Department of Defense
Fiscal Year (FY) 2011 President's Budget

February 2010

Defense Threat Reduction Agency

Justification Book

Research, Development, Test & Evaluation, Defense-Wide - 0400

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Exhibit R-1, RDT&E Programs
Defense Threat Reduction Agency

Appropriation: RDT&E, Defense-Wide **Date: February 2010**

OVERVIEW

The mission of the Defense Threat Reduction Agency (DTRA) is to safeguard the United States and its allies from Weapons of Mass Destruction (WMD) (Chemical, Biological, Radiological, Nuclear, and High Yield Explosives) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects.

The DTRA is the only DoD agency focused fulltime on the Countering of WMD threats (C-WMD). The agency is the DoD Combat Support Agency for the C-WMD mission; executes national missions in arms control monitoring and verification, and threat reduction; builds and leverages DoD, US Government, and international partnerships; performs related science and technology development including the Science and Technology portion of the DoD Chemical-Biological Defense Program; develops and provides capabilities that make strategic differences in countering WMD; and provides unique support to the US nuclear deterrent. The DTRA Director concurrently serves as the Director for the US Strategic Command's Center for Combating WMD that maintains WMD situational awareness, establishes technical support and interagency relationships, conducts C-WMD planning activities, synchronizes C-WMD activities among the Combatant Commanders, and advocates for C-WMD capabilities.

The DTRA, in partnership with other US Government agencies, is embarked on a global strategy to increase security cooperation with friends, allies, and other partners to dramatically reduce WMD worldwide. While this strategy requires coordinated action across the US Government, DoD brings to the table a range of expertise, experience, and capabilities from its successes with the Nunn-Lugar Cooperative Threat Reduction (CTR) Program and its arms control monitoring and verification activities, as well as other similar security cooperation programs instituted over the past decade.

This new model for global security engagement, called Nunn-Lugar Global Cooperation, emphasizes greater program agility, flexibility, and responsiveness; expanded interagency and international partnerships; expanded roles for the Combatant Commanders and increased DTRA support to their Theater Security Engagement; and integration of other threat reduction activities such as the Proliferation Security Initiative, Global Initiative to Combat Nuclear Terrorism, and the G8 Global Partnership.

The Defense Threat Reduction Agency (DTRA) has one of the most challenging missions of any Department of Defense (DoD) Agency---combating weapons of mass destruction (CWMD). Our investment strategy and the difficult funding choices made regarding specific Agency priorities for the FY 2011 budget request responds directly to DoD, Presidential CWMD strategic priorities, and seeks to fill critical investment and sustainment gaps across the DTRA CWMD spectrum in the areas of Arms Control & Verification Technology,

OVERVIEW (continued)

Biological Threat Reduction Program, Combating WMD-Terrorism, Global Nuclear Lockdown, Nimble Elder, Joint Intelligence Preparation of the Operating Environment, National Technical Nuclear Forensics, Reachback, and the Counter-WMD Analysis Center (CWAC). The DTRA and Cooperative Threat Reduction FY 2011 budget requests reflect programmatic increases totaling more than $239 million to support these priorities: (Research & Development: $65 million; Operation & Maintenance: $49.8 million; Procurement, Defense-wide: $5.7 million; Cooperative Threat Reduction Program: $118.7 million).

The agency's Research, Development, Test and Evaluation (RDT&E) program is designed to meet the most pressing WMD challenges and to reduce the time needed to close WMD capability gaps. RDT&E priorities include: the nexus of WMD and terrorism; countering engineered pathogens; non-traditional agents; denying safe refuge; comprehensive assessments of WMD consequences; post-attack forensics; nuclear and biological detection; engagement with the Intelligence Community; and bolstering Basic Science and University engagements.

Defense Threat Reduction Agency
FY 2011 President's Budget
Exhibit R-1 FY 2011 Base and Overseas Contingency Operations (OCO) Request
(Dollars in Thousands)

Appropriation: 0400D Research, Development, Test & Eval, DW

Date: 20 Jan 2010

Line No	Program Element Number	Item	Act	FY 2009 (Base & OCO)	FY 2010 Base & OCO Enacted	FY 2010 Supplemental Request	FY 2010 Total	FY 2011 Base	FY 2011 OCO	FY 2011 Total Request	Sec
1	0601000BR	DTRA Basic Research Initiative	01	28,798	40,848		40,848	47,412		47,412	U
Basic Research				28,798	40,848		40,848	47,412		47,412	
21	0602718BR	Weapons of Mass Destruction Defeat Technologies	02	217,044	221,185		221,185	212,742		212,742	U
Applied Research				217,044	221,185		221,185	212,742		212,742	
27	0603160BR	Counterproliferation Initiatives - Proliferation Prevention and Defeat	03	221,471	238,773		238,773	295,163		295,163	U
Advanced Technology Development (ATD)				221,471	238,773		238,773	295,163		295,163	
120	0605000BR	Weapons of Mass Destruction Defeat Capabilities	05	15,499	9,489		9,489	7,307		7,307	U
System Development and Demonstration (SDD)				15,499	9,489		9,489	7,307		7,307	
150	0605502BR	Small Business Innovation Research	06	8,076							U
RDT&E Management Support				8,076							
Total Defense Threat Reduction Agency				490,888	510,295		510,295	562,624		562,624	

Exhibit R-1G: FY 2011 President's Budget (Published), as of January 20, 2010 at 10:18:00

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	28.798	40.848	47.412	0.000	47.412	47.737	48.071	48.493	48.925	Continuing	Continuing
RU: **Fundamental Research for Combating WMD*	28.798	40.848	47.412	0.000	47.412	47.737	48.071	48.493	48.925	Continuing	Continuing

Note

*Project title change from Basic Research for WMD Knowledge Gaps starting in FY 2010

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) safeguards America and its allies from Weapons of Mass Destruction (chemical, biological, radiological, nuclear, and high explosives) by providing capabilities to reduce, eliminate, and counter the threat, and mitigate its effects. The Basic Research Initiative program provides for the discovery and development of fundamental knowledge and understanding by research performers drawn primarily from academia and world-class research institutions in government and industry. This leverages Department of Defense's $1 billion annual investment in basic research by ensuring a motivation within the scientific community to conduct research benefiting Weapons of Mass Destruction-related defense missions and by improving Agency knowledge of other research efforts of potential benefit to DTRA nonproliferation, counterproliferation and consequence management efforts.

These efforts are closely coordinated with the Chem-Bio Technology portfolio which executes a basic research program under the joint Chem-Bio Defense Program. Agency research interests are coordinated with those of Defense Advanced Research Projects Agency and Service basic research programs through the Defense Basic Research Advisory Group. DTRA reviews research interests annually to focus on technology areas not clearly addressed by other basic research efforts.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	**R-1 ITEM NOMENCLATURE** PE 0601000BR: *DTRA Basic Research Initiative*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	22.329	48.544	0.000	0.000	0.000
Current President's Budget	28.798	40.848	47.412	0.000	47.412
Total Adjustments	6.469	-7.696	47.412	0.000	47.412
• Congressional General Reductions		-0.196			
• Congressional Directed Reductions		-7.500			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.531	0.000			
• Realignment / Internal Functional Transfer	7.000	0.000	-0.210	0.000	-0.210
• Inflation Reduction	0.000	0.000	-0.266	0.000	-0.266
• Other Program Adjustments	0.000	0.000	47.888	0.000	47.888

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: RU: **Fundamental Research for Combating WMD*		
Congressional Add: *Dual Use Technologies for Bio-Defense Drug & Novel Therapeutics*	1.200	0.000
Congressional Add: *University Strategic Partnership*	3.200	0.000
Congressional Add Subtotals for Project: RU	4.400	0.000
Congressional Add Totals for all Projects	4.400	0.000

Change Summary Explanation

The increase of $12 million between FY 2009 and FY 2010 reflect the Agency's commitment to realign research efforts to achieve the Department of Defense's investment norm of 10-12% of total obligation authority for Basic Research. The Defense Threat Reduction Agency's basic research program supports high-payoff, novel research that will provide benefits to the warfighter in important areas of the Combating Weapons of Mass Destruction (CWMD) mission. Three exemplary areas are: (1) remote detection of fissile material; (2) defeat of WMD-related facilities and materials with acceptable collateral damage; and (3) advances in physical and social network analyses that fosters the means for countering electromagnetic pulse attacks and terrorism. Another very important

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*

benefit of basic research is the training of the next generation of scientists, who will be needed to support the warfighter in future operations against emerging WMD threats. The realignment in funding to basic research and systems engineering is to grow the scientific community in support of WMD research to provide far sighted, high payoff research to reduce, eliminate, and mitigate the effects of WMD. The FY 2010 congressional reduction was levied for excessive growth ahead of program assessment.

The DoD did not estimate FY 2011 costs when the FY 2010 President's Budget was prepared. There is a FY 2011 decrease that reflects the internal functional transfer of advisory and assistance services from DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account ($.210 million). This transfer reflects the internal functional realignment of advisory and assistance services and other business-related costs that were formerly captured under DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. As part of DTRA's continued effort to integrate and refine its functions and activities, this transfer more appropriately aligns this funding to the proper appropriation. At the Agency level, this functional transfer between appropriations will have a zero sum impact to these budget line items. An additional decrease of $.266 million is associated with changes in the inflation rates and therefore is a price change, not a program change.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*	PROJECT RU: **Fundamental Research for Combating WMD*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RU: **Fundamental Research for Combating WMD*	28.798	40.848	47.412	0.000	47.412	47.737	48.071	48.493	48.925	Continuing	Continuing

Note

*Project title change from Basic Research for WMD Knowledge Gaps starting in FY 2010

A. Mission Description and Budget Item Justification

This project provides for the discovery and development of fundamental knowledge and understanding by research performers drawn primarily from academia and world-class research institutions in government and industry. This leverages the Department of Defense's (DoD) $1 billion annual investment in basic research by ensuring a motivation within the scientific community to conduct research benefiting Weapons of Mass Destruction-related defense missions and by improving Agency knowledge of other research efforts of potential benefit to Defense Threat Reduction Agency (DTRA) nonproliferation, counterproliferation and consequence management efforts. The increase in FY 2010 reflects the DTRA corporate decision to fund the 6.1 Basic Research program at the DoD investment norm of 10-12% of Total Obligation Authority.

These efforts are closely coordinated with the Chem-Bio Technology Portfolio which executes a basic research program under the joint Chem-Bio Defense Program. Agency research interests are coordinated with those of Defense Advanced Research Projects Agency and Service basic research programs through the Defense Basic Research Advisory Group. DTRA reviews research interests annually to focus on technology areas not clearly addressed by other basic research efforts.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Project RU: Fundamental Research for Combating WMD	24.398	40.848	47.412	0.000	47.412
FY 2009 Accomplishments: - Expanded the FY 2008 basic research portfolio to 100 basic research initiatives dedicated to developing better and new understanding of science principles that can underwrite science and technology to meet strategic challenges. Expanded opportunities to include foreign universities. The overall research goal to build a 6.1 portfolio that represents approximately 10-12% of the Defense					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*	PROJECT RU: **Fundamental Research for Combating WMD*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Threat Reduction Agency (DTRA) research and development investment beginning in the FY 2010 timeframe was met. - Conducted a technical review of each grant to assess the scientific advancements and progress in meeting the award's technical objectives and to foster collaboration and build relationships within the scientific community. - Conducted an external panel review of the basic research program, open to Department of Defense (DoD) research stakeholders, to assess the focus and scope of the program with respect to the Combating Weapons of Mass Destruction (CWMD) challenges, and to assess the coordination of CWMD basic research across DoD mission space and across the broader basic research community to avoid unintended duplication and ensure successful partnerships. *FY 2010 Plans:* - Expand the FY 2009 basic research portfolio by adding an additional 180 research investigators to the basic research community dedicated to developing better and new understanding of science principals that can underwrite science and technology to meet strategic challenges. The expanded portfolio will include the Combating Weapon of Mass Destruction (CWMD) grand challenge for the DoD. The goal is to build a 6.1 basic research portfolio of approximately 10-12% of the DTRA research and development investment. *FY 2011 Base Plans:* - Program expected to be managing over 300 active basic research awards on a three year cycle. The Agency's 6.1 basic research portfolio is expected to continue the CWMD grand challenge for the DoD, and be capitalized at approximately 10-12% of the DTRA research and development investment. - Conduct a technical review of each grant to assess the scientific advancements and progress in meeting the award's technical objectives and to foster collaboration and build relationships within the scientific community. - Conduct an external panel review of the basic research program, open to DoD research stakeholders, to assess the focus and scope of the program with respect to the CWMD challenges,					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*	PROJECT RU: **Fundamental Research for Combating WMD*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
and to assess the coordination of CWMD basic research across DoD mission space and across the broader basic research community to avoid unintended duplication and ensure successful partnerships.					
Accomplishments/Planned Programs Subtotals	24.398	40.848	47.412	0.000	47.412

	FY 2009	FY 2010
Congressional Add: Dual Use Technologies for Bio-Defense Drug & Novel Therapeutics *FY 2009 Accomplishments:* - Basic research will focus on containment and renewal of viral threats.	1.200	0.000
Congressional Add: University Strategic Partnership *FY 2009 Accomplishments:* - Congressional Add funded 3 full and open competition grants to the University of New Mexico. - Basic research will focus on increasing fundamental understanding in the Counter WMD space.	3.200	0.000
Congressional Adds Subtotals	4.400	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 1: *Basic Research*	R-1 ITEM NOMENCLATURE PE 0601000BR: *DTRA Basic Research Initiative*	PROJECT RU: **Fundamental Research for Combating WMD*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 20/0602718BR: *WMD Defeat Technologies*	14.711	13.484	10.385		10.385	10.160	10.011	9.846	9.690	Continuing	Continuing

D. Acquisition Strategy

Procurement methods include in-scope award through Defense Threat Reduction Agency University Strategic Partnership, collaborative funding through other organizations, and competitive award through Broad Agency Announcement.

