Exhibit R-2, RDT&E Budget Item Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**R-1 ITEM NOMENCLATURE:** Proliferation Prevention and Defeat; 0603160BR

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0603160BR Cost	**105.361**	**116.630**	**213.240**	**211.555**	**216.641**	**211.934**	**217.807**	**225.275**
Project BB - Small Business Innovative Research*	0.000	0.689	0.000	0.000	0.000	0.000	0.000	0.000
Project BI - Detection Technology	19.088	19.824	0.000	0.000	0.000	0.000	0.000	0.000
Project BJ - SOF Counterproliferation Support	20.515	18.217	0.000	0.000	0.000	0.000	0.000	0.000
Project BK - Counterforce	65.758	77.900	0.000	0.000	0.000	0.000	0.000	0.000
Project RA - Systems Engineering and Innovation	0.000	0.000	9.126	3.687	4.106	4.154	4.154	4.154
Project RE - Counter-Terrorism Technologies	0.000	0.000	44.109	45.424	45.399	44.367	44.367	44.367
Project RF - Detection Technology	0.000	0.000	39.305	41.213	43.783	47.589	49.186	46.967
Project RG - Adcanced Energetics & Counter WMD Weapons	0.000	0.000	20.470	20.550	19.670	24.706	29.321	37.997
Project RI - Nuclear Survivability	0.000	0.000	18.848	18.867	18.867	18.867	18.868	18.869
Project RM - WMD Battle Management	0.000	0.000	57.911	55.621	56.668	42.200	41.500	42.500
Project RT - Target Assessment Technologies	0.000	0.000	23.471	26.193	28.148	30.051	30.411	30.421

*In year of execution, funding executed under PE 0605502BR “Small Business Innovative Research”.

A. Mission Description and Budget Item Justification:

This program element reduces WMD proliferation and enhances WMD defeat capabilities through advanced technology development. To accomplish this objective, Small Business Innovative Research and four project areas were developed: BI - Detection Technology, BJ - Special Operation Forces Counterproliferation Support, BK - Counterforce, and Unconventional Nuclear Warfare Defense. In an effort to better align its investment portfolio with requirements and initiatives on combating Weapons of Mass Destruction, these projects are revised, starting in FY 2008, to the following projects: RA - Systems Engineering and Innovation, RE - Counter-Terrorism Technologies, RF - Detection Technology, RG - Advanced Energetics and Counter WMD Weapons, RI - Nuclear Survivability, RM - WMD Battle Management and RT - Target Assessment Technologies. This revision supports technology requirements defined in the Joint Functional Concepts (Chairman, Joint Chiefs of Staff Instruction 3170.01) and the Quadrennial Defense Review Transformational Goals. The missions and plans of these projects are described below in the R-2a Budget Exhibits.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**R-1 ITEM NOMENCLATURE:** Proliferation Prevention and Defeat; 0603160BR

B. Program Change Summary:

($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget	**107.879**	**104.582**	**109.371**	**109.906**
Current President's Budget	**105.361**	**116.630**	**213.240**	**211.555**
Total Adjustment	**-2.518**	**12.048**	**103.869**	**101.649**
Congressional program reductions				
Congressional reductions		**-0.442**		
Congressional increases		**12.490**		
Reprogramming	**-1.500**			
Classified Program Transfer				
Other Program Adjustments			**103.869**	**101.649**
SBIR/STTR Transfer	**-1.018**			

Change Summary Explanation:

- The increase in overall funding for Proliferation Prevention and Defeat in FY 2008 and beyond reflects the increased emphasis in providing demonstrated technologies and solutions to warfighters for combating the WMD threat.
- In FY 2008, $23.471M transfers from PE 0602716BR and $80.398M from PE 0602717BR.
- In FY 2009, $26.193M transfers from PE 0602716BR and $75.456M from PE 0602717BR.
- The following table provides the crosswalk for the realignment of the project funds within this program element.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**R-1 ITEM NOMENCLATURE:** Proliferation Prevention and Defeat; 0603160BR

PE 0603160BR FY 2008 Cost ($ in Millions)									
Old Projects		**New Projects**							
Project	Total	RA	RE	RF	RG	RI	RM	RT	Total
BB	0.731	0.731	0.000	0.000	0.000	0.000	0.000	0.000	**0.731**
BI	7.678	0.495	0.000	7.183	0.000	0.000	0.000	0.000	**7.678**
BJ	20.532	0.000	20.532	0.000	0.000	0.000	0.000	0.000	**20.532**
BK	80.430	7.900	23.577	0.000	20.470	0.000	28.483	0.000	**80.430**
Total	109.371	9.126	44.109	7.183	20.470	0.000	28.483	0.000	**109.371**
From PE 0602716BR		0.000	0.000	0.000	0.000	0.000	0.000	23.471	**23.471**
From PE 0602717BR		0.000	0.000	32.122	0.000	18.848	29.428	0.000	**80.398**
Grand Total		**9.126**	**44.109**	**39.305**	**20.470**	**18.848**	**57.911**	**23.471**	**213.240**

PE 0603160BR FY 2009 Cost ($ in Millions)									
Old Projects		**New Projects**							
Project	Total	RA	RE	RF	RG	RI	RM	RT	Total
BB	0.751	0.751	0.000	0.000	0.000	0.000	0.000	0.000	**0.751**
BI	6.128	0.768	0.000	5.360	0.000	0.000	0.000	0.000	**6.128**
BJ	20.916	0.000	20.916	0.000	0.000	0.000	0.000	0.000	**20.916**
BK	82.111	2.168	24.508	0.000	20.550	0.000	34.885	0.000	**82.111**
Total	109.906	3.687	45.424	5.360	20.550	0.000	34.885	0.000	**109.906**
From PE 0602716BR		0.000	0.000	0.000	0.000	0.000	0.000	26.193	**26.193**
From PE 0602717BR		0.000	0.000	35.853	0.000	18.867	20.736	0.000	**75.456**
Grand Total		**3.687**	**45.424**	**41.213**	**20.550**	**18.867**	**55.621**	**26.193**	**211.555**

