added real-time monitoring to multi-media broadcast collection system. Fielded for operational use, two multi-media broadcast systems to two separate locations at CENTCOM, one at Headquarters and one in Iraq. Validated order of magnitude improvement in our facial recognition research effort at the government sponsored Facial Recognition Grand Challenge. Fielded an improved Assault/Attack FLIR video tracker that will be installed in all Army Special Operations Aviation helicopters.

FY 2006 Plans: Expand language capabilities for automated machine language tools for translation and prioritization of foreign language media that are of high interest to senior decision makers. Provide advances in joint tagging, tracking, and locating technology to improve maritime tagging and tracking. Increase access to open source foreign media with broader language domains. Address most challenging aspects of facial recognition technology shortfalls by continuing to improve algorithms and by executing pilot projects to address operational needs. Integrate facial recognition technology into surveillance systems by including multi-spectral imaging and laser vibrometry. Build automated tools for the detection of shallow tunnels. Enhance modular airborne reconnaissance platforms.

FY 2007 Plans: Integrate multiple tagging, tracking, and location technologies as a cue for other sensors or action. Expand existing geolocation and targeting capabilities. Advance capabilities for long-range audio surveillance. Evaluate biometric and other novel technology areas to improve tagging, tracking, and locating.

TACTICAL OPERATIONS SUPPORT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	13.277	19.627	6.400

FY 2005 Accomplishments: Held two large-scale asymmetric warfare exercises under Asymmetric Warfare Center which focused on integrating DOD, Federal, State and Local First Responders for complex terrorist attacks. Successfully conducted two major urban and rural operational assessments of the Muzzle Flash Detection System. Delivered highly detailed Tactical Surveys that will be used by first responders, security personnel and training teams in responding to crisis events for several critical installations. Assessed an acoustical small arms shot detection systems for patrol boats. Fabricated prototype of a Dual Band Night Sight that will provide merged infrared and image intensified images for weapons sights and prepared for transition to user assessment. Built initial prototype of an Omni Directional Imaging Device that provides remote panoramic images of a tactical assault location and can be tossed into an area of concern in preparation for operational testing and evaluation.

FY 2006 Plans: Deliver Muzzle Flash Detection System to enhance counter sniper urban and rural operations for operational testing and evaluation. Deliver first Eyeball preproduction systems, greatly enhancing assaulter tactical awareness. Execute two integrated asymmetric warfare exercises under direction from the Asymmetric Warfare Center, highlighting new technologies for operational consideration. Provide RCIED ECM training and initial equipment to ten select state and local bomb squads. Deliver tactical surveys for select high risk facilities. Conduct minimum of one Tactical Technology Seminar for state and local SWAT teams, introducing new technologies and identifying new SWAT requirements. Deliver Dual Universal Night Sight prototypes for low rate initial production (LRIP). Provide prototype close quarter battle carbine (CQB) for user testing and evaluation. Fabricate first generation Augmented Reality Training System for tactical assault teams. Deliver a next generation diversionary device for tactical teams that enhances safety. Deliver an enhanced tactical rope ascending device that is capable of mechanically lifting individuals to heights of 100 ft at variable speeds, while maintaining tactical awareness. Deliver a system that enables tactical forces to remotely receive images and text sent electronically yet is still affordable to local law enforcement. Deliver an improved small laser target designator that precisely designates targets for engagement by the full range of laser guided munitions. Provide a weapon mounted video display that provides both thermal and CCD images to a display that is bore-sighted to the weapon. Deliver an advanced High Performance In Line Sniper Scope for operational testing and evaluation that will provide enhanced infrared images for sniper weapons.

FY 2007 Plans: Deliver Weapon Mounted Video Display for operational testing and evaluation by Special Forces. Deliver Augmented Reality Training System for operational testing and evaluation by DoD and DOE Security Forces. Deliver a shoulder-fired weapon scope providing both long-range and CQB sighting that is selectable by the shooter without magnification. Deliver a prototype lightweight, weapon-mounted integrated rangefinder to improve sniper rifle applications. Develop an integrated level IIIA ballistic helmet that supports modular tactical attachments, but remains balanced and comfortable. Deliver a Dynamic Breaching Guide for SWAT operations that standardizes operational procedures and incorporates characterization of all SWAT common use dynamic breaching capabilities. Finalize training and equipping of select state and local pilot bomb squads for RCIED ECM. Deliver

high power in-line sniper scope for low rate initial production. Fabricate a launched 40mm listening system to enhance situational awareness for SWAT counter terrorist operations.

TRAINING TECHNOLOGY DEVELOPMENT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	10.228	8.841	2.950

FY 2005 Accomplishments: Validated end-user requirements for distributed, web-based simulation technologies in support of regional and large scale terrorism training exercises. Transitioned technology-enhanced training on personnel screening, railcar inspection, and suicide bombings to the Government Printing Office. Designed and developed an accredited training curriculum for food protection and security. Conducted training requirements analysis in support of Chemical ,Biological, Radiological, and Nuclear Explosives (CBRNE) response. Created an enhanced canine training program for detecting firearms, ammunitions, explosives, and other objects associated with bomb-making equipment.