E. Performance Metrics

Project performance is measured via a combination of statistics including the number of publications generated, number of students trained in sciences and engineering supporting DoD educational goals, number of research organizations participating, and percentage of participating universities on the US News & World Report “Best Colleges” list.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*				R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	217.044	221.185	212.742	0.000	212.742	206.170	202.610	203.558	207.252	Continuing	Continuing
RA: *Systems Engineering and Innovation*	55.281	55.857	53.464	0.000	53.464	53.231	52.905	51.754	53.164	Continuing	Continuing
RF: *Detection Technology*	38.766	47.008	52.649	0.000	52.649	48.406	45.660	46.345	47.046	Continuing	Continuing
RG: *Advanced Energetics & Counter WMD Weapons*	21.265	32.381	29.139	0.000	29.139	27.522	26.483	26.883	27.282	Continuing	Continuing
RI: *Nuclear Survivability*	29.359	18.660	17.902	0.000	17.902	17.788	17.695	17.962	18.250	Continuing	Continuing
RL: *Nuclear & Radiological Effects*	15.041	19.704	16.776	0.000	16.776	17.323	17.067	17.336	17.612	Continuing	Continuing
RM: *WMD Battle Management*	25.210	14.440	10.899	0.000	10.899	10.303	11.435	11.727	12.107	Continuing	Continuing
RR: *Test Infrastructure*	17.411	19.651	21.528	0.000	21.528	21.437	21.354	21.705	22.101	Continuing	Continuing
RU: **Fundamental Research for Combating WMD*	14.711	13.484	10.385	0.000	10.385	10.160	10.011	9.846	9.690	Continuing	Continuing

Note

*Project title change from Basic Research for WMD Knowledge Gaps starting in FY 2010

A. Mission Description and Budget Item Justification

The mission of the Defense Threat Reduction Agency (DTRA) is to safeguard America and its allies from Weapons of Mass Destruction (WMD) by reducing the present threat and preparing for the future threat. This mission directly reflects several national and Department of Defense level guidance/vision documents to include the National Security Strategy, Unified Command Plan, National Strategy to Combat WMD, Counterproliferation Interdiction, National Strategy for Combating Terrorism, National Military Strategy, Global Development of Forces, Global Employment of Forces, National Military Strategy for Combating WMD, National Military Strategic Plan for the War on Terrorism, Joint Strategic Capabilities Plan (including the Nuclear Annex), and Nuclear Posture Review. To achieve this mission, DTRA has identified principal objectives along with strategies and tasks to ensure the objectives are met. Three of these objectives are to deter the use of WMD, reduce the present threat and prepare for the future threat. A focused, strong threat reduction technology base is critical to achieving these objectives and is closely tied with the operational support programs that make up its combat support mission. DTRA has taken the steps to develop this technology base and provide a foundation for transformational activities within the WMD arena.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*

Project RA provides the research and development both for systems engineering and analysis support across all other projects and innovative counterproliferation research and technical reachback support.

Project RF 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 Department of Defense (DoD) requirements for combating terrorism, counterproliferation and nonproliferation, homeland defense, and international initiatives and agreements.

Project RG develops advanced technologies and weapon concepts and validates their applicability as counter Weapons of Mass Destruction (WMD) weapon systems.

Project RI provides the capability for DoD nuclear forces and their associated control and support systems and facilities in wartime to avoid, repel, or withstand attack or other hostile action, to the extent that essential functions can continue or be resumed after the onset of hostile action. Funding in this project reflects a rebalancing of efforts within the program element to augment the Radiation Hardened Microelectronics Program and enabling technologies to enhance Nuclear Weapons Effects (NWE) experimentation capability.

Project RL develops nuclear and radiological assessment modeling tools to support military operational planning, weapon effects predictions, and strategic system design decisions.

Project RM provides (1) full scale testing of counter WMD weapon effects, sensor performance, and weapon delivery optimization, (2) weapon effects modeling, and (3) the Defense Threat Reduction Agency Experimentation Lab.

Project RR provides a unique national test bed capability for simulated WMD facility characterization, weapon-target interaction, and WMD facility defeat testing to respond to operational needs by developing and maintaining test beds used by the DoD, the Services, the Combatant Commanders and other federal agencies to evaluate the implications of WMD, conventional, and other special weapon use against U.S. military or civilian systems and targets.

Project RU provides (1) strategic studies to support DoD, (2) Decision support tools and analysis to support combating WMD research and development investments, and (3) early applied research for technology development.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602718BR: *WMD Defeat Technologies*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	213.606	219.130	0.000	0.000	0.000
Current President's Budget	217.044	221.185	212.742	0.000	212.742
Total Adjustments	3.438	2.055	212.742	0.000	212.742
• Congressional General Reductions		-1.065			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		3.120			
• Congressional Directed Transfers		0.000			
• Reprogrammings	8.783	0.000			
• SBIR/STTR Transfer	-3.845	0.000			
• Realignment / Internal Functional Transfer	-1.500	0.000	-4.233	0.000	-4.233
• Inflation Reduction	0.000	0.000	-1.116	0.000	-1.116
• Other Program Adjustment	0.000	0.000	218.091	0.000	218.091

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: RA: *Systems Engineering and Innovation*		
Congressional Add: *Comprehensive National Incident Management System*	2.000	0.000
Congressional Add Subtotals for Project: RA	2.000	0.000
Project: RM: *WMD Battle Management*		
Congressional Add: *National Center for Blast Mitigation & Protection*	0.000	1.200
Congressional Add Subtotals for Project: RM	0.000	1.200
Project: RU: **Fundamental Research for Combating WMD*		
Congressional Add: *Center for Nonproliferation Studies, Monterey Institute for International Affairs*	1.200	0.000
Congressional Add: *University Strategic Partnership*	0.000	1.920

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602718BR: *WMD Defeat Technologies*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Congressional Add Subtotals for Project: RU	1.200	1.920
Congressional Add Totals for all Projects	3.200	3.120

Change Summary Explanation

The FY 2009 increase from the previous budget submission reflects the net effect of two reprogramming actions. The FY09-04 PA reprogramming action to accelerate ongoing DTRA research in active interrogation technologies and to accelerate ongoing efforts to identify and develop the technologies necessary to provide an advanced nuclear weapon neutralization capability and the FY 09-26 PA reprogramming action in support of higher priority Department needs.

The DoD did not estimate FY 2011 costs when the FY 2010 President's Budget was prepared. The FY2011 budget reflects an increase for Near Real Time Reachback Support (NRTRS) Demonstration to investigate remote warfighter decision making in WMD Operations using high performance computational tools, visualization, user input and network accessible DTRA Subject Matter Expertise (SME). The demonstration will provide a platform within the Commander's decision cycle time in support of courses of action and tactical decisions related to WMD operations.

The FY 2011 increase is offset by the internal functional transfer of advisory and assistance services from DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. This transfer reflects the internal functional realignment of advisory and assistance services and other business-related costs that were formerly captured under DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. As part of DTRA's continued effort to integrate and refine its functions and activities, this transfer more appropriately aligns this funding to the proper appropriation. At the Agency level, this functional transfer between appropriations will have a zero sum impact to these budget line items. An additional decrease of $1.116 million is associated with changes in the inflation rates and therefore is a price change, not a program change.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RA: *Systems Engineering and Innovation*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RA: *Systems Engineering and Innovation*	55.281	55.857	53.464	0.000	53.464	53.231	52.905	51.754	53.164	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Systems Engineering and Innovation project provides (1) systems engineering and analysis support across all other Projects, (2) innovative counterproliferation research, and (3) technical advisory reachback support on Weapons of Mass Destruction (WMD) effects and consequences. The systems engineering effort provides research and development with requirements, technology, architecture analyses and proof-of-principle capability necessary for making decisions on strategic planning, research and development investments, new initiatives, cooperation, ventures with new customers, and accomplishment of high-level, short notice special projects. It also conducts the development, validation and fielding of the Arms Control Information System as a part of the U.S. commitment under arms control treaties. The innovative counterproliferation effort conducts research and development to investigate, identify, develop and transition short term, high payoff technologies from Defense Threat Reduction Agency (DTRA), other government agencies, industry, academia and international Science and Technology partners into the respective DTRA research and development programs. The technical reachback effort provides 24 hours, 7 days per week information and analyses on potential impacts of a WMD event to Warfighters and First Responders in consult with DTRA's Combating WMD Research and Development subject matter experts. This project also provides technical support to the DTRA London Office.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RA: Systems Engineering and Innovation	53.281	55.857	53.464	0.000	53.464
Project RA provides the research and development both for systems engineering and analysis support across all other projects and innovative counterproliferation research and technical reachback support.					
FY 2009 Accomplishments: - Continued to provide support for requirements and gap analysis to enable program managers to identify, conduct, and deliver innovative Science and Technology to combat WMD. As a result of this support, DTRA deployed new constructive simulation trade space environment and supported requirement studies for efforts to prevent loose nukes experimentation campaign, efforts to control					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
chemical and biological weapons, electromagnetic pulse (EMP) Vulnerability, and the Global Nuclear Defense System. - Continued to conduct studies and develop systems architectures to enable research and development efforts to meet capability gaps by translating Agency goals and Concept of Operations into actionable products. As a result of these efforts, DTRA provided analysis support to U.S. Pacific Command, U.S. Joint Forces Command, OSD Policy, and the Quadrennial Defense Review. - Initiated five new systems engineering based analyses for distributed decision support and analysis, battle management, situational awareness, medical manufacturing readiness levels, nuclear enterprise, and 21st century technology needs. Numerous projects completed within the overall categories listed above and project completion will continue through FY 2010. - Completed and identifying transition paths for innovative projects in threat anticipation, explosives detection, bio-agent sampling for real-time detection, and electronic device detection. - Solicited new innovative research projects. *FY 2010 Plans:* - Initial operational capability for systems engineering decision support tools. Direct support to Defense Threat Reduction Agency (DTRA) programs and projects for analyzing and determining key performance and key technical parameters to support investment strategies. - Continue requirements and gap analyses to enable research and development efforts to meet combating WMD capability gaps. Support program and project managers by translating Agency goals and Concept of Operations into actionable products. - Initial 21st century nuclear threat assessment in support of the Nuclear Posture Review. - Initial Battle Management Architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA mission and active projects. - Initial Nuclear Enterprise architecture analysis. - Initiate three new systems engineering-based special projects.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Receive transition, management and out year funding of decision-support tools from Project RU – Fundamental Research for Combating WMD. - Complete and transition innovative projects in portable neutron sources for nuclear detection and radio systems for use in jamming environments. - Complete and transition micro miniature chemical detector for unattended sensors. - Solicit new innovative research projects. *FY 2011 Base Plans:* - Final operational capability for systems engineering decision support tools. Direct support to DTRA programs and projects for analyzing and determining key performance and key technical parameters to support investment strategies. - Continue requirements and gap analyses to enable research and development efforts to meet combating WMD capability gaps. Support program and project managers by translating Agency goals and Concept of Operations into actionable products. - Complete 21st century nuclear threat assessment. - Complete the Distributed Decision Support and Analysis architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA Mission and active projects. - Complete Nuclear Enterprise architecture analysis. - Initiate three new systems-engineering based special projects. - Solicit new innovative research projects. - Complete reconstructing the current networks to produce the DTRA Integration Technical Experimentation Center (DITEC) as an environment to test and assess new technologies and configuration changes. - Develop and integrate secure core infrastructure enhancements that remediate vulnerability issues. - Engineer and deploy full virtual infrastructure modeling and anomaly detection capability.					
Accomplishments/Planned Programs Subtotals	53.281	55.857	53.464	0.000	53.464

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Comprehensive National Incident Management System *FY 2009 Accomplishments:* - Continued baseline research and development on the underlying technology upon which each Comprehensive National Incident Management System (CNIMS) capability is based. Demonstrated capabilities for large-scale national and regional pandemic influenza studies. Investigated methodologies necessary to provide complex situational representation and Course of Action (CoA) analyses including public health interventions. - Employing the core research and development technologies, CNIMS provided working level, demonstrative studies supporting the Department of Health & Human Services Assistant Secretary for Preparedness and Response (HHS/ASPR) Fusion Cell and USNORTHCOM (Surgeon General) in support of recent H1NI pandemic.	2.000	0.000
Congressional Adds Subtotals	2.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0603160BR: *Proliferation Prevention and Defeat*	17.447	7.314	7.270		7.270	7.342	7.346	5.937	5.859	Continuing	Continuing

D. Acquisition Strategy

Not Applicable

E. Performance Metrics

Number of customer requests for data analysis compared to historical level.