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**R-1 ITEM NOMENCLATURE:** Proliferation Prevention and Defeat; 0603160BR

C. Other Program Funding Summary: See Exhibit R-2a.

D. Acquisition Strategy: Not Applicable.

E. Performance Metrics: Program cost, schedule and performance are measured using a systematic approach with approved programs and methods. The results of these measurements are presented to DTRA management on a regular basis to determine program effectiveness and to provide new direction as needed to ensure the efficient use of resources. Program specific performance metrics are outlined within each project description.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME and NUMBER:** 0603160BR Project BB – Small Business Innovative Research

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BB - Small Business Innovative Research*	0.000	0.689	0.000	0.000	0.000	0.000	0.000	0.000

*In year of execution, funding executed under PE 0605502BR "Small Business Innovative Research (SBIR)".

A. Mission Description and Budget Item Justification:

This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting DoD R&D needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of DoD supported R&D results. These efforts are responsive to Public Law 106-554.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project BB - Small Business Innovative Research*	0.000	0.689	0.000	0.000

*In year of execution, funding executed under PE 0605502BR "Small Business Innovative Research (SBIR)". SBIR funding will be identified in the change section as a decrease to the total level of funds and transferred to PE 0605502BR for execution.

Performance Metrics:

- Number of phase I awards supporting innovative technology development.
- Number of phase II and III awards leading to technology transition.

FY 2006 Accomplishments:

- Not Applicable. See Project BB of PE 0605502BR.

FY 2007 Plans:

- Fund 43.0 percent of DTRA SBIR investment including:
  - Up to ten Phase I SBIR contracts to perform feasibility studies on FY 2007 topics.
  - Up to two Phase II SBIR contracts to perform full research and development on promising FY 2006 Phase I efforts.
  - Share of incremental funding of FY 2006 Phase I and FY 2005 Phase II SBIR contract awards.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BB – Small Business Innovative Research

FY 2008 Plans:

- Not Applicable. See Project RA of PE 0605502BR.

FY 2009 Plans:

- Not Applicable. See Project RA of PE 0605502BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BI – Detection Technology

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BI - Detection Technology	19.088	19.824	0.000	0.000	0.000	0.000	0.000	0.000

***** Funding and activities realigned to Projects RA and RF of PE 0603160BR in FY 2008.
Note: FY 2006 resources reflect Congressional Adjustment of $13.38 M.

A. Mission Description and Budget Item Justification:

This project develops technologies to achieve national defense counter- and non proliferation, as well as arms control objectives. Major activities include:

Develop technologies to monitor, detect, identify and locate strategic, conventional and improvised weapons, components, or materials. In addition, provide improved detection systems for radiological or high explosive materials under cooperative and non-cooperative conditions providing increased range of detection, lower costs, lower weight and better resolution, higher sensitivity, and greater discrimination to minimize false positive and false negative readings.

Develop and test enhanced operational systems supporting DoD requirements employing advances in solid state nuclear detectors, processing electronics, analysis software, and identification technology, and integrated nuclear/biological/chemical sensor technology.

Develop procedures and equipment that will enable the United States government to effectively monitor compliance with current and projected international agreements in the most non-intrusive and cost-effective manner.

Develop technology to provide information collection, processing and dissemination capabilities to meet notification and reporting requirements.
Perform technology assessments and provide technical input to support development of innovative agreements addressing transparency, cooperation, and confidence-building issues in new topical areas and/or specific geographical regions.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project BI - Detection Technology	19.088	19.824	0.000	0.000

***** Funding and activities realigned to Projects RA and RF of PE 0603160BR in FY 2008.

Performance Metrics:

- Completion and successful laboratory testing of the helium dimer Compton imager.

- Test/demonstrate Secret/Restricted Data (S/RD) and Secret Internet Protocol Router Network (SIPRNet) communications capabilities from field units; deliver audit report for end-to-end technology demonstration of National Technical Nuclear Forensics for Attribution (NTNF) system.
- Successfully develop data integration capability with future interagency comprehensive, all domain WMD detection architecture.
- Deploy upgraded technology and Concept of Operations for sample collection, Radiochemistry (RADCHEM) analysis, Secret/Restricted Data (S/RD) communications, and data analysis; develop plan for faster diagnostics based on technology demonstrations; formulate program direction for advanced forensic sampling concepts.
- New capabilities delivered and transitioned to O&M.

FY 2006 Accomplishments:

- Continued developing detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology, eliminating the logistical burden of cryogenic cooling as well as bulky gas detectors. Completed laboratory prototype solid state neutron detectors and novel scintillation detectors.
- Initiated a Joint/Advanced Concept Technology Demonstration effort to develop and demonstrate a modular nuclear and radiation detection system capable of being mounted on multiple platforms (vehicular, aerial, marine, and handheld), deployed in both overt and covert situations, and seamlessly integrated into a sensor network to provide battlespace awareness for the theater commander. This included a $6.800M Congressional Adjustment in support of Fiber Radiation Detector and Guardian development.
- Delivered 5 new Arms Control Enterprise System Modules: Unit Transactions Module (UTM), Open Skies Treaty, United Nations Transparency in Armaments (UNTIA), Global Exchange of Military Information (GEMI) and Wassenaar Arrangement.

FY 2007 Plans:

- Continue development of a multi-layer, multi-crystal (3 x 3 x 2) prototype pixellated gamma ray Compton imaging spectrometer and of novel scintillating crystal detectors with enhanced energy resolution.
- Complete a Joint/Advanced Concept Technology Demonstration effort demonstrating a modular nuclear radiation detection system capable of being mounted on multiple platforms (vehicular, aerial, marine, and handheld), deployed in both overt and covert situations and seamlessly integrated into a sensor network to provide battlespace awareness for the theater commander.
- Deliver new Arms Control Enterprise System Module: Inspection Planning Module (IPM).