FY 2006 Plans: Conduct a series of training needs analysis for threats to combating terrorism. Create Advanced Distributed Learning (ADL) software tools to design integrated on-line training and virtual reality training. Develop the next generation ADL registry for combating terrorism related content and assets. Produce a chemical and radiological stimulant kit that is intrinsically safe. Design and develop an online training program for managing an agricultural incident. Integrate interactive simulation technologies with training and mission performance support capabilities. Develop a program that produces the capability for a combined canine and human tracking team. Create a tool for streamlining the creation of ADL conformant content and assets for the DoD. Develop several training aids and devices to complement recently fielded TSWG advanced technologies.

FY 2007 Plans: Improve the knowledge, skills, and abilities of bomb squads through improved curriculum and practical exercises. Produce a distributed language learning system that provides accurate translations for common operational phrases. Enhance the creation of adaptable, autonomous, agent-based simulations that model human behavior and social interactions. Design full-scale, tactical simulation scenarios for engaging a suicide homicide bomber.

VIP PROTECTION

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	6.019	5.453	4.300

FY 2005 Accomplishments: Delivered fully armored passenger vehicle performance guidelines. Completed ballistic and blast protocols and guidelines for fully armored passenger vehicles. Conducted testing and characterization of Spinel transparent armor using both single shot and multi-hit testing. Evaluated aging and environmental effects on body armor performance. Successfully demonstrated a scaled deployment of an Instantaneous Personnel Protection System (IPPS) shield for enhanced VIP protection. Validated vehicle tamper alerting system component performance. Investigated and demonstrated alternative design concepts of a

laser detection system for early warning of laser targeting activity directed at windows. Developed components of a rapidly deployable VIP security kit for use in temporary venues. Fielded the initial personal duress system prototype for VIPs to alert protection details of threatening situations. Evaluated deployable armor system performance against standard ballistic threats. Delivered an instrumented head form and test protocols for assessing ballistic blunt trauma to the head which will lead to more objective assessments of helmet performance.

FY 2006 Plans: Develop a sensor system for detecting threats and automatically activating the IPPS shield. Integrate vehicle tamper alerting system components and conduct final system testing. Deliver the window laser detection system for early warning of laser targeting activity. Conduct VIP security kit component validation testing. Expand previously developed projectile database to include frangible and new threat ammunition characteristics, and ammunition performance against selected body armor. Enhance the personal duress system user interface. Evaluate deployable armor system performance against armor piercing ballistic threats. Conduct advanced evaluation of body armor performance in multi-hit scenarios and evaluate metrics for dynamic effects of ballistic blunt trauma. Complete installation of full scale aluminum oxynitride (ALON) transparent windows and conduct multi-hit test scenarios against the seams of large ALON panels. Evaluate the performance of body armor treated with a shear thickening fluid (STF) and develop a concealable, flexible body armor prototype using the STF-treated fabric. Assess blunt trauma to the head and torso using the advanced ballistic helmet and body armor test fixtures. Develop a prototype concrete imaging system to detect possible bombs within flat concrete surfaces.

FY 2007 Plans: Integrate the IPPS sensor and shield components, and conduct final testing. Field the vehicle tamper alerting system. Integrate the VIP security kit components, and conduct final testing. Deploy the updated projectile database with frangible and new threat ammunition information. Deliver the final assessment report of body armor performance in multi-hit scenarios. Deliver the STF-treated body armor prototype. Deliver the final test reports on blunt trauma to the head and torso for selected ballistic helmets and body armor. Enhance the prototype concrete imaging system to detect possible bombs within cylindrical columns. Evaluate methods for rapid detection of a broad range of laser energy that may be directed at VIPs. Develop an IED blast/fragmentation test protocol to determine the effects on VIPs and protective detail armored vehicles.

PROGRAM MANAGEMENT

	FY 2005	FY 2006	FY 2007
Accomplishment/Effort/Subtotal Cost	8.999	10.633	5.262

FY 2005 Accomplishments: Provided program management oversight and technical support for CTTS R&D projects. Augmented the CTTS program office with contract, financial, and security management personnel. Managed an additional $87 million in funds from other agencies. Managed cooperative R&D programs with the United Kingdom, Canada, and Israel. Negotiated cooperative R&D agreements with Australia and Singapore. Established communication and information sharing with other government agencies for CTTS related initiatives to reinforce interagency and international participation in the identification and prioritization of CTTS mission area requirements. Solicited proposals via Broad Agency Announcement (BAA) for new projects and tasks based on

prioritized requirements. Directed the program, planning, and execution of projects and associated contracts, including the daily management and reporting for more than 325 separate contracts and tasks. Developed and implemented improvements for the BAA Information Delivery System (BIDS) solicitation process including enhanced outreach via training to potential submitters on BIDS use. Developed and implemented process improvement initiatives for general document and action tracking and enhanced Business Information System processes.

FY 2006 Plans: Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of cooperative R&D programs with international partners. Establish goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Review and revise existing process and execution plans for CTTS mission area management and internal and external reporting responsibilities.

FY 2007 Plans: Provide program management oversight and technical support for CTTS R&D projects including funds from other agencies and management of international cooperative R&D programs. Establish goals, objectives, and immediate revisions to plans that will reinforce interagency participation for the identification and prioritization of CTTS mission area requirements. Direct the program, planning and execution for projects and associated contracts using direct and indirect budget allocations. Review and revise existing process and execution plans for CTTS mission area management and reporting responsibilities.