Number of changes to investments based on systems engineering analyses.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	**R-1 ITEM NOMENCLATURE** PE 0602718BR: *WMD Defeat Technologies*	**PROJECT** RA: *Systems Engineering and Innovation*

Number of exercise and operations supported.

Number of Defense Acquisition Workforce Improvement Act certified systems engineers.

New capabilities delivered and transitioned to operational capabilities.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RF: *Detection Technology*	38.766	47.008	52.649	0.000	52.649	48.406	45.660	46.345	47.046	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Detection Technology 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 Department of Defense requirements for combating terrorism, counterproliferation and nonproliferation, homeland defense, and international initiatives and agreements. This project researches, develops, demonstrates, and transitions advanced technologies to improve: operational capability to detect and identify nuclear and radiological weapons; post-detonation National Technical Nuclear Forensics capabilities; and to support the attribution process. 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 Weapons of Mass Destruction Proliferation Prevention and Defeat emphasizes the advanced technology development and engineering portion of the overall effort.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RF: Detection Technology	38.766	47.008	52.649	0.000	52.649
Project RF 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 Department of Defense (DoD) requirements for combating terrorism, counterproliferation and nonproliferation, homeland defense, and international initiatives and agreements.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Continued 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. - Initiated 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. - Continued program to develop systems that enable consequence management, to include the protection of forces. - Performed field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continued to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continued to develop upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Developed technical information to support programmatic decisions regarding next-generation ground sampling capabilities, marine sampling capability, and next-generation Unmanned Aerial Systems for air and ground sampling. Support potential development/conduct of a Nuclear Forensics Joint Concept Technology Demonstration (JCTD). - Continued to provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision makers to transform the nuclear stockpile and infrastructure. - Commenced an effort to develop a portable stand off Bremsstrauhlung active interrogation system capable of being mounted on an aerial platform that can be seamlessly integrated into a bi-static or					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
mono-static detector network to provide battle space awareness for hidden and shielded nuclear material for the theater commander. - Continued to investigate active interrogation as a safe method of standoff detection in situations where dosage to people and cargo are below the allowable limits. - Continued cooperation and acceptance of DTRA developed detection technologies for operational development. - Continued cooperation and acceptance of DTRA developed post nuclear event collection technologies for operational development. - Continued transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. - Exercised developmental collection capabilities with table top experiment, command post exercise, and field test experiment. - Continued enhancement/maintenance of the Sentry/Sniper databases. Integrated chemical and biological weapon information and a decision matrix into a comprehensive WMD database. - Continued robotic ground sample collection improvements. - Continued development techniques, tactics, and procedures of a nuclear forensics ground sample collection team. - Conducted modeling, simulation and experiments to evaluate the feasibility of using muons and protons to stimulate fissions in nuclear materials from standoff ranges. *FY 2010 Plans:* - Complete design for a baseline Department of Defense large standoff proton active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Continue the extensive effort begun in the standoff Bremsstrauhlung active interrogation system Joint Capability Technology Demonstration to develop a standoff active interrogation system to detect hidden and shielded nuclear material.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Investigate the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conduct experiments to validate the feasibility of the approach. *FY 2011 Base Plans:* - Complete development of a fielded standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material. - Continue development of a baseline DoD large standoff monoenergetic or wakefield accelerator active interrogation system to provide a new reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Continue execution of the National Technical Nuclear Forensics Joint Concept Technology Demonstration (JCTD).					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Investigate the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conduct experiments to validate the feasibility of the approach. - Investigate alternative methods to stimulate fissions in nuclear materials from standoff ranges, including the use of high-energy lasers to generate beams of mono-energetic x-rays. - Develop methods to rapidly determine nuclear weapon yields post-event, by investigating alternative prompt nuclear weapons effects on the environment. - Develop improved correlation tools, signature databases, and modeling of device/production design space to increase confidence, decrease uncertainties and timelines, to better support production of consensus technical forensics results. - Transition alternative neutron detection materials and systems as an alternative to the use of helium-3.					
Accomplishments/Planned Programs Subtotals	38.766	47.008	52.649	0.000	52.649

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0603160BR: *Proliferation Prevention and Defeat*	60.622	70.627	90.688		90.688	89.700	89.898	90.993	91.374	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Successful completion of laboratory testing of the helium dimer Compton imager.

Successful completion of the individual digital dosimeter project.

Increase standoff detection distance using a mobile active interrogation system to stimulate characteristic neutron and gamma ray signals from nuclear material.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RF: *Detection Technology*

Successful acceptance and operational development of transitional detection technologies.

Successful demonstrations of a ground sampling forensics capability to support attribution involving both Radiological Dispersal and Improvised Nuclear Devices.

Deliver technical equipment prototypes to reduce their current gaps in technology, to locate, characterize and provide advanced diagnostics to defeat Weapons of Mass Destruction devices in support of a classified Chairman Joint Chiefs of Staff plan.

Improve forensics tool capabilities.

Support development of a National Technical Nuclear Forensics (NTNF) capability through development of technologies/prototypes addressing gaps and shortfalls in Department of Defense (DoD) NTNF capabilities, and through participation in the interagency process. Note: Specific metrics associated with NTNF are classified.

Sustain readiness via lab exercises and Quality Control and Quality Assurance processes. Conduct successful separate collection exercises specific to DoD NTNF mission.

Support completion of the Department of Defense (DoD) Directive promulgating DoD support to the National Technical Forensics Program. Draft strategic Concept of Operations for the Commander, U.S. Strategic Command Center for Combating Weapons of Mass Destruction that addresses post-detonation NTNF operational response.

Continue to maintain/enhance the Sentry/Sniper databases and assist in populating the Sniper Chemical and Biological database.

Use an active interrogation system to interrogate and differentiate Special Nuclear Materials and an inert material at extended ranges.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RG: *Advanced Energetics & Counter WMD Weapons*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RG: *Advanced Energetics & Counter WMD Weapons*	21.265	32.381	29.139	0.000	29.139	27.522	26.483	26.883	27.282	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Energetics & Counter WMD Weapons project provides applied research supporting defeat of Weapons of Mass Destruction (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. The effort also focuses on accelerating the development of advanced energetics technology (highly novel chemical and non-chemical energy systems), integrating disruptive payloads and technologies into existing and next generation weapon systems, developing a Hard and Deeply Buried Target (HDBT) bunker buster capability that produces a threshold of five-fold in defeat capability over current bunker buster capability, ten-fold over current capability by FY 2013 and providing residual and transition support of these products. These objectives will be accomplished by a combination of developing and/or maturing technologies, weapon systems, weapon concepts and methods. Supported products are: (1) counter force weapons, fuzing technology, and robotics; (2) counter force agents and methods; and (3) disruptive payloads and delivery systems.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RG: Advanced Energetics & Counter WMD Weapons	21.265	32.381	29.139	0.000	29.139
Project RG develops advanced technologies and weapon concepts and validates their applicability as counter Weapons of Mass Destruction (WMD) weapon systems. *FY 2009 Accomplishments:* - Conducted two flight tests of the Massive Ordnance Penetrator (MOP), successfully demonstrating safe release from the B-52 aircraft, warhead and explosive survivability upon impact, and fuze functionality. - Continued development of technologies for counterforce agent defeat, advanced payloads, counter WMD payload delivery systems, and advanced counter WMD weapons.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RG: *Advanced Energetics & Counter WMD Weapons*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continued to develop non-kinetic based counter-WMD process modeling capability and integrate it into High Level Architecture backbone. - Conducted survey, analysis and down-select of non-kinetic test beds, models and capabilities. - Completed sub-scale testing of brass board Sandia National Lab 3 axis digital data booster-cup recorder. - Completed Counter WMD Deny Payload component test. - Continued scale tunnel lethality tests, completed 14 tests on six promising high-energy fills. - Continued Integrated Precision Ordnance Delivery System refinement of concepts, technology assessments. - Initiated Singlet Oxygen Neutralization Experimentation. *FY 2010 Plans:* - Complete Scaled High Speed Penetration Tests vs. Limestone Geological Targets. - Initiate High Speed Penetrator case/fill material development and characterization. - Support Hard Target Void Sensing Fuze full-scale Joint Capability Technology Demonstration survivability testing. - Complete fuze booster cup survivable recorder development. - Conduct Joint Direct Attack Munition Battle Damage Information system full-scale technology development. - Begin integration of kinetic and non-kinetic capabilities into single payload for counter WMD. - Begin testing of novel high explosive materials developed under disruptive payloads technology. - Conduct small scale testing and modeling of non-kinetic payload capability. *FY 2011 Base Plans:* - Conduct Scaled High Speed Penetrator Tests versus High Strength Concrete Targets to further characterize breakthrough penetrator technologies. - Incorporate improved material models into penetration codes for geological and concrete targets.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RG: *Advanced Energetics & Counter WMD Weapons*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Complete development of fuze/fuze module sub-scale survivability test protocol to further characterize breakthrough penetrator technologies. - Continue maturing advanced non-energetic countering WMD payload components. - Initiate advanced testing of countering WMD sub-munitions. - Explore transformational energetic fills by performing Sub-scale characterization of next generation survivable penetrator energetic material fill. - Demonstrate robust survivable 3” fuze instrumentation weapon data recorder package in sub-scale tests. - Continue Thermite Multi-effort Basic Research, trade studies, tests and Demos. - Initiate Singlet Oxygen Compatibility studies/tests. - Explore transformational energetic fills by performing Sub-scale characterization of next generation survivable penetrator energetic material fill - Demonstrate robust survivable 3” fuze instrumentation weapon data recorder package in sub-scale tests - Continue Thermite Multi-effort Basic Research, trade studies, tests and Demos. - Initiate Singlet Oxygen Compatibility studies/tests					
Accomplishments/Planned Programs Subtotals	21.265	32.381	29.139	0.000	29.139

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0603160BR: *Proliferation Prevention and Defeat*	26.412	21.396	17.386		17.386	18.486	25.508	26.962	26.413	Continuing	Continuing

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
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E. Performance Metrics

Number of large scale tests completed.

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

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RI: *Nuclear Survivability*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RI: *Nuclear Survivability*	29.359	18.660	17.902	0.000	17.902	17.788	17.695	17.962	18.250	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Nuclear Survivability project provides enabling technologies for Department of Defense (DoD) nuclear forces and their associated control and support systems and facilities in wartime to avoid, repel, or withstand attack or other hostile action, to the extent that essential functions can continue or be resumed after the onset of hostile action. Emphasis is on ionizing radiation effects and Electromagnetic Pulse. The Nuclear Survivability project provides Radiation Hardened Microelectronics and Nuclear Weapons Effects (NWE) experimentation capabilities. Funding in this project also supports the expanding role of the Nuclear Test Personnel Review (NTPR) program into Science & Technology development.

The Simulation Technology area is operating under a new business model for the West Coast Facility, San Leandro, CA, that makes it a 100% customer funded facility. These NWE simulators are available to validate nuclear survivability requirements for DoD missile and space systems, conduct research in radiation effects, and validate computational models. The Nuclear Survivability Experimental Capabilities program is working with the National Nuclear Security Administration and the United Kingdom Atomic Weapons Establishment to jointly develop new, enabling technologies for improved NWE experimentation capabilities for x-rays, gamma rays and neutrons.