FY 2008 Plans:

- Not Applicable. See Projects RA and RF of PE 0603160BR.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BI – Detection Technology

FY 2009 Plans:

- Not Applicable. See Projects RA and RF of PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BJ – SOF Counterproliferation Support

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BJ - SOF Counterproliferation Support	20.515	18.217	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned to Project RE of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project supports the Joint Functional Concept of Force Application by developing and demonstrating technologies that enable Special Operations Forces (SOF) to detect, disable, neutralize and render safe WMD and their associated facilities. This mission within Force Application has been identified as a critical national priority assigned to SOF. The goal of this project is to provide management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities.

Demonstrate SOF-unique devices that enable SOF to detect, disable and neutralize WMD and their associated facilities. This project directly supports SOF contributions to the nation's effort to counter the spread of WMD. Efforts in this project include: the defeat of hard and deeply buried targets (HDBT), explosive ordnance disposal (EOD) and maritime efforts to prevent the spread of WMD technology. Details of this program have been classified per Chairman, Joint Chiefs of Staff Manual (CJCSM) 5225-01 dated 1 March 2001 (Classification of Counterproliferation (CP)).

Develop a full spectrum of complementary capabilities for Counter Terrorism (CT) and CP that will provide the ability to rapidly detect and destroy WMD in various backgrounds, concentrations and forms to the Department of Defense, Combatant Commanders and Other Government Agencies. This effort also analyzes the current knowledge base for detection and decontamination of Chemical, Biological, Radiological and Nuclear materials. DTRA will provide, upon request, direct program support to develop enhanced capabilities for USSOCOM applications that expand this technology base and mitigate mid-term deficiencies. Details of this program have been classified per Chairman, CJCSM 5225-01 dated 1 March 2001 (Classification of CP).

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project BJ - SOF Counterproliferation Support	20.515	18.217	0.000	0.000

* Funding and activities realigned to Project RE of PE 0603160BR in FY 2008.

Performance Metrics:

- Number of technologies delivered that increase the potential mission success and reduce the number of current gaps in Special Operations Forces (SOF) capabilities to counter WMD when conducting Global War on Terrorism operations.

FY 2006 Accomplishments:

- Continued to provide support to the development of SOF–unique technologies, tactics and procedures aimed at enhancing SOF capabilities.
- Continued to provide the full spectrum of new technologies for SOF to counter WMD proliferation enabling the war-fighter to improve their ability to detect, disable and neutralize threat WMD and associated facilities.

FY 2007 Plans:

- Initiate terrorist pathway counter proliferation Advanced Technology Demonstration (ATD) (Specific technologies are classified Alternative Compensative Control Measures).

FY 2008 Plans:

- Not Applicable. See Project RE of PE 0603160BR.

FY 2009 Plans:

- Not Applicable. See Project RE of PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BK - Counterforce

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BK - Counterforce	65.758	77.900	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned to Projects RA, RE, RG and RM of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project develops and demonstrates technologies to strengthen joint and combined warfighting capabilities useful in the Global War on Terrorism and those that demonstrate integrated attack technologies used against Hard & Deeply Buried Targets that house WMD. The objectives of this program are to develop technologies, demonstrate prototype systems in an operationally realistic environment, support operators in defining innovative concepts of operation, and provide combatant commanders with enhanced capabilities that respond to potential adversaries' capability to develop and/or employ chemical, biological, radiological, nuclear and high explosive (CBRNE) weapons. The U.S. requires the capability to attack and neutralize CBRNE research, production, storage, operations and support, and command and control facilities while mitigating collateral effects from expulsion and release of CBRNE agents. Potential targets include mobile and fixed, above ground and underground, hardened and unhardened facilities, as well as related Command, Control, Communications and Intelligence (C3I) facilities, and trans-shipment and delivery systems. The goal is rapid development and demonstration of enhanced counterforce mission capabilities that include, but are not limited to, advanced conventional and non-conventional (non-nuclear) weapons, application of stand-off technologies for WMD combat assessment, integration of global strike technologies, and target-attack planning tools that optimize weapon and sensor employment.

This project emphasizes technology demonstrations to include Advanced Technology Demonstrations (ATDs) and Advanced Concept Technology Demonstrations (ACTDs). The project is divided into four mission areas, WMD Counterforce Applications, CBRNE Counterproliferation Support, Global Strike Integration Technologies, and Hard Target Defeat.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project BK - Counterforce	65.758	77.900	0.000	0.000

* Funding and activities realigned to Projects RA, RE, RG and RM of PE 0603160BR in FY 2008.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BK - Counterforce

Performance Metrics:

- Percent increase of Counter WMD weapon performance compared to fielded weapons (e.g. Bomb, Live Unit (BLU)-109 and BLU-113).

FY 2006 Accomplishments:

- Completed analysis of the suitability of alternative guidance kits for use with the Bomb, Live Unit BLU-121/B warhead.
- Collaborated with Air Force Special Operations Command (AFSOC) and Air Force Unmanned Aerial Vehicle (UAV) Battle Lab to develop the SPECTRE-FINDER program plan and initiate activities to deliver capability to acquire off-board, below the weather imagery for pre-strike target identification and post-strike battle damage assessment.
- Conducted a series of full scale static detonations against moving, Medium-Range Ballistic Missile (MRBM) WMD targets to evaluate the performance of Cobra and Predator-launched Hellfire missile systems in defeating the target while minimizing collateral effects.
- Conducted Foreign Comparative Test (FCT) program to evaluate the German Programmable Intelligent Multi-Purpose Fuze (PIMPF) ability to detect and count voids in prosecuting multi layered targets.
- Demonstrated seven technologies, as part of a Chemical Advanced Technology Demonstration (ATD), that enabled Special Operations Forces (SOF) to detect, disable, neutralize, and render safe WMD capable Improvised Explosive Devices (IEDs) and their associated facilities.
- Initiated the following new R&D projects in support of USSOCOM requirements under the SOF Venture program: Integrated Micro-Climatization System (IMCS) project, GPS-Denied Navigation and Mapping (GPS DNM) project, Non-intrusive Detection (PINS-3) project, Gellants project, Biological Detection and Identification project, and Standoff Chemical Detection project.
- Completed construction and outfitting of a tunnel testbed used for a large-scale ground-shock experiment on a tunnel facility.
- Initiated development of WMD plume volume measurement capability.
- Began validation of variable terminal effects concepts.
- Conducted limited experiment proof-of-principle flight test of Battle Damage Reporting System using a Tomahawk Land Attack Missile, Dispenser Variant (TLAM-D).
- Completed limited experiment proof-of-principle flight test of weapon-borne sensors using a chemical sensor and an aerial version of unattended ground sensor in a Wind Corrected Munitions Dispenser (WCMD) Tactical Munitions Dispenser (TMD).