The Nuclear Technology Analysis Support provides support for the Joint Atomic Information Exchange Group and the international Weapon Effects Steering Committee (WESC) that was called the NWE Users' Group. The WESC establishes standards for nuclear weapons effects simulation codes and models as defined and prioritized by the nuclear community, and serves as a forum for sharing information on nuclear technologies, gaps and plans.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RI: Nuclear Survivability	29.359	18.660	17.902	0.000	17.902
Project RI provides the capability for DoD nuclear forces and their associated control and support systems and facilities in wartime to avoid, repel, or withstand attack or other hostile action, to the extent that essential functions can continue or be resumed after the onset of hostile action. Funding in this project reflects a rebalancing of efforts within the program element to augment the Radiation Hardened					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RI: *Nuclear Survivability*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Microelectronics Program and enabling technologies to enhance Nuclear Weapons Effects (NWE) experimentation capability. *FY 2009 Accomplishments:* - Characterized the warm x-ray sources at the West Coast Facility (WCF) using a time-resolved camera from the United Kingdom's Atomic Weapons Establishment. - Conducted warm x-ray source experiments on Saturn and matched the dose-rates produced at the WCF. - Initiated research & development for enabling technology to improve small experimentation capability for high fidelity gamma effects and model validation. - Developed laser-driven cold x-ray source designs and experiment plans to investigate the potential Nuclear Weapons Effects (NWE) capabilities of the National Ignition Facility (NIF) in collaboration with Lawrence Livermore National Laboratory and the Missile Defense Agency. - Researched and published beta-particle radiation dose probabilistic uncertainty analysis. *FY 2010 Plans:* - Demonstrate final Radiation Hardened by Design 90 nanometer reconfigurable Field-Programmable Gate Array. - Complete disposition of excess government-owned WCF equipment. - Complete a joint x-ray source and effects demonstration experiment at the NIF with Sandia National Laboratory, Lawrence Livermore National Laboratory, United Kingdom Atomic Weapons Establishment, and the Missile Defense Agency. - Develop new, enabling technologies for improved NWE experimentation capabilities for x-rays, gamma rays, and neutrons. - Development of modeling for prompt radiation environment in urban settings, noting in particular canyon effects and shielding by structures.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RI: *Nuclear Survivability*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: - Demonstrate initial 45nm radiation hardened prototype circuits to develop radiation hardened by design methods. - Complete prototype demonstration of a high-temporal fidelity gamma small experimentation capability. - Continue investigation of NIF as a potential NWE experimentation capability. - Complete Warm X-ray source experiments on Saturn. - Improve operational models of secondary and tertiary blast effects.					
Accomplishments/Planned Programs Subtotals	29.359	18.660	17.902	0.000	17.902

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 25/0603160BR: *Proliferation Prevention and Defeat*	9.749	13.935	14.052		14.052	13.962	13.878	14.062	14.252	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Reduce facility overhead costs by disposition of excess government-owned simulator hardware at the West Coast Facility (WCF).

Development of cold and warm x-ray capabilities on the Saturn machine at Sandia National Laboratory that meet or exceed the equivalent capabilities at the WCF.

Weapon Effects Steering Committee: Coordinate and integrate nuclear weapon effects needs, capabilities and programs across the United States and United Kingdom defense communities and provide accreditation authority for all nuclear-related modeling and simulation.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RL: *Nuclear & Radiological Effects*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RL: *Nuclear & Radiological Effects*	15.041	19.704	16.776	0.000	16.776	17.323	17.067	17.336	17.612	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Nuclear and Radiological Effects project develops nuclear and radiological assessment modeling tools to support military operational planning, weapon effects predictions, and strategic system design decisions; consolidate validated Defense Threat Reduction Agency modeling tools into net-centric environment for integrated functionality; predict system response to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock and radiation environments - key systems include Nuclear Command and Control System, Global Information Grid, missiles, structures, humans and environment; provide detailed adversary nuclear infrastructure characterization to enhance counterforce operations and hazard effects; conduct analyses in support of nuclear and radiological Science and Technology and address the priority needs of the Combatant Commands and the Department of Defense.

Changes from FY 2009 to 2010 reflect rebalancing of efforts in the areas of advanced modeling systems and survivability technology are rebalanced to increase corporate capabilities in systems engineering and analysis support across all other projects within the research and development portfolio. The impacts delay full 3-D modeling and simulation efforts for electromagnetic pulse (EMP) response and consequence management predictions, to include second and third order effects.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RL: Nuclear & Radiological Effects	15.041	19.704	16.776	0.000	16.776
Project RL develops nuclear and radiological assessment modeling tools to support military operational planning, weapon effects predictions, and strategic system design decisions. *FY 2009 Accomplishments:* - Continued to provide nuclear electromagnetic hardening and survivability support to the Joint Staff, Defense Information Systems Agency, and Missile Defense Agency. Focus areas anticipated include the Nuclear Command and Control System and Global Information Grid (GIG). - Completed development and integration of the electromagnetic pulse (EMP) prediction model and low equivalent dose radiation cancer algorithms.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RL: *Nuclear & Radiological Effects*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Assessed EMP effects on power grid components to determine impacts to the Department of Defense's GIG. - Continued technical revisions to Redbook Volumes I-IV, Effects Manual-1, and further publishing of Joint Radiation Effects documentation. - Continued development of models allowing the predictions and analysis of nuclear survivability for military communication satellites. - Began Air Conductivity Experimentation and Advanced High Altitude Nuclear Environment Engineering Code Development efforts. *FY 2010 Plans:* - Continue to provide nuclear electromagnetic hardening and survivability support to the Joint Staff, Defense Information Systems Agency, and Missile Defense Agency. Focus areas anticipated include the Nuclear Command and Control System and Global Information Grid. - Continue development of models allowing the predictions and analysis of nuclear survivability for ballistic missile defense system. - Provide small scale testing in support of modeling and simulation (M&S) validation. - Continued EM-1 development; integrate activities to include validation and verification, peer review, and coordination with experimentation efforts; continue publication of Joint Radiation Effects documentation. - Validate code for system response to X-Rays; validate and integrate M&S capability to understand thermo-structural response to X-Rays; validate and integrate M&S capability for satellite design. *FY 2011 Base Plans:* - Conduct tests of vulnerabilities of reprocessing facilities. - Begin EMP E1 physics-based code. - Provide collateral effects M&S for enrichment facilities. - Continue EM-1 development; continue publication of Joint Radiation Effects documentation.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RL: *Nuclear & Radiological Effects*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continue development of models allowing the predictions and analysis of nuclear survivability for Nuclear Command and Control System. - Continue to validate code for system response to X-Rays; validate and integrate Modeling and Simulation (M&S) capability to understand thermo-structural response to X-Rays; validate and integrate M&S capability for satellite design.					
Accomplishments/Planned Programs Subtotals	15.041	19.704	16.776	0.000	16.776

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 115/0605000BR: *WMD Defeat Capabilities*	15.499	8.689	7.307		7.307	6.660	5.432	5.508	5.587	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Complete transition of all hazard source terms to the Chemical and Biological (Chem-Bio) Defense Program's Joint Effects Model (JEM) Block II enhancing our ability to predict hazards associated with weapons of mass destruction.

Develop and integrate baseline database of 80% of current foreign nuclear reactors and enrichment facilities.

Provide Department of Defense the ability to predict the survival and mission impact of military critical systems exposed to nuclear weapon environments within acceptability criteria defined during the model accreditation process.

Transition required capabilities to the Chem-Bio Defense Program's JEM and Joint Operational Effects Federation, the Missile Defense Agency, U.S. Space Command, and U.S. Strategic Command's planning suite.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RM: *WMD Battle Management*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RM: *WMD Battle Management*	25.210	14.440	10.899	0.000	10.899	10.303	11.435	11.727	12.107	Continuing	Continuing

A. Mission Description and Budget Item Justification

The WMD Battle Management project provides applied research to support full and sub-scale testing required to investigate countering Weapons of Mass Destruction (WMD) weapon effects, sensor performance, and weapon delivery optimization; weapon effects modeling algorithm development; and the set-up of the Defense Threat Reduction Agency (DTRA) Experimentation Lab.

This project provides combatant commanders the prediction capability and the attack options to engage Hard & Deeply Buried Targets (HDBTs) as the proliferation and hardness of this class target increases. It develops new and enhanced capabilities at DTRA's WMD National Test Beds for integrating WMD defeat testing Department of Defense (DoD) wide and supports tests and demonstrations of new capabilities for the countering WMD offensive operations mission area. It develops, tests, and demonstrates innovative and optimized HDBT Defeat weapon delivery methods, leading to the Services implementation of optimized conventional weapon Tactics, Techniques and Procedures into warfighter operations. The project conducts weapon effects phenomenology tests, analyzes data, conducts high performance computer simulations, and creates/modifies software to more accurately model cratering effects, fragmentation (both primary & secondary), internal air blast, equipment/container damage, structural response, and penetration. These efforts will lead to advanced modeling capability in the countering WMD tools, Integrated Munitions Effects Assessment (weaponeering) and Vulnerability Assessment and Protection Option (force/structure protection).

The DTRA Experimentation Lab Capability is an Agency-wide capability that assures the timely acquisition, synchronization, correlation and delivery of Chemical, Biological, Radiological, Nuclear and Explosive (CBRNE) consequence management and mitigation data necessary in combating WMD. The DTRA Experimentation Lab will be the "key enabler" allowing the Agency to transform successfully into an interoperable DoD Science and Technology environment. Through the use of the DTRA Experimentation Lab, DTRA will be able to shape and improve military situational awareness independent of time or location, effectively shorten decision cycles in a CBRNE event, and extend DTRA's knowledge base externally through collaborative technologies.

Changes from FY 2009 to FY 2010 reflect a realignment of funds that were realigned from this project to fund the 6.1 Basic Research program at the DoD investment goal of 10-12% of Total Obligation Authority. Efforts in this project were rebalanced to increase corporate capabilities within Project RA - Systems Engineering and Innovation. Subprograms impacted are Weapons Effects Planning Tools, WMD Technology, and Counter WMD Weapons Effects modeling\testing. Planned tests supporting blast mitigation projects and recapitalization of test beds are delayed. Risk reduction testing is scaled back and technology demonstrations are reduced.

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RM: WMD Battle Management	25.210	13.240	10.899	0.000	10.899

Project RM provides (1) full scale testing of counter WMD weapon effects, sensor performance, and weapon delivery optimization, (2) weapon effects modeling, and (3) the Defense Threat Reduction Agency Experimentation Lab.

FY 2009 Accomplishments:

- Conducted 70 material characterization tests on Ultra-High Performance Concrete (UHPC) which are used to develop high-fidelity computational models.
- Conducted 9 small-scale penetration tests on UHPC with oblique angles of impact and multi-layers of UHPC and conventional concrete.
- Conducted 3 contact and embedded detonation tests on UHPC.
- Completed testing and model development for multi-hit attacks to hardened bunker roof slabs.
- Conducted equipment fragility testing in 20 separate field events, for components of biological weapons facilities.
- Conducted Internal Detonation (quasi static and dynamic pressure) testing and modify model.
- Conducted testing and modeling improvements to the Weapons of Mass Destruction (WMD) Agent Release Model allowing agent release from user-specified fragments.
- Completed 9 tests of contact and near-contact explosive charges against columns to improve analytical models (partnered with the Technical Support Working Group and Navy Facilities Engineering Service Center).
- Conducted modifications to predictive models for two blast door types in order to capture more complex failure modes.
- Conducted 6 tests examining blast propagation through failing walls from internal detonations to support model development.
- Continued research and development supporting countering WMD weapons effect modeling & testing and the Defense Threat Reduction Agency (DTRA) Experimentation Lab. Tunnel blast experiments, using a 1/3 scaled complex tunnel test facility, to validate tunnel blast models was not completed..

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Implemented multiple security levels across DTRA information domains to increase effectiveness of the DTRA Experimentation Lab. - Continued to provide leading technological integration capabilities to the Combating WMD (CWMD) mission through utilization of the DTRA Experimentation Lab (DEL). - Continued to support demonstrations and experimentation events for the CWMD Community of Interest to include participation in Noble Resolve, Coalition Warrior Interoperability Demonstration, Urban Resolve, and DTRA loose nukes experimentation campaigns. Integrated Technology Demonstration (ITD-1) Test/Demonstration facility design & construction not started. - Continued facilitation of the internal Continuity of Operations Table Top Experiment through the DEL. *FY 2010 Plans:* - Conduct Ultra High Performance Concrete penetration tests and material analysis. Continue modeling. - Complete model for multi-hit attacks to hardened bunker roof slabs. Finalize or re-direct multi-hit research efforts. - Deliver 15 additional validated equipment fragility models. - Complete Quasi Static Pressure model. - Conduct testing and modeling improvements to the Weapons of Mass Destruction (WMD) Agent Release Model with emphasis on dry agents. - Complete column satchel charge model. - Conduct blast door model testing and model modifications. - Complete progressive collapse model. - Continue to provide leading technological integration capabilities to the combating WMD mission through utilization of the Defense Threat Reduction Agency (DTRA) Experimentation Lab (DEL). - Continue to support demonstrations and experimentation events for the Countering WMD Continuity of Interest to include participation in Noble Resolve, Coalition Warrior Interoperability Demonstration, Urban Resolve, and Campaign X experimentation campaigns. - Continue facilitation of the internal Continuity of Operations Table Top Experiment through the DEL.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: - Conduct Ultra High Performance Concrete penetration tests and material analysis. Continue modeling and finalize evaluation of current models. - Deliver 15 additional validated equipment fragility models. - Complete validation and verification on Internal Detonation (quasi-static and dynamic pressure) model. - Conduct testing and modeling improvements to the WMD Agent Release Model. Complete validation and verification of dry agent model. - Conduct blast door model testing and model modifications. - Complete progressive collapse testing and model development for concrete frame structures. - Continue to provide leading technological integration capabilities to the combating WMD mission through utilization of the DEL. - Continue to support demonstrations and experimentation events for the Countering WMD Community of Interest (COI) to include participation in Noble Resolve, Coalition Warrior Interoperability Demonstration, Urban Resolve, and efforts to prevent loose nukes experimentation campaigns. - Continue facilitation of the internal Continuity of Operations Table Top Experiment through the DEL.					
Accomplishments/Planned Programs Subtotals	25.210	13.240	10.899	0.000	10.899

	FY 2009	FY 2010
Congressional Add: National Center for Blast Mitigation & Protection	0.000	1.200
FY 2010 Plans: -Improve high fidelity analyses for internal blast environments and weapon-target interactions -Improve internal blast models to enhance DTRA's Vulnerability Assessment & Protection Option (VAPO) and Integrated Munitions Effects Assessment (IMEA) planning tools.		

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
-Enhance computational ability for the Agency to save time in generating target solutions.		
Congressional Adds Subtotals	0.000	1.200

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0603160BR: *Proliferation, Prevention and Defeat*	37.647	31.939	28.260		28.260	26.907	27.914	28.200	28.482	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Percent confidence in engineering models.

Percent confidence in assessment solutions.

Number of targets successfully planned.

Time require to complete assessments.

The Defense Threat Reduction Agency Experimentation Lab is occupied by planning or execution efforts 75% of the year.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RR: *Test Infrastructure*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RR: *Test Infrastructure*	17.411	19.651	21.528	0.000	21.528	21.437	21.354	21.705	22.101	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Test Infrastructure project provides a unique national test bed capability for simulated Weapons of Mass Destruction (WMD) facility characterization, weapon-target interaction, and WMD facility defeat testing to respond to operational needs by developing and maintaining test beds used by the Department of Defense (DoD), the Services, the Combatant Commanders, and other federal agencies to evaluate the implications of WMD, conventional, and other special weapon use against U.S. military or civilian systems and targets. It leverages fifty years of testing expertise to investigate weapons effects and target response across the spectrum of hostile environments that could be created by proliferant nations or terrorist organizations with access to advanced conventional weapons or WMD (nuclear, biological and chemical). The project maintains testing infrastructure to support the testing requirements of warfighters, other government agencies, and friendly foreign countries on a cost reimbursable basis. Creates testing strategies and a WMD Test Bed infrastructure focusing on the structural response of buildings and Hard & Deeply Buried Targets that house nuclear, biological, and chemical facilities. It provides support for full and sub-scale tests that focus on weapon-target interaction with fixed soft and hardened facilities to include aboveground facilities, cut-and-cover facilities, and deep underground tunnels. This capability does not exist anywhere else within the DoD and supports the counterproliferation pillar of the National Strategy to Combat WMD.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RR: Test Infrastructure	17.411	19.651	21.528	0.000	21.528
Project RR provides a unique national test bed capability for simulated WMD facility characterization, weapon-target interaction, and WMD facility defeat testing to respond to operational needs by developing and maintaining test beds used by the DoD, the Services, the Combatant Commanders and other federal agencies to evaluate the implications of WMD, conventional, and other special weapon use against U.S. military or civilian systems and targets.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RR: *Test Infrastructure*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Continued research and development activities for test and technology support, infrastructure development and improvement, and environmental restoration of sites and return of the sites to host facilities. - Completed classified test bed at Dugway Proving Ground. - Completed site restoration and closure document for the final Nevada Test Site Federal Facilities Agreement and Consent Order site—the last of 108 clean-up issues at 35 sites. - Acquired a mobile command post capability for the Chestnut test site at Kirtland Air Force Base, NM. - Enhanced our test infrastructure to provide support, as required, for chemical-biological sensing test events. - Conducted more than 200 test events supporting customers internal and external to the Defense Threat Reduction Agency (DTRA), including foreign allies, the Department of Defense, the Department of Energy, the Department of Homeland Security, and the State Department. *FY 2010 Plans:* - Dismantle and environmentally remediate Large Test Structure (LTS)-2 and begin replacement setup for LTS-2 to support an integrated Countering Weapons of Mass Destruction (WMD) Technologies demonstration in FY 2012. - Begin designing and procurement of a add on structure for Component Test Structure-3 for structural stress tests with Singapore. - Conduct nuclear detection and forensics testing. - Conduct nuclear detection and forensics testing for the Department of Homeland Security, Domestic Nuclear Detection Office (DNDO) in accordance with the DTRA-DNDO Memorandum of Agreement. - Conduct WMD sensor testing at the Technical Evaluation Assessment and Monitor Site (TEAMS); provide infrastructure upgrades for TEAMS. - Continue environmental remediation and compliance activities at the Nevada Test Site, Dugway Proving Grounds, White Sands Missile Range and Kirtland Air Force Base Chestnut Site.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RR: *Test Infrastructure*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continue infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs. *FY 2011 Base Plans:* - Complete construction of add on structures to Component Test Structure -3 to develop weapons effects and mitigation test data models for fire and blast in cooperation with the Singapore government with estimated start date for testing first quarter FY 2011. - Upgrade and integrate instrumentation mobile wireless "Mesh" infrastructure capabilities and improvements in support of the Department of Home Land Security (DHS/DNDO) tests conducted at DTRA and DHS/DNDO defined CONUS wide locations in support of DHS/DNSO Secure the Cities (STC), Lower Manhattan Security Initiative *(LMSI) and other functional tests as defined by DHS/DNDO during the first quarter FY 2011. - Conduct Interagency Biological Restoration Demonstration (IBRD) testing in conjunction with DoD & DHS to reduce the time and resources necessary to recover and restore wide urban areas, Military Installations, and critical infrastructure following a biological incident with estimated start date second quarter FY 2011. - Construct facility for Integrated Test Demonstration to defeat credible, threat-based scenarios with an estimated start date for testing third quarter FY 2011. - Conduct testing on Chemical, Biological, Radiological, Nuclear and Explosive sensors, WMD countermeasures, remote geological sensing, and battle management systems designed for surveillance and tracking targets used for WMD activities during the third and fourth quarters FY 2011. - Conduct WMD Aerial Collection System testing which is designed to meet U.S. Forces Korea's requirement of an "all-in-one" Chemical Biological Radiological & Nuclear sensor system for post-strike assessment (Battle Damage Assessment) of suspected WMD facilities and mobile time-sensitive targets during third and fourth quarters FY 2011. - Conduct nuclear detection and forensics testing to prevent weapons grade material/dirty bombs from entering the U.S., U.S. Territories, and Allied Nations with estimated start date fourth quarter FY 2011.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RR: *Test Infrastructure*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Conduct Weapons of Mass Destruction sensor testing at the Technical Evaluation Assessment and Monitor Site to detect nuclear grade material from entering the U.S., U.S. Territories, and Allied Nations through rail, ship, and air ports with estimated start date fourth quarter FY 2011. - Continue environmental remediation and compliance activities at the Nevada Test Site, Dugway Proving Grounds, White Sands Missile Range, and Kirtland Air Force Base in accordance with EPA, Safety, & Environmental guidelines throughout FY 2011. - Develop Cost Analysis Tool for Test Sites database to develop Rough Order of Magnitude estimates for different types of tests as well as different test beds during FY 2011. - Conduct tunnel work detection testing at Nevada Test Site for the Customs and Border Patrol to be able to detect tunnel work or tunnels along northern and southern borders of CONUS with estimated fourth quarter FY 2011. - Continue infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs. - Document, prioritize, and support test infrastructure requirements.					
Accomplishments/Planned Programs Subtotals	17.411	19.651	21.528	0.000	21.528

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Number of tests executed safely, i.e., no loss of life or limb, no unintentional significant damage of property.

Number of tests that go through the milestone review process.

Number of tests that undergo environmental assessment consistent with existing Environmental Impact Statements.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RU: **Fundamental Research for Combating WMD*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RU: **Fundamental Research for Combating WMD*	14.711	13.484	10.385	0.000	10.385	10.160	10.011	9.846	9.690	Continuing	Continuing

Note

*Project title change from Basic Research for WMD Knowledge Gaps starting in FY 2010

A. Mission Description and Budget Item Justification

The Fundamental Research for Combating WMD project (1) conducts strategic studies to support Department of Defense, (2) develops decision support tools and conducts analyses to support combating Weapons of Mass Destruction (WMD) research and development investments, and (3) advances emerging technology and transitional science into viable applied technology development capabilities. The strategic studies address challenges in reducing the threat from WMD based on an assessment of the future national security environment. They also develop and maintain an evolving analytical vision of necessary and sufficient capabilities to protect the U.S. and allied forces and citizens from nuclear, biological, and chemical attack and identify gaps in these capabilities and initiate programs to fill them. The decision support tools identify key technology and performance parameters required for products generated under research and development investments. These tools also assess the expected impact on military missions and forces. The advancement of technology and science into applied technology development effort focus upon increasing the stability and utility of mid-to-long term, moderate risk but high payoff science and emerging technologies for transition to other Defense Threat Reduction Agency (DTRA) applied technology programs. This effort serves as the bridge between the bench scientist and the applied technologist.

Beginning in FY 2010, this project is rebalanced to transition the decision support tools efforts into Project RA - Systems Engineering and Innovation to enhance corporate capabilities across all projects.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RU: Fundamental Research for Combating WMD	13.511	11.564	10.385	0.000	10.385
Project RU provides (1) strategic studies to support DoD, (2) Decision support tools and analysis to support combating WMD research and development investments, and (3) early applied research for technology development.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RU: **Fundamental Research for Combating WMD*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Identified and transition all suitable investigatory Science and Technology research and development projects to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding. - Identified and conducted strategic studies addressing challenges in reducing the threat from Weapons of Mass Destruction. - Exercised testbed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Continued seven “bridging” projects for early applied development of combating WMD technologies. - Completed initial operational capability for pilot program to support Department of Defense effort to utilize a web-based system for research proposal submission, evaluation and status reporting. - Continued to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation. - Initiated a Mentor program and continue the sponsorship and education of the “Next Generation” of mission-critical scientific, technical and engineering expertise. - Continued examination of emerging technologies and underlying sciences applicable to combating WMD, with increased emphasis on avoiding technical surprise. *FY 2010 Plans:* - Transition decision support tools with current and outyear funding to Project RA - Systems Engineering and Innovation. - Identify and conduct strategic studies addressing challenges in reducing the threat from WMD. - Continue to exercise the testbed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Complete seven “bridging” projects for early applied development of combating WMD technologies, initiate transition to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RU: **Fundamental Research for Combating WMD*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Final operational capability for pilot program to support Department of Defense effort to utilize a web-based system for research proposal submission, evaluation and status reporting. - Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation. - Continue examination of emerging technologies and underlying sciences applicable to combating WMD with increased emphasis on avoiding technical surprise. - Initiate new "bridging" projects for early applied development of combating WMD technologies. - Continue the mentoring, sponsorship, and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise. *FY 2011 Base Plans:* - Identify and transition all suitable investigatory Science and Technology research and development projects to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding. - Identify and conduct strategic studies addressing challenges in reducing the threat from WMD. - Assess utility of continuing testbed; continue to exercise the testbed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Continue "bridging" projects for early applied development of combating WMD technologies. - Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation. - Continue the mentoring, sponsorship, and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise.					
Accomplishments/Planned Programs Subtotals	13.511	11.564	10.385	0.000	10.385

	FY 2009	FY 2010
Congressional Add: Center for Nonproliferation Studies, Monterey Institute for International Affairs	1.200	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RU: **Fundamental Research for Combating WMD*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
FY 2009 Accomplishments: - The main focus of CNS is to help build the knowledge base for DTRA and DoD that will allow for better understanding, anticipation, and influence of the WMD-related behavior of adversaries and to help decision-makers avoid costly mistakes and achieve national security objectives. - Studies, analyses, databases, seminars, and training, that support the DTRA mission of understanding, anticipating, preparing for, and reducing the threat from Weapons of Mass Destruction (WMD).		
Congressional Add: University Strategic Partnership *FY 2010 Plans:* -Support early technology development for the Counter-WMD mission area across multiple science areas including new materials for radiation detectors, survivable electronics, and computational modeling. -Collaborate with universities to stimulate interest in cutting edge Counter-WMD research with a strategic goal for fostering the growth of scientific talent for the Counter-WMD workforce.	0.000	1.920
Congressional Adds Subtotals	1.200	1.920

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 1/0601000BR: *DTRA Basic Research Initiative*	28.798	40.848	47.412		47.412	47.737	48.071	48.493	48.925	Continuing	Continuing

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 2: *Applied Research*	R-1 ITEM NOMENCLATURE PE 0602718BR: *WMD Defeat Technologies*	PROJECT RU: **Fundamental Research for Combating WMD*

E. Performance Metrics

Project performance is measured via a combination of statistics including the number of publications generated, number of students trained in sciences and engineering supporting DoD's educational goals, number of research organizations participating, and percentage of participating universities on the US News & World Report "Best Colleges" list.

Minimum 10% increase in the number of new universities participating in the basic research grant program from FY 2008-2010.

Publication of an annual basic research technical and external programmatic review report.