FY 2007 Plans:

- Develop and integrate an infrared, video payload into the FINDER UAV to address AFSOC requirement for off-board, below the weather imagery for pre-strike target identification and post-strike battle damage assessment.
- Conduct mid scale testing of taggant technologies to enable integration of taggant into a counter-WMD strike weapon system.

- Conduct integration and fit-checks for bio mobile laboratory, ground command, control, and communications station, and Combat Assessment Unmanned Aerial Vehicle components of the Biological Combat Assessment System (BCAS).
- Conduct large scale ground shock experiment on a tunnel target test bed to validate ground shock and tunnel response models.
- Develop requirements for DoD Tier II and III unique equipment to enhance first responders' ability to safely detect, diagnose, and defeat Radiological Dispersal and Chemical/Biological Devices through table top and field exercises.
- Deliver SOF-unique technologies under the SOF Venture program. Projects planned for completion: Standoff Chemical Detection, Phase I of Integrated Micro-Climatization System (IMCS).
- Initiate development of a spray-on protective coating under SOF Venture biological/chemical defense.
- Conduct demonstration of alternate guidance kits with the thermobaric bomb live unit (BLU-121/B) warhead.
- Make site selection for Reusable Full-Scale Simulant Testbed.

FY 2008 Plans:

- Not Applicable. See Projects RA, RE, RG and RM of PE 0603160BR.

FY 2009 Plans:

- Not Applicable. See Projects RA, RE, RG and RM of PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RA – Systems Engineering and Innovation

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RA - Systems Engineering and Innovation	0.000	0.000	9.126	3.687	4.106	4.154	4.154	4.154

* Funding and activities realigned from Projects BB, BI and BK of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides the research and development operations analysis support to the Agency in understanding, analysis, integration and execution of DTRA operational missions. This includes analysis of National, DoD and other Federal agencies' strategic guidance and plans in the Combating WMD, Combating Terrorism (CT) and Homeland Defense (HD) arenas through analytical political-military and technical studies, workshops and conferences. It also provides DTRA on-site support to North Atlantic Treaty Organization (NATO) and Supreme Headquarters Allied Powers, Europe (SHAPE) with a current primary focus on support to US European Command, NATO, and SHAPE in combating WMD and maintaining the NATO nuclear deterrent.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RA - Systems Engineering and Innovation	0.000	0.000	9.126	3.687

*Funding and activities realigned from Projects BB, BI and BK of PE 0603160BR in FY 2008.

Performance Metrics:

- Development of a DoD annex to the National Response plan for a pandemic flu and subsequent national-level exercises to test plan.
- Development of DTRA Security Cooperation Plans for all regional Combatant Commands.
- Development of a DTRA gap analysis of Combating WMD mission vice HD and CT mission areas to provide way ahead for DTRA operational and R&D planning.
- Robust lessons learned process that incorporates new, workable operational and technical solutions into DoD and with allies.
- Incorporation of at least 3 new technologies by FY 2013 as a result of International R&D collaboration.

FY 2006 Accomplishments:

- Not Applicable. See Projects BB, BI and BK of PE 0603160BR.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RA – Systems Engineering and Innovation

FY 2007 Plans:

- Not Applicable. See Projects BB, BI and BK of PE 0603160BR.

FY 2008 Plans:

- Support development of institutionalized plans for national response to pandemic flu.
- Complete development of all DTRA Security Cooperation Planning and associated annexes to support DoD nonproliferation, counterproliferation, and consequence management activities in selected nations within Combatant Commands' Areas of Responsibility.
- Complete gap analysis roadmap of Combating Weapons of Mass Destruction (WMD) mission and attendant issues with Combating Terrorism (CT) and Homeland Defense (HD) mission areas.
- Continue to support development and update of DTRA annexes to the U.S. European Command (EUCOM) Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater.
- Continue to work with Supreme Headquarters Allied Powers, Europe (SHAPE) J3 and J6 for survivable, reliable communications to assure command, control and positive control of the nuclear mission with the goal of North Atlantic Treaty Organization (NATO) Infrastructure Committee procurement.

FY 2009 Plans:

- Institutionalize development of Combating WMD lessons learned in that theater and with international staff across the other Combatant Commands.
- Continue to support development and update of DTRA annexes to EUCOM Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater.
- Institutionalize linkage with NATO/SHAPE and EUCOM in international R&D collaboration.
- Continue to work with SHAPE J3 and J6 for survivable, reliable communications to assure command, control and positive control of the nuclear mission with the goal of NATO Infrastructure Committee procurement.

C. Other Program Funding Summary:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RA - Systems Engineering and Innovation	0.000	0.000	22.000	26.472

D. Acquisition Strategy: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RA – Systems Engineering and Innovation

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RE - Counter-Terrorism Technologies	0.000	0.000	44.109	45.424	45.399	44.367	44.367	44.367

* Funding and activities realigned from Projects BJ and BK of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

The Counter-Terrorism Technologies Project is an over-arching project that has three distinct functional areas in support of Joint U.S. Military Forces, specifically United States Special Operations Command (USSOCOM). The R&D support to SOCOM is one of the highest priority mission areas in the Global War On Terrorism and a top priority for DTRA. The following efforts are included in this project:

Develop innovative technologies, energetic materials, and software programs to identify, defeat, contain and mitigate WMD-capable Improvised Explosive Devices (IEDs).