Each study/project will commence within 3 months of customer request and results delivered within 3 months of completion.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	221.471	238.773	295.163	0.000	295.163	302.977	312.230	313.098	314.580	Continuing	Continuing
RA: *Systems Engineering and Innovation*	17.447	7.314	7.270	0.000	7.270	7.342	7.346	5.937	5.859	Continuing	Continuing
RE: *Counter-Terrorism Technologies*	40.270	61.268	102.395	0.000	102.395	110.987	112.267	113.675	113.380	Continuing	Continuing
RF: *Detection Technology*	60.622	70.627	90.688	0.000	90.688	89.700	89.898	90.993	91.374	Continuing	Continuing
RG: *Advanced Energetics & Counter WMD Weapons*	26.412	21.396	17.386	0.000	17.386	18.486	25.508	25.962	26.413	Continuing	Continuing
RI: *Nuclear Survivability*	9.749	13.935	14.052	0.000	14.052	13.962	13.878	14.062	14.252	Continuing	Continuing
RM: *WMD Battle Management*	37.647	31.939	28.260	0.000	28.260	26.907	27.914	28.200	28.482	Continuing	Continuing
RT: *Target Assessment Technologies*	29.324	32.294	35.112	0.000	35.112	35.593	35.419	34.269	34.820	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Proliferation, Prevention and Defeat program reduces Weapons of Mass Destruction (WMD) proliferation and enhances WMD defeat capabilities through advanced technology development. To accomplish this objective, seven project areas were developed: 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 in line with the Joint Functional Concepts (Chairman, Joint Chiefs of Staff Instruction 3170.01). The missions and plans of these projects are described below in the R-2a Budget Exhibits.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	218.958	233.203	0.000	0.000	0.000
Current President's Budget	221.471	238.773	295.163	0.000	295.163
Total Adjustments	2.513	5.570	295.163	0.000	295.163
• Congressional General Reductions		-1.150			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		6.720			
• Congressional Directed Transfers		0.000			
• Reprogrammings	11.316	0.000			
• SBIR/STTR Transfer	-3.303	0.000			
• Realignment / Internal Functional Transfer	-5.500	0.000	56.153	0.000	56.153
• Inflation Reduction	0.000	0.000	-1.249	0.000	-1.249
• Other Program Adjustment	0.000	0.000	240.259	0.000	240.259

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: RA: *Systems Engineering and Innovation*		
Congressional Add: *Recovery, Recycle and Reuse (R3) of DOE Metals for DoD Applications*	0.000	1.920
Congressional Add Subtotals for Project: RA	0.000	1.920
Project: RF: *Detection Technology*		
Congressional Add: *Next Generation Intelligent Portable Radionuclide Detection and Identification Systems*	1.600	0.000
Congressional Add: *AELED IED Electronic Signature Detection*	3.200	4.800
Congressional Add: *Continuation of Adv Materials Research for Nuc Detection, CP and Imaging*	0.800	0.000
Congressional Add Subtotals for Project: RF	5.600	4.800
Congressional Add Totals for all Projects	5.600	6.720

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*

Change Summary Explanation

The FY 2009 increase from the previous budget submission reflects the net effect of two reprogramming actions; the FY09-04 PA reprogramming action to accelerate ongoing DTRA efforts for advanced nuclear and radiological detection systems, and the FY 09-26 PA reprogramming in support of higher priority Department needs.

The DoD did not estimate FY 2011 cost when the FY 2010 President's Budget was prepared. The FY 2011 Agency's RDT&E budget reflects increased investment in several areas which respond directly to DoD and Presidential CWMD strategic priorities. The budget adjustments close critical investment and sustainment gaps across the DTRA CWMD spectrum. Specific focus areas are: 1) Counter WMD-Terrorism (CWMD-T), 2) Joint Intelligence Preparation of the Operational Environment (JIPOE), 3) Nuclear Forensics, 4) Arms Control Monitoring, 5) Helium-3 replacement technology, and 6) Counter-WMD Analysis Cell (C-WAC). The CWMD-T develops technologies to enable the warfighter to locate, identify, characterize, and access WMDs and their production and storage facilities. It also focuses efforts to disrupt, delay, degrade, destroy or deny Chemical, Biological, Radiological, and Nuclear WMDs, all while minimizing risk to U.S. forces. The JIPOE integrates, federates, and analyzes intelligence information to forecast plausible terrorist threats for planning and conducting operations to combat WMD terrorism. Nuclear Forensics increases support post-detonation data collection and analysis to support national decision making. Arms Control Monitoring and Verification Technologies will revitalize arms control technologies to support treaty verification regimes by developing systems to improve capabilities to be more responsive to the new security environment without compromising sensitive U.S. information. Helium-3 Replacement Technology develops technologies and components for systems to reduce reliance on Helium-3 technology. C-WAC will conduct the analysis required to accelerate spiral development and deployment of new modeling capabilities across Nuclear, Biological Warfare (BW) and Chemical Warfare (CW) threat areas, enhancing fusion of R&D and intelligence support for the Combatant Commands. Sustaining these RDT&E budget increases are key to meeting national and DoD CWMD priorities.

These increases are partially offset by the internal functional transfer of advisory and assistance services from DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. The transfer to Operation and Maintenance reflects the internal functional realignment of advisory and assistance services and other business-related costs that were formerly captured under DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. As part of DTRA's continued effort to integrate and refine its functions and activities, this transfer more appropriately aligns this funding to the proper appropriation. At the Agency level, this functional transfer between appropriations will have a zero sum impact to these budget line items. An additional decrease of $1.249 million is associated with changes in the inflation rates and therefore is a price change, not a program change.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RA: *Systems Engineering and Innovation*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RA: *Systems Engineering and Innovation*	17.447	7.314	7.270	0.000	7.270	7.342	7.346	5.937	5.859	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Systems Engineering and Innovation project provides the research and development operations analysis support to the Agency in understanding, analysis, integration and execution of Defense Threat Reduction Agency (DTRA) operational missions. This includes analysis of National, Department of Defense and other Federal agencies' strategic guidance and plans in the combating Weapons of Mass Destruction (WMD), Combating Terrorism and Homeland Defense 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 U.S. European Command (USEUCOM), NATO, and SHAPE in combating WMD and maintaining the NATO nuclear deterrent. A significant element of this project includes support to Command Elements and the warfighting Combatant Commands (COCOMs) on strategies for reducing/countering the WMD threat in the COCOMs Areas of Responsibility. This project also provides for the solution to the Secretary of Defense mandate for DTRA to account, maintain, report, and track the National Nuclear Weapons Stockpile & Nuclear Weapon-Related Materiel during peacetime, crisis, and wartime. In support of national requirements necessary to maintain a viable nuclear deterrent, the Defense Integration and Management of Nuclear Data Services provides a platform to ensure continued sustainability and viability of the nuclear weapon stockpile.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RA: Systems Engineering and Innovation	17.447	5.394	7.270	0.000	7.270
FY 2009 Accomplishments: - Organized/convened workshops for the Special Operations Command Commander (Nov 2008 on Security Force Assistance using Pakistan as a case study) and the Air Force Chief of Staff (Jun 2009 on the Air Force's Nuclear Mission and the Future of Deterrence Planning). - Institutionalized development of Combating WMD lessons learned in regional COCOMs theaters and with appropriate international staffs. - Continued to support development and update of DTRA annexes to USEUCOM Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continued to institutionalize linkage with NATO/SHAPE and USEUCOM in international research and development collaboration. - Continued 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. - Continued to conduct strategic analyses and assessments on emerging Weapons of Mass Destruction (WMD) threats. - Continued to organize/conduct senior Combatant Commands (COCOMs), Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/combating the WMD threat. *FY 2010 Plans:* - Institutionalize development of Combating WMD lessons learned in regional COCOMs theaters and with appropriate international staffs. - Continue to support development and update of Defense Threat Reduction Agency (DTRA) annexes to U. S. European Command (USEUCOM) Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater. - Institutionalize linkage with NATO/SHAPE and USEUCOM in international research and development 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. - Continue to conduct strategic analyses and assessments on emerging WMD threats. - Continue to organize/conduct senior COCOMs, Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/combating the WMD threat.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**PROJECT** RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: - Continue to conduct strategic analyses and assessments on emerging WMD threats. - Continue to organize/conduct senior COCOM, Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/ combating the WMD threat. - Continue to refine and enhance WMD lessons learned process with international staff and across the other COCOM, incorporating lessons learned from partner activities. - Continue to develop and update Defense Threat Reduction Agency (DTRA) Campaign Support Plan as directed in the Global Employment of Forces (GEF) to further Combating WMD mission across all theaters while balancing DTRA assets and managing risks as prioritized within the GEF. - Utilize institutionalized linkage with NATO/SHAPE and USEUCOM in international research and development collaboration to further develop similar international research and development collaboration within the Pacific Region in accordance with the GEF.					
Accomplishments/Planned Programs Subtotals	17.447	5.394	7.270	0.000	7.270

	FY 2009	FY 2010
Congressional Add: Recovery, Recycle and Reuse (R3) of DOE Metals for DoD Applications *FY 2010 Plans:* - Funding will be used toward continued development of an efficient low cost method of obtaining lightweight specialty metals for use by the DoD. - DTRA believes this add was misdirected again in FY10. DTRA is working with Army and OSD to have this add reprogrammed to the Army.	0.000	1.920
Congressional Adds Subtotals	0.000	1.920

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RA: *Systems Engineering and Innovation*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 20/0602718BR: *WMD Defeat Technologies*	55.281	55.857	50.914		50.914	53.231	52.905	51.754	53.164	Continuing	Continuing

D. Acquisition Strategy

N/A

E. 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 Defense Threat Reduction Agency (DTRA) Security Cooperation Plans for all regional Combatant Commands (COCOMs).

Development of a DTRA gap analysis of Combating Weapons of Mass Destruction (CWMD) mission vice Homeland Defense and Combating Terrorism mission areas to provide way ahead for DTRA operational and research and development planning.

Robust lessons learned process that incorporates new, workable operational and technical solutions into DoD and with allies.

Incorporation of at least three new technologies by FY 2013 as a result of International research and development collaboration.

Number of strategic analyses and assessments conducted on emerging WMD threats.

Number of senior Combatant Commands (COCOMs), Interagency and/or International Workshops/Conferences organized/conducted to address national/international strategies for reducing the WMD threat.

Manage the strategic weapons stockpile and Nuclear Weapon-Related Materiel; maintain 100% accountability.

Support the Office of Secretary of Defense, Joint Staff, Combatant Commands, Services, Nuclear Weapon Custodial Units, and Department of Energy.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RE: *Counter-Terrorism Technologies*	40.270	61.268	102.395	0.000	102.395	110.987	112.267	113.675	113.380	Continuing	Continuing

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 U.S. Special Operations Command (USSOCOM). The research and development support to USSOCOM is one of the highest priority mission areas in the Overseas Contingency Operations and a top priority for Defense Threat Reduction Agency (DTRA). The following efforts are included in this project:

The Device Defeat effort develops innovative technologies, energetic materials, and software programs to identify, defeat, contain and mitigate Weapons of Mass Destruction (WMD) capable Improvised Explosive Devices. Device Defeat began with minimal funding in FY 2008 and receives full funding in FY 2010. DTRA has been delegated the responsibilities and authority to act as Task Lead on behalf of DoD to provide leadership, integration, development, and testing as the primary U.S. Government coordinator for the National Implementation Plan WMD-Terrorism Task 5.4.4.

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

Provide oversight for Counterproliferation (CP) research and development resources sent directly to USSOCOM that are used to develop Special Operations Forces (SOF)-unique technologies in support of USSOCOM's CP mission. New CP technologies are developed under USSOCOM management that provides SOF with the operational capability to counter WMD threats.