Develop and transition the full spectrum of new technologies for Joint U.S. Military Forces to counter WMD, enabling warfighters, specifically Special Operations Forces (SOF), to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities.

Provide oversight for CP R&D resources sent directly to USSOCOM that are used to develop SOF-unique technologies in support of SOCOM's Counter-proliferation (CP) mission. New CP technologies are developed under SOCOM management that provides SOF with the operational capability to counter WMD threats. Specific technologies are classified Alternative or Compensatory Control Measures (ACCM).

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RE - Counter-Terrorism Technologies	0.000	0.000	44.109	45.424

* Funding and activities realigned from Projects BJ and BK of PE 0603160BR in FY 2008.

Performance Metrics:

- Number of technologies developed and delivered that increase the potential mission success and reduces the number of current gaps in SOF capabilities to counter WMD when conducting Global War On Terrorism operations.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

FY 2006 Accomplishments:
- Not Applicable. See Projects BJ and BK of PE 0603160BR.

FY 2007 Plans:
- Not Applicable. See Projects BJ and BK of PE 0603160BR.

FY 2008 Plans:
- Research and develop technologies to enhance the capabilities of U.S. Forces in the Global War On Terrorism to counter WMD and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities.
- Deliver Special Operations Forces (SOF)-unique technologies. Projects planned for completion: Non-intrusive Detection (PINS-3), Gellants, Biological Detection and Identification, Phase II of Integrated Micro-Climatization System (IMCS).
- Provide management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities in coordination with United States Special Operations Command (USSOCOM).
- Develop WMD/Improvised Explosive Device (IED) defeat technologies that will increase Explosive Ordinance Disposal (EOD) capabilities to identify, defeat and contain a chemical, biological and radiological dispersal devise.
- Initiate terrorist pathway counter proliferation ATD (Specific technologies are classified Alternative Compensative Control Measures (ACCM)).
- Conduct Military Unit Assessment/Independent Validation and Verification of proven technologies.

FY 2009 Plans:
- Continue to support research and development of technologies to enhance the capabilities of U.S. Forces in the Global War On Terrorism to counter WMD and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities.
- Deliver SOF-unique technologies under the SOF Venture program. Projects planned for completion: Global Positioning Systems (GPS)-Denied Navigation and Mapping (GPS DNM), Phase III (final) of Integrated Micro-Climatization System (IMCS), NanoCatalysts.
- Continue development of various SOF-unique technologies under the SOF Venture program.
- Continue terrorist pathway counter proliferation ATD (Specific technologies are classified ACCM).

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

- Conduct Military Unit Assessment/Independent Validation and Verification of proven technologies. Provide management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities in coordination with USSOCOM.
- Develop WMD/IED defeat technologies that will increase EOD capabilities to identify, defeat and contain a chemical, biological and radiological dispersal devise.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RF – Detection Technology

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RF - Detection Technology	0.000	0.000	39.305	41.213	43.783	47.589	49.186	46.967

***** Funding and activities realigned from Projects BG and BH of PE 0602717BR and Project BI of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project develops technologies, systems and procedures to detect, identify, track, tag, locate, monitor and interdict strategic and improvised nuclear and radiological weapons, components, or materials in support of DoD requirements for combating terrorism, counter- and non-proliferation, homeland defense, and international initiatives and agreements. This project also develops the tools, technologies, communications, models, databases, and displays for forensic sampling and analysis of post-nuclear detonation debris fields to support the accurate identification and characterization of the weapons and sources of the material employed. Efforts under this project also support international peacekeeping and nonproliferation objectives, on-site and aerial inspections and monitoring, on-site sampling and sample transport, and on- and off-site analysis to meet forensic, verification, monitoring and confidence-building requirements.

The Detection Technology project under WMD Proliferation Prevention and Defeat emphasizes the advanced technology development and engineering portion of the overall effort.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RF - Detection Technology	0.000	0.000	39.305	41.213

*Funding and activities realigned from Projects BG and BH of PE 0602717BR and Project BI of PE 0603160BR in FY 2008.

Performance Metrics:

- Completion and successful laboratory testing of the helium dimer Compton imager.
- Test/demonstrate Secret/Restricted Data (S/RD) and Secret Internet Protocol Router Network (SIPRNet) communications capabilities from field units; deliver audit report for end-to-end technology demonstration of National Technical Nuclear Forensics for Attribution (NTNF) system.
- Successfully develop data integration capability with future interagency comprehensive, all domain WMD detection architecture.

- Deploy upgraded technology and Concept of Operations for sample collection, Radiochemistry (RADCHEM) analysis, encrypted communications, and data analysis; develop plan for faster diagnostics based on technology demonstrations; formulate program direction for advanced forensic sampling concepts.
- Detection standoff distance: handheld identification of 1 kilogram of shielded Highly Enriched Uranium (HEU) at 5 meters.

FY 2006 Accomplishments:
- Not Applicable. See Projects BG and BH of PE 0602717BR and Project BI of PE 0603160BR.

FY 2007 Plans:
- Not Applicable. See Projects BG and BH of PE 0602717BR and Project BI of PE 0603160BR.

FY 2008 Plans:
- Develop integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology, eliminating the logistical burden of cryogenic cooling as well as bulky gas detectors.
- Complete a Joint Capability Technology Demonstration (JCTD) effort demonstrating a modular nuclear radiation detection system capable of being mounted on multiple platforms (vehicular, aerial, marine, and handheld) and being deployed in both overt and covert situations and that can be seamlessly integrated into a sensor network to provide battlespace awareness for the theater commander. This JCTD should result in transitioning a viable modular nuclear detection system to Combatant Commands.
- Complete development of a baseline DoD large standoff active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material.
- Execute evaluation of distributed sensor systems, their communications, and their signal processing to support a prioritized development program of networks for defense, security and tracking.
- Conduct end-to-end demonstration and audit (evaluation) of global National Technical Nuclear Forensics for Attribution (NTNF) capability.
- Develop sensors to detect WMD threats as far forward as possible and in all operational environments. Develop the capability to integrate data with future interagency comprehensive, all-domain WMD detection architecture from collection to dissemination.
- Provide enhanced technical support and analysis to the Nuclear Weapons Council (NWC) and Nuclear Weapons Council Standing and Safety Committee (NWCSSC) and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RF – Detection Technology

FY 2009 Plans:

- Continue program for developing integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology.
- Initiate a full scale test and evaluation campaign for Compton imagers and a second generation effort to develop more integrated and compact imagers with enhanced capability. These second generation imagers will be more optimized to operate with an active excitation source directed at the target item.
- Continue the extensive effort begun in the Joint Capability Technology Demonstration (JCTD) to integrate solid state detectors, communications, and processors into a robust self-configuring sensor network for detecting, identifying, and tracking nuclear materials in transit.
- Complete a testing and evaluation program to assess the capabilities of biomarker expression for monitoring acute radiation exposure in Messenger Ribonucleic Acid (mRNA) and proteins utilizing voluntary human subjects, probably oncology patients, to evaluate the ability of the biodosimeter to accurately measure exposure.
- Conduct Concept of Operations demonstrations of upgraded technical capabilities for sample collection, radiochemical analysis, Secret/Restricted Data-level field-laboratory communications, and integration of design modeling and forensic data for identification and attribution.
- Develop technical information to support programmatic decisions regarding next-generation ground sampling platform, marine sampling capability, and next-generation Unmanned Aerial Vehicle (UAV) systems for air and for ground sampling.
- Continue to provide enhanced technical support and analysis to the Nuclear Weapons Council (NWC) and Nuclear Weapons Council Standing and Safety Committee (NWCSSC) and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure.

C. Other Program Funding Summary:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RF – Detection Technology	0.000	0.000	26.299	32.498

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RG – Advanced Energetics & Counter WMD Weapons

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RG - Adcanced Energetics & Counter WMD Weapons	0.000	0.000	20.470	20.550	19.670	24.706	29.321	37.997

*Funding and activities realigned from Project BK of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides advanced technology development and demonstration for defeating WMD targets (including facilities with biological and chemical agents) while minimizing collateral damage and release of those agents when using air, land and sea assets brought to the theater by the warfighters. These objectives will be accomplished by a combination of developing and/or maturing technologies, weapon systems, weapon concepts and methods. Supported products are: (1) advanced counter-WMD weapons, fuzing technology, and robotics; (2) counter force agent defeat weapons and methods; and (3) disruptive payloads and delivery systems.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RG - Adcanced Energetics & Counter WMD Weapons	0.000	0.000	20.470	20.550

*Funding and activities realigned from Project BK of PE 0603160BR in FY 2008.

Performance Metrics:

- Percent increase of Counter WMD weapon performance compared to fielded weapons (e.g. Bomb, Live Unit (BLU)-109 and BLU-113).

FY 2006 Accomplishments:

- Not Applicable. See Project BK of PE 0603160BR.

FY 2007 Plans:

- Not Applicable. See Project BK of PE 0603160BR.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RG – Advanced Energetics & Counter WMD Weapons

FY 2008 Plans:

- Continue development of advanced counter-WMD weapons and counter-force agent defeat weapons.
- Conduct high speed munition warhead component level tests supporting demonstration of improved penetration over fielded weapons.
- Initiate development of Directed Energy (DE) payload for demonstration of a counter WMD deny/disrupt mission concept.
- Site and begin building Reusable Full-Scale Live Simulant testbed to support counterforce agent defeat testing.
- Complete Joint Direct Attack Munition (JDAM) Guidance Kit Integration and Demonstration with Bomb, Live Unit (BLU)-121.
- Complete Alternate BLU-121 Manufacturing Process Qualification Testing.

FY 2009 Plans:

- Continue development of advanced counter-WMD weapons and counter-force agent defeat weapons.
- Integrate/test Insensitive Munition (IM) Agent Defeat (AD) BLU-109 payload supporting Air Force tactics, techniques and procedures for the Shredder program.
- Support the Acquisition Transition Program Support and Weapon Effects Targeting Analysis for BLU-121.

C. Other Program Funding Summary:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RG – Advanced Energetics and Counter WMD Weapons	0.000	0.000	27.899	30.748

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RI - Nuclear Survivability	0.000	0.000	18.848	18.867	18.867	18.867	18.868	18.869

* Funding and activities realigned from Project BH of PE 0602717BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project develops and demonstrates Radiation Hardened Microelectronics (RHM) for nuclear hardening and survivability of DoD systems on the Radiation Hardened Oversight Council (RHOC) Technology Roadmap and provides for the execution of force-on-force evaluations and nuclear weapons surety efforts to enhance the protection of nuclear resources.

The RHM program responds to DoD space and missile system requirements for radiation-hardened microelectronics and photonics technology to support mission needs. This program develops and demonstrates radiation-hardened, high performance prototype microelectronics to support the availability of radiation-hardened microelectronics and photonics for DoD missions from both private sector and government organizations.

MIGHTY GUARDIAN Force-on-Force tests aid in satisfying requirements for the Air Force and Navy by providing denial of access to nuclear weapons in all environments; operational, storage and in transit. The results of the evaluations identify security vulnerabilities to weapons systems that are then addressed through targeted application of research and development projects requested by the Air Force and Navy resource owners. These projects are designed to demonstrate, test, and evaluate security enhancement systems prior to service procurement.