The requested increase builds upon the FY 2010 request in support of the Combating WMD-Terrorism (CWMD-T) Support Program and Arctic Mist efforts. Arctic Mist builds upon the collaborative effort with the warfighter that delivered a proof of concept to USSOCOM in June 2007 and provides a multi-mission oriented critical capability that may be applied throughout the entire spectrum of warfare while significantly eliminating collateral damage. It will develop technologies to enable the warfighter to locate, identify, characterize and access WMDs, their production and storage facilities and associated enablers anywhere within the terrorist pathway to disrupt, delay, degrade, destroy or deny Chemical, Biological, Radiological and Nuclear WMDs while minimizing risk to US forces in support of Counterproliferation and Counterterrorism Offensive operations. Arctic Mist specifically addresses USSOCOM Directive 70-1 Appendix C, Special Mission Area Programs and 71-4 Force Development Special Operations Forces Capabilities Integration and Development Systems. The Counter Weapons of Mass Destruction – Terrorism (CWMD T) Support Program integrates and federates all-source intelligence products and information with operational analysis to support the Joint Intelligence Preparation of the

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
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Operational Environment (JIPOE) process to forecast plausible terrorist WMD threats for planning and conducting operations to combat WMD terrorism. The CWMD-T Support Program specifically addresses a USSOCOM Statement of Requirements for Combating WMD – Terrorism.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RE: Counter-Terrorism Technologies	40.270	61.268	102.395	0.000	102.395
FY 2009 Accomplishments: - Continued to support research and development of technologies to enhance the capabilities of U.S. Forces in the OCO in countering Weapons of Mass Destruction (WMD) and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Delivered SOF-unique technologies under the SOF Venture program. Projects completed: Gellants Phase II, Global Positioning Systems-Denied Navigation and Mapping, Phase III (final) of Integrated IMCS, NanoCatalysts, Stir Device, and Generation I Thermal Agent Defeat. - Continued development of various SOF-unique technologies under the SOF Venture program. - Continued terrorist pathway counterproliferation Advanced Technology Development (ATD). - Conducted Military Unit Assessment/Independent Validation and Verification of proven technologies. Provided management oversight and technical assistance for SOF-unique technologies, and developed enhanced SOF capabilities in coordination with USSOCOM. - Developed plans for WMD/Improvised Explosive Device anti-terrorism technologies that will increase Explosive Ordnance Disposal capabilities to identify, defeat and contain a radiological dispersal devise (FY 2010 increase in funding will enable research and development to begin resulting in an initial delivery of the short-term solutions). - Initiated Pilot Phase to establish the Combating Weapons of Mass Destruction – Terrorism Support Cell. - Initiated efforts to explore Counter-Smuggling Network development, and utilized University Strategic Partnership to develop a Black Sea Regional Academic Network in support of the Global Initiative to Combat Nuclear Terrorism.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: - Continue development and then transition 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. - Characterize networks. - Characterize material properties of Ultra-High Performance Concrete. - Initiate funding for three 48-month technology solutions. - Knowledge Management Objectives: Threat Assessment, acquire emergent fireset design and build; characterization & testing; classified Research and Development programs to counter emergent threat(s). - Integrate and federate national intelligence with operations research systems analysis capabilities to support planning and operations. - Continue Counter-Smuggling Network development, and utilize University Strategic Partnership to develop a Black Sea Regional Academic Network in support of the Global Initiative to Combat Nuclear Terrorism. *FY 2011 Base Plans:* - Continue development and then transition new technologies for Joint U.S. Military Forces to counter Weapons of Mass Destruction (WMD), enabling warfighters, specifically SOF, to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. These efforts use innovative technologies utilizing energetic, mechanical and alternative energies to improve the efficiencies and effectiveness of Joint U.S. Military Ground Force's offensive operations against CBRNE WMD production facilities. - Develop test articles for development of Ultra High-Performance Concrete tactics, techniques, and procedures. - Develop tools to enable the warfighter to combat against WMDs, their production and storage facilities and associated enablers anywhere within the terrorist pathway.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Initiate funding for three 48-month technology solutions. - Continue work on following Knowledge Management Objectives: Threat Assessment, acquire emergent fireset design and build; charactization & testing; classified R&D programs to counter emergent threat(s). - CWMD-T Support Program achieves Full Operational Capability. Develop advanced IT infrastructure and capabilities for processing, analysis, modeling, simulation and planning; and begin development of methodologies for anticipating rare events. - Develop and transition innovative counter-WMD tools designed to locate, identify, characterize, assess and attack WMD production and storage facilities with minimal to no collateral damage or loss of life (Tempest Edge). - Conduct surreptitious Sensitive Site exploitation of high priority WMD facilities through the use of highly effective tools designed to defeat WMD production systems and enabling technologies (Tempest Edge). - This project implements the acquisition strategy contained in USSOCOM Directive 70-1, Appendix C, Special Mission Area Programs and Directive 71-4 Force Development Special Operations Forces Capabilities Integration and Development Systems (Tempest Edge). - Explosive Ordnance Disposal Device Defeat: Develop technologies and tools that characterize and identify the electronic environment and any improvised electronic triggering and firing system (Explosive Ordnance Disposal (EOD) Device Defeat). - Develop tools to enable warfighters to locate, identify and render safe improvised WMD systems (EOD Device Defeat). - Enhance the threat assessment to replicate WMD triggering designs to be reproduced and tested in order to develop render safe procedures (EOD Device Defeat). - Barrier Defeat will develop tools which enhance defeat solutions to “breach” a variety of WMD barriers (perimeter, external, internal) using a range of breaching techniques, equipment and material (Target Defeat). - Production Defeat will develop tools that enable ground forces to destroy “critical nodes” used in the production and support of WMD (Target Defeat).					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Structural Defeat will provide tools for the destruction of key entry points while collapsing the structure or rendering it unusable (Target Defeat). - Continue Counter-Smuggling Network development, and utilize University Strategic Partnership to develop a Black Sea Regional Academic Network in support of the Global Initiative to Combat Nuclear Terrorism.					
Accomplishments/Planned Programs Subtotals	40.270	61.268	102.395	0.000	102.395

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Number of technologies developed and delivered, and/or proof of concept, or successful Military Utility Assessments conducted that increase the potential mission success and reduces the number of current gaps in Special Operations Forces (SOF) capabilities to counter weapons of mass destruction when conducting Overseas Contingency Operations.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RF: *Detection Technology*	60.622	70.627	90.688	0.000	90.688	89.700	89.898	90.993	91.374	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Detection Technology 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 Department of Defense requirements for combating terrorism, counterproliferation and nonproliferation, homeland defense, and international initiatives and agreements. This project researches, develops, demonstrates, and transitions advanced technologies to improve: operational capability to detect and identify nuclear and radiological weapons; post-detonation National Technical Nuclear Forensics capabilities; and to support the attribution process. 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 Weapons of Mass Destruction Proliferation Prevention and Defeat emphasizes the advanced technology development and engineering portion of the overall effort.

Efforts within the program element are rebalanced beginning in FY 2010 to support the nuclear forensics Joint Capability Technology Demonstration to employ mature technologies and to improve procedures to address gaps identified by the National Technical Nuclear Forensic (NTNF) Capabilities Based Assessment to advance capabilities across the entire post detonation NTNF system.

The FY 2011 budget increase predominately reflects funding increases for Nuclear Forensics. This accelerates development and implementation of accurate, rapid, and reliable global nuclear forensic capabilities to collect, analyze, and evaluate post-detonation prompt data and ground debris from a nuclear or radiological event to support attribution and National decision-making. It also funds Helium-3 replacement to develop technologies and components that serve as one-for-one replacements for systems that rely on He-3 technology. Additionally, it supports Arms Control Monitoring & Verification Technology to develop systems and technologies to improve monitoring and verification capabilities that are responsive to the new security environment without compromising sensitive US information in the international arena for the arms control treaty regime.

B. Accomplishments/Planned Program ($ in Millions)

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RF: Detection Technology	55.022	65.827	90.688	0.000	90.688

FY 2009 Accomplishments:

- Continued 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.
- Initiated 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.
- Continued program to develop systems that enable consequence management, to include the protection of forces.
- Performed field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space.
-Continued 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.
-Conducted rigorous independent technical testing of developed sensors to include environmental and radiological performance.
-Continued to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing.
- Conducted four operational demonstrations utilizing the Smart Threads Integrated Radiological Sensors Joint Capability Technology Demonstration (JCTD) capabilities which integrate solid state detectors, communications, and processors into a robust self-configuring sensor network for detecting, identifying, and tracking nuclear materials in transit.
- Completed a testing and evaluation program to assess the capabilities of biomarker expression for monitoring acute radiation exposure in Messenger Ribonucleic Acid and proteins utilizing voluntary

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
human subjects, probably oncology patients, to evaluate the ability of the biodosimeter to accurately measure exposure. - Continued to develop upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Developed prototype ground sampling systems and continue to develop sample collection equipment for manual and robotic supportability. - Continued enhancements to ground sample collection tools and integration of tools with robotic platforms. -Developed technical information to support programmatic decisions regarding next-generation ground sampling capabilities, marine sampling capability, and next-generation Unmanned Aerial Systems for air and for ground sampling. Support potential development/conduct of a Nuclear Forensics JCTD. - Continued to provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision makers to transform the nuclear stockpile and infrastructure. - Commenced an initial JCTD effort to develop a portable stand off Bremsstrahlung active interrogation system capable of being mounted on an aerial platform that can be seamlessly integrated into a bi-static or mono-static detector network to provide battle space awareness for hidden and shielded nuclear material for the theater commander. This Joint Capability Technology Demonstration (JCTD) should result in transitioning a viable standoff active interrogation system to Combatant Commands. - Continued to investigate active interrogation as a safe method of standoff detection where dose to people and cargo are below the allowable limits. - Continued cooperation and acceptance of DTRA developed detection technologies for operational development. - Continued cooperation and acceptance of DTRA developed post nuclear event collection technologies for operational development.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continued transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. Transitioned 8 of 10 EOD specific tools to supported forces for the defeat of Weapons of Mass Destruction. - Exercised developmental collection capabilities with table top exercises, command post exercises, and field training exercises. - Continued Enhancement/maintenance of the Sentry/Sniper databases. Integrated chemical and biological weapon information and a decision matrix into a comprehensive WMD database. Incorporated Home Made Explosives (HME) data base into Sniper data base. - Continued development Techniques, Tactics, and Procedures of a nuclear forensics ground sample collection team. - Conducted modeling, simulation and experiments to evaluate the feasibility of using muons and protons to stimulate fissions in nuclear materials from standoff ranges. - Conducted/supported multiple Inter-Agency end-to-end exercise/demonstration of global National Technical Nuclear Forensics for attribution capabilities. - Continued refinement of the Concept of Operations (CONOPS) and Standard Operating Procedures (SOP) for ground sample collection. -Continued development of unattended sensor technologies for rapid detection and identification of radiological material. - Development of contour mapping technologies for radiation field analysis. - Continued to enhance/maintain the Sentry/Sniper databases. Continued integrating chemical and biological weapon information and a decision matrix into comprehensive weapons of mass destruction database. -Transitioned eight of 10 Explosive Ordinance Disposal (EOD) specific tools to supported forces for the defeat of WMD.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: - Complete design for a baseline Department of Defense large standoff proton active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Continue the extensive effort begun in the stand off Bremsstrahlung active interrogation system JCTD to develop a system capable of detecting hidden and shielded nuclear material. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision makers to transform the nuclear stockpile and infrastructure. - Investigate the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conduct experiments to validate the feasibility of the approach. - Continue refinement of the Continuity of Operations and Standard Operating Procedures for ground sample collection. - Continue to enhance/maintain the Sentry/Sniper databases. Continue integrating chemical and biological weapon information and a decision matrix into a comprehensive WMD database. - Continue the development and transition of prototypes and technical data packages to supported forces. - Begin operational characterization of select shape charges in support of WMD defeat technologies. - Begin operational testing of classified defeat capability against specific WMD targets.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continue update/enhancement and maintenance of SNIPER family of data bases. - Begin development of next generation of man portable battery powered X-ray systems for diagnostics of WMD. - Begin development of next generation of Timed Delay Firing Device (TDFD). - Begin development of Next Generation Metal Detector. - Continue development of next generation ground sample collection platforms for IND and RDD collections. - Continue development of prototype UAV with sensor suite for mapping rad field in support of ground sample collections. - Continue cooperation and acceptance of DTRA developed detection technologies for operational development. - Continue cooperation and acceptance of DTRA developed post nuclear event collection technologies for operational development. - Continue transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. - Exercise developmental collection capabilities with table top experiment, command post exercise, and field test experiment. - Continue robotic ground sample collection improvements. - Continue development techniques, tactics, and procedures of a nuclear forensics ground sample collection team. - Continued development of unattended sensor technologies for rapid detection and identification of radiological material. - Continued development of contour mapping technologies for radiation field analysis. *FY 2011 Base Plans:* - Complete development of a fielded standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Complete development of a baseline Department of Defense large standoff monoenergetic or wakefield accelerator active interrogation system to provide a new reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Begin development of fieldable (integrated and deployable) enhanced/rapid separation, dissolution and analysis laboratory capabilities and prototype novel technologies to shorten the analysis timeline. - Provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure. - Investigate the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conduct experiments to validate the feasibility of the approach. - Investigate alternative methods to stimulate fissions in nuclear materials from standoff ranges, including the use of high-energy lasers to generate beams of mono-energetic x-rays. - Develop methods to rapidly determine nuclear weapon yields post-event, by investigating alternative prompt nuclear weapons effects on the environment. Complete development, validation and transition of seismic/air blast model to improve yield accuracy. - Complete development of contour mapping technology prototype for radiation field analysis. - Develop improved correlation tools, signature databases, and modeling of device/production design space to increase confidence, decrease uncertainties and timelines, to better support production of consensus technical forensics results. Field improved debris diagnostic codes; accelerate design signatures database development and baselining of weapon design analysis capability.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Complete operational characterization of select shape charges in support of WMD defeat technologies. - Complete operational testing of classified defeat capability against specific WMD targets. - Continue update/enhancement and maintenance of SNIPER family of data bases. - Complete development of next generation of man portable battery powered X-ray systems for diagnostics of WMD. - Complete development of next generation Timed Delay Firing Device. - Complete development of Next Generation Metal Detector. - Continue Concept of Operations development & Standard Operating Procedures development for more complex Outside the Continental United States (OCONUS) demonstrations for detection, and collection capabilities. - Continue cooperation and acceptance of DTRA developed detection technologies for operational development. - Continue cooperation and acceptance of DTRA developed post nuclear event collection technologies for operational development. - Continue transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. - Exercise developmental collection capabilities with table top experiment, command post exercise, and field test experiment. - Continue robotic ground sample collection improvements. Begin development of enhanced autonomous/semi-autonomous collection capabilities as well as improved/new collection capabilities (e.g., water). - Continue development techniques, tactics, and procedures of a nuclear forensics ground sample collection team. - Continue development and testing of remote information awareness capability for radiation sensor systems and data integration for increased area of detection capability. - Complete operational characterization of select shape charges in support of Weapons of Mass Destruction (WMD) defeat technologies.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Complete operational testing of classified defeat capability against specific WMD targets. - Continue update/enhancement and maintenance of SNIPER family of data bases. - Complete development of next generation of man portable battery powered X-ray systems for diagnostics of WMD. - Complete development of next generation Timed Delay Firing Device. - Investigate capability gaps and opportunities for insertion of technology for treaty monitoring and verification. - Develop experiment to determine the seismic effects of device coupling. - Begin to develop a manufacturing capability for boron and lithium based replacements to helium based neutron detectors.					
Accomplishments/Planned Programs Subtotals	55.022	65.827	90.688	0.000	90.688

	FY 2009	FY 2010
Congressional Add: Next Generation Intelligent Portable Radionuclide Detection and Identification Systems *FY 2009 Accomplishments:* - Efforts are focused on technology development for high resolution, uncooled detectors. eV Microelectronics delivered low power electronics for a handheld detector and improved CZT processing techniques with the last congressional. This year, they will focus on an improved low cost/ high yield method for growing CZT. eV is currently the largest supplier of CZT in the United States.	1.600	0.000
Congressional Add: AELED IED Electronic Signature Detection *FY 2009 Accomplishments:* - Continued to develop both an active and passive Improvised Explosive Device (IED) detection signature system.	3.200	4.800

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
- Frequency agile source prototype design components have been identified and characterized along with filtering approaches to reduce source emissions has been accomplished. - Defined prototype antenna design and identified commercial-off-the-shelf (COTS) availability along with defined prototype software architecture. - Preliminary testing and evaluation (T&E) was completed on the ground and airborne system in July'09 and the formal T&E of the airborne system is being coordinated. - The airborne effort has focused on evaluating system performance and identifying methods to reduce the effects of external and internal electromagnetic interference sources. - The airborne system sensor performance successfully met threshold performance requirements; objective performance requirements are being addressed. *FY 2010 Plans:* - Continue active source technology development and integration with passive capability. - Continue frequency agile source development and integration. - Build next-generation active source and integrate with receiver. - Research and develop phenomenology for better assessment of target responses to illumination. - Develop phenomenology for WMD/IED applications for signature detection and evaluation of underground facilities and for WMD/IED triggers. - Develop advanced receiver and algorithm enhancement for detection of evolving signatures to improve DSP (digital signal processing) capability specific to this application and the identification/ design of emerging hardware for electronics detection.		
Congressional Add: Continuation of Adv Materials Research for Nuc Detection, CP and Imaging *FY 2009 Accomplishments:* - Efforts are focused on technology development for high resolution, uncooled detectors. The anticipated accomplishment for the Constellation Technology Corporation (CTC) $800k will be an improved, low cost/high yield method for growing mercuric iodide crystals. CTC is currently the world's sole supplier of mercuric iodide.	0.800	0.000

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Adds Subtotals	5.600	4.800

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0602718BR: *WMD Defeat Technologies*	38.766	47.008	52.649		52.649	48.406	45.660	46.345	47.046	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Conduct/support end-to-end National Technical Nuclear Forensics capabilities exercise and supporting demonstration(s).

Successfully develop data integration capability with future interagency comprehensive, all domain weapons of mass destruction detection architecture.

Continue to develop upgraded technologies for sample collection, sample analysis, 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 at five meters.

Successful maritime demonstration of neutron sensitive panel detector.

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RG: *Advanced Energetics & Counter WMD Weapons*	26.412	21.396	17.386	0.000	17.386	18.486	25.508	25.962	26.413	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Advanced Energetics & Counter WMD Weapons project provides advanced technology development and demonstration for defeating Weapons of Mass Destruction (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 ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RG: Advanced Energetics & Counter WMD Weapons	26.412	21.396	17.386	0.000	17.386
FY 2009 Accomplishments: - Continued development of advanced countering Weapons of Mass Destruction (WMD) weapons and counter-force agent defeat weapons. - Integrated/tested Insensitive Munitions Agent Defeat Bomb, Live Unit (BLU)-109 payload supporting U.S. Air Force tactics, techniques and procedures for the Shredder program. - Completed Joint Direct Attack Munitions Guidance Kit Integration and Demonstration with BLU-121. - Produced BLU-121 technical data package for transition to program of record. - Conducted sub-scale testing of counter-WMD kinetic and non-kinetic based payloads. - Continued development of non-kinetic payloads and novel materials. - Supported the Acquisition Transition Program Support and Weapon Effects Targeting Analysis for BLU-121. - Supported Thermobaric Advanced Concept Technology Demonstrations All Up Round Penetration Sled Test.					

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Continued Integrated Precision Ordnance Delivery System concept development and Concept of Operations. - Developed penetrating munitions concepts to defeat ultra-hard targets. *FY 2010 Plans:* - Conduct Massive Ordnance Penetrator validation tests for Advance Payloads. - Conduct IPODS Concept Design (aero & warhead). - Conduct IPODS scaled lethality/effects test. - Initiate Modular Autonomous Countering Weapons of Mass Destruction (WMD) System Concept Development trade studies. - Continue development of non-kinetic based countering WMD process modeling capability and apply it to specific countering WMD targets - Continue development of novel thermal based payloads. - Conduct live stimulant matrix testing. *FY 2011 Base Plans:* - Complete IPODS concept design and initiate scaled model tests of selected design. - Finalize Modular Autonomous Countering Weapons of Mass Destruction (WMD) System Concept Development Studies and initiate technology maturation efforts. - Evaluate Defense Advanced Research Projects Agency Strategic Hardened Facility Defeat technology maturity. - Continue development of enhancements to Weapons Effects Modeling for Agent Defeat and integrate non-kinetic based Countering WMD capabilities. - Initiate improvements for soft target Countering WMD capability. - Conduct initial full-scale flight test against a multi-story test structure. - Initiate advancements in Bulk Neutralization Payload Development.					
Accomplishments/Planned Programs Subtotals	26.412	21.396	17.386	0.000	17.386

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 26/0602718BR: *WMD Defeat Technologies*	21.265	32.381	29.139		29.139	27.522	26.483	26.883	27.282	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Percent increase of countering Weapons of Mass Destruction weapon performance compared to fielded weapons (e.g. Bomb, Live Unit (BLU)-109 and BLU-113).

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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RI: *Nuclear Survivability*	9.749	13.935	14.052	0.000	14.052	13.962	13.878	14.062	14.252	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Nuclear Survivability project develops and demonstrates Radiation Hardened Microelectronics (RHM) for nuclear hardening and survivability of Department of Defense's (DoD) systems on the Radiation Hardened Oversight Council 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 RHM and photonics technology to support mission needs. This program develops and demonstrates radiation-hardened, high performance prototype microelectronics to support the availability of RHM and photonics for DoD missions from both private sector and government organizations.

Mighty Guardian Force-on-Force tests aid in satisfying requirements for the U.S. Air Force and U.S. 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 U.S. Air Force and U.S. 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 (COCOMs), 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 COCOMs and Services.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RI: Nuclear Survivability	9.749	13.935	14.052	0.000	14.052

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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Demonstrated final Radiation hardened by Design (RHBD) 90nm digital, analog and mixed signal Systems-on-Chips (SOC). - Demonstrated radiation hardened 150nm combined digital and analog/mixed signal Application-Specific Integrated Circuit. - Demonstrated bulk silicon 90nm RHBD digital and analog/mixed signal libraries and SOC electronic design automation technology. - Demonstrated intermediate RHBD 90nm reconfigurable Field Programmable Gate Array. - Demonstrated 90nm radiation hardened by process development structure and methods. - Conducted Mighty Guardian XII Force-On-Force test at Naval Base Kitsap, WA to evaluate nuclear security policy as it applies to weapons movement convoys from the limited area to the explosives handling wharf. - Planned Mighty Guardian XIII Force-On-Force test to evaluate nuclear security policy as it applies to missile launch facility security Minot AFB, ND. - Conducted exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services. *FY 2010 Plans:* - Perform initial characterizations of single event effects in commercial 45nm bulk and silicon-on-insulator technology. - Conduct Mighty Guardian XIII Force-On-Force test to evaluate nuclear security policy as it applies to missile launch facility security Minot AFB, ND. - Planning Mighty Guardian XIV Force-On-Force test to evaluate bomber generation operations at an Air Force Global Strike Command installation. - Planning a Mighty Guardian test to evaluate nuclear security policy as it applies to the waterfront restricted areas and submarines in transit at the Naval Base, Kings Bay, GA. - 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: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RI: *Nuclear Survivability*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: - Develop mitigation techniques for 45nm Radiation Hardened by Design Technology - Develop initial Technology Computer-Aided Design modeling for 45nm - Demonstrate 45nm Radiation Hardened by Design (RHBD) Test Circuit Vehicle. - Conduct Mighty Guardian XIV Force-On-Force test at a location to be determined by Global Strike command to evaluate nuclear security policy as it applies to bomber generation. -Planning Mighty Guardian XV Force-on-Force test to evaluate nuclear security policy for waterfront restricted areas and submarines in transit at Naval Base Kings Bay, GA. - Conduct exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services.					
Accomplishments/Planned Programs Subtotals	9.749	13.935	14.052	0.000	14.052

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 25/0602718BR: *WMD Defeat Technologies*	29.359	18.660	17.902		17.902	17.788	17.695	17.962	18.250	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Achieve Radiation Hardened 150nm, RH 150nm 16 meters Static Random Access Memory and Radiation Hardened by Design 90nm reconfigurable Field Programmable Gate Array.

Achieve RHBD 90nm digital, analog and mixed signal System-On-a-Chip and digital and analog/mixed signal libraries.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	**R-1 ITEM NOMENCLATURE** PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	**PROJECT** RI: *Nuclear Survivability*

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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RM: *WMD Battle Management*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RM: *WMD Battle Management*	37.647	31.939	28.260	0.000	28.260	26.907	27.914	28.200	28.482	Continuing	Continuing

A. Mission Description and Budget Item Justification

The WMD Battle Management project develops, integrates, demonstrates and transitions emerging/innovative technologies to support the counter Weapons of Mass Destruction (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 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 and Biological Weapon aerosol agents released during these WMD counterforce strikes.

The FY 2009 to FY 2010 funding decreases reflects the Agency’s decision to rebalance efforts within its research and development portfolio to achieve the Department of Defense’s investment goal for basic research of 10-12% of Total Obligation Authority. The reductions are in the areas of advanced modeling systems and survivability technology. The impacts are delayed full 3-D modeling and simulation efforts for electromagnetic pulse response and consequence management predictions to include third order effects.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RM: WMD Battle Management	37.647	31.939	28.260	0.000	28.260

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: - Continued development of Weapons of Mass Destruction (WMD) reconnaissance technologies and WMD planning tools. - Studied/developed prototype dispense delivery mechanisms for high speed weapons in support of Global Strike combat assessment requirements. - Completed developmental testing of sensor suite for real-time, weapon-borne Battle Damage Indication system. - Conducted WMD Aerial Collection System (WACS) payload integration and flight testing of autonomous plume tracking, chemical detection/collection and biological detection sub-systems. - Developed Integrated Munitions Effects Assessment (IMEA) with integration of additional net-centric components for weaponeering. - Developed Vulnerability Assessment Protection Option (VAPO) 4.0 which integrated a computational fluid dynamic capability into the planning tool. - Continued to integrate advanced command and control capabilities into Defense Threat Reduction Agency (DTRA) Operations Center including the Global Command and Control System version 4 software suites which will allow DTRA to seamlessly share information between Combatant Commands (COCOMs) and the inter-agency community. - Integrated improved geospatial information, such as that provided by National Geospatial-Intelligence Agency, National Reconnaissance Office, and Wide Field of View Electro-Optical/Infra red data, into the WMD Common Operating Picture and other Command and Control capabilities for enhanced decision support. - Enabled Data discovery of WMD related activity propagating from all sources and data repositories using the Persistent Surveillance Test bed, Network Intelligence Surveillance and Reconnaissance, and Smart Agent technologies. - Provided common standards to network sensors, and data sources into common operating pictures providing WMD intelligence fusion.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Characterized the Tactical Satellite (TACSAT)-3 hyper spectral sensor and data for proactively identifying WMD precursor activity and post strike Battle Damage Assessment. - Developed near real time Concept of Operations (CONOPS) for Constant Hawk and enable on board processing of the camera upgrade Electro-Optical sensor with