Nuclear Weapons Surety, as tasked by the DoD Nuclear Weapon System Safety Program, provides Combatant Commands, Services, and Joint Chiefs of Staff with technical analyses, studies, research, and experimental data necessary to identify and quantify risks of plutonium dispersal and Loss of Assured Safety due to accidents, fires or natural causes during peacetime operations of the nation's nuclear weapon systems. Additionally, this will provide studies necessary to quantify the probability of success against targeted terrorist attacks on DoD facilities, while leveraging these risk assessment advances. It also provides new and innovative technologies for the protection of nuclear resources in support of Combatant Commands and Services.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RI - Nuclear Survivability	0.000	0.000	18.848	18.867

* Funding and activities realigned from Project BH of PE 0602717BR in FY 2008.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

Performance Metrics:

- Achieve Radiation Hardened (RH) 150nm structured- Application-Specific Integrated Circuit (ASIC), RH 150nm 16M Static Random Access Memory (SRAM) and Radiation Hardened by Design (RHBD) 90nm reconfigurable Field Programmable Gate Array (r-FPGA).
- Successful completion of Mighty Guardian exercises is measured by completing all necessary planning and logistics steps, troops arriving when required, training completed, execution of the exercise, redeployment of forces, and publishing a final report within 90 days of completion.
- Successful completion of exploratory research for physical security equipment and technology is determined by performers completing the project on-time and within budget, all stated tasks in the statement of objectives being met, proper reporting and coordination of decision areas, receipt of final reports closing out the project, and transitioning the project to the requesting Service.

FY 2006 Accomplishments:

- Not Applicable. See Projects BH of PE 0602717BR.

FY 2007 Plans:

- Not Applicable. See Projects BH of PE 0602717BR.

FY 2008 Plans:

- Demonstrate bulk silicon 90 nanometer (nm) radiation hardened by design technology and design libraries.
- Perform initial characterization of single event effects in 90nm technology and 65nm technologies.
- Demonstrate > 4 gigahertz (GHz) high speed radiation effects test capability.
- Demonstrate prototype silicon-on-insulator 150nm 4Mgate structured- Application-Specific Integrated Circuit (ASIC).
- Demonstrate radiation hardened 90/150nm analog/mixed-signal Phased/Delay Lock Loop circuits.
- Demonstrate 150nm radiation hardened bulk silicon & silicon-on-insulator libraries and electronic design automation technology.
- Conduct Mighty Guardian XII Force-On-Force test at Bangor, WA to evaluate nuclear security policy as it applies to weapons movement convoys from the limited area to the explosives handling wharf.
- Conduct exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

FY 2009 Plans:

- Demonstrate 90 nanometer (nm) technology substrate hardening technology.
- Demonstrate radiation hardened 90nm bulk silicon process technology and digital library.
- Demonstrate radiation hardened 150nm combined digital and analog/mixed signal Application Specific Integrated Circuits (ASIC).
- Demonstrate bulk silicon 90nm radiation hardened by design digital and analog/mixed signal libraries and System-on Chip electronic design automation technology.
- Conduct Mighty Guardian XIII Force-On-Force test to evaluate nuclear security policy as it applies to bomber generation at a location in the Air Combat Command area of operations.
- Conduct Mighty Guardian XIV Force-On-Force test at Kings Bay, GA to evaluate nuclear security policy as it applies to the waterfront.
- Conduct exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services.

C. Other Program Funding Summary:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RI - Nuclear Survivability	0.000	0.000	10.416	10.424

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RM – WMD Battle Management

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RM - WMD Battle Management	0.000	0.000	57.911	55.621	56.668	42.200	41.500	42.500

* Funding and activities realigned from Project BH of PE 0602717BR and Project BK of PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project develops, integrates, demonstrates and transitions emerging/innovative technologies to support the Counter WMD Mission. This activity specifically focuses on two critical components in countering the WMD threat:

Develop end-to-end planning capabilities including weaponeering tools to aid the Combatant Commander's targeting and weapons officers in choosing the proper weapon, fuze, and employment parameters to optimize the defeat of WMD and related hard targets. Deliver modernized, validated and fast running attack planning tools and integrating software. Leverage attack planning tools to support force protection planners and vulnerability assessment teams.

Develop, integrate, demonstrate and transition emerging/innovative technologies to provide the warfighter with an enhanced near real-time combat and battle damage assessment capability. Capability is achieved through the development of Unmanned Aerial Systems (UAS) and weapon-based sensors, platforms, taggants, seekers and other innovative technologies to; remotely sense, identify, track and target WMD-related threats; perform battle damage assessment/indication of strikes against these threats; and locate, track, collect, detect, selectively identify, and characterize Chemical Weapon (CW) and Biological Weapon (BW) aerosol agents released during these WMD counterforce strikes.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RM - WMD Battle Management	0.000	0.000	57.911	55.621

*Funding and activities realigned from Project BH of PE 0602717BR and Project BK of PE 0603160BR in FY 2008.

Performance Metrics:

- Stand off detection range of WMD reconnaissance system.
- Number of new capabilities delivered to Combatant Commanders (COCOMs).
- Number of weaponeering solutions delivered to COCOMs.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RM – WMD Battle Management

FY 2006 Accomplishments:
- Not Applicable. See Project BH of PE 0602717BR and Project BK of PE 0603160BR.

FY 2007 Plans:
- Not Applicable. See Project BH of PE 0602717BR and Project BK of PE 0603160BR.

FY 2008 Plans:
- Continue development of WMD reconnaissance technologies and WMD planning tools.
- Conduct demonstration to validate tunnel facility defeat using optimized inventory weapons attack on Capitol Peak Tunnel facilities, White Sands Missile Range (WSMR).
- Demonstrate capability to launch and control FINDER Unmanned Aerial Vehicle (UAV) from AC-130 and MQ-1 Predator to address Air Force Special Operations Command (AFSOC) requirement for off-board, below the weather imagery for pre-strike target identification and post-strike battle damage assessment.
- Conduct Spiral 1 demonstration of the Biological Combat Assessment System.
- Conduct full scale static testing of taggant technology in Bomb, Live Unit (BLU)-116 Advanced Unitary Penetrator.
- Complete design of networking, telemetry and communication components for combat assessment sensors.
- Deliver Integrated Munitions Effects Assessment (IMEA) with improved groundshock model.
- Deliver Vulnerability Assessment and Protection Option (VAPO) with improved models for global response of framed structures
- Integrate advanced command and control (C^2) capabilities into DTRA Operations Center including the Army's Command Post of the Future (CPoF) and Joint Forces Command's "Joint" variant of CPoF for improved situational awareness.
- Integrate WMD data from the Intelligence Community (IC), Combatant Commands, Services, and Agencies into the WMD Common Operating Picture (COP) and continue research and development to provide that information into National Geospatial-Intelligence Agency's Palanterra global COP.

FY 2009 Plans:
- Continue development of WMD reconnaissance technologies and WMD planning tools.
- Study/develop prototype dispense delivery mechanisms for high speed weapons in support of Global Strike combat assessment requirements.
- Complete Developmental testing of sensor suite for real-time, weapon-borne Battle Damage Indication system.
- Deliver Integrated Munitions Effects Assessment (IMEA) with integration of additional net-centric components for weaponeering.
- Deliver Vulnerability Assessment and Protection Option (VAPO) integrating the Aircraft Impact Database.

- Conduct demonstration to validate command, control and communications (C3I) tunnel facility defeat using optimized inventory weapons attack on HTD Facility 2 tunnel (Nevada Test Site).
- Continue to integrate advanced command and control (C^2) capabilities into DTRA Operations Center including the Global Command and Control System version 4 (GCCS 4.X) software suite which will allow DTRA to seamlessly share information between Combatant Commands and the inter-agency community.
- Integrate improved geospatial information, such as that provided by National Geospatial-Intelligence Agency, National Reconnaissance Office, and Project Angel Fire, into the WMD Common Operating Picture and other Command and Control capabilities for enhanced decision support.

C. Other Program Funding Summary:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RM - WMD Battle Management	0.000	0.000	26.158	29.411

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RT - Target Assessment Technologies	0.000	0.000	23.471	26.193	28.148	30.051	30.411	30.421

* Funding and activities realigned from Project BF of PE 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project represents the maturation of previous target characterization efforts. While complete physical destruction may be desired, for some hard and deeply buried targets this effect isn't practicable with current weapons and employment techniques. It may be possible, however, to deny or disrupt the mission or function of a facility. Functional defeat is facilitated through better data collection and intelligence. The defeat process includes finding and identifying a facility, characterizing its function and physical layout, determining its vulnerabilities to available weapons, planning an attack, applying force, assessing damage, and if necessary, suppressing reconstitution efforts and re-striking the facility. Target Assessment Technologies supports the Intelligence Community and the Combatant Commands (COCOMs) by providing technologies and processes to find and characterize hard and deeply buried targets and then assess the results of attacks against those targets. Overall objectives are to develop new methodologies, processes and technologies for detecting, locating, identifying, physically and functionally characterizing, modeling, and assessing new and existing hard and deeply buried targets to support full dimensional defeat operations. Extending this activity to hardened WMD target characterization and analysis capability presents even greater technical challenges. Target Assessment Technologies consists of three subordinate and related activities, Targeting and Intelligence Community technologies, Find, Characterize, Assess technology development, and the WMD Target Research Analysis Center initiative.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009
Project RT - Target Assessment Technologies	0.000	0.000	23.471	26.193

*Funding and activities realigned from Project BF of PE 0602716BR in FY 2008.

Performance Metrics:

- Number of target characterizations, 3-D target models and weaponeering solutions delivered to the COCOMs and Intelligence Community in response to prioritized requirements.
- Number of new geological properties models added to the geological characterization process each year.
- Efficiency of Underground Targeting and Analysis System (UTAS).

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

FY 2006 Accomplishments:
- Not Applicable. See Project BF of PE 0602716BR.

FY 2007 Plans:
- Not Applicable. See Project BF of PE 0602716BR.

FY 2008 Plans:
- Continue research and development of targeting and Intelligence Community technologies and find/characterize/assess technologies.
- Begin research and development support for a WMD Target Research and Analysis Center.
- Enhance the Underground Targeting and Analysis System (UTAS) software capability to include the capability to model additional Underground Facility (UGF) structural details and WMD functional features.
- Continue to provide target characterization training to increase the size and expertise of the UGF and WMD target defeat communities.
- Conduct a UGF vulnerability assessment exercise with the operations and intelligence communities to gauge the effectiveness of our target characterization tools and processes.
- Develop a prototype Integrated Sensor System for use in UGF characterization and assessment demonstrations.
- Continue development of UGF signature recognition capability to facilitate functional characterization of UGF targets for the Combatant Commands (COCOMs) and Intelligence Community.
- Develop additional geological materials models and enhanced site-specific geological characterization processes to increase the fidelity and accuracy of our UGF characterizations.

FY 2009 Plans:
- Continue research and development of targeting and Intelligence Community technologies and find/characterize/assess technologies.
- Begin research and development support for a WMD Target Research and Analysis Center.
- Deliver enhanced UTAS special operations mission planning capabilities to the special operations community.
- Continue to provide target characterization training for the UGF and WMD target defeat communities.
- Conduct an exercise with the operations and intelligence communities to evaluate the effectiveness of our tools and processes to support the characterization of UGF and WMD targets.
- Perform a developmental evaluation of the capability of a prototype Integrated Sensor System to support the UGF and WMD target characterization and assessment processes.

Exhibit R-2a, RDT&E Project Justification	Date: February 2007
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

- Continue development of an Underground Facility (UGF) signatures database to facilitate functional characterization of UGF targets for the Combatant Commands and Intelligence Community.
- Develop additional geological materials models to increase the fidelity and accuracy of our UGF characterizations.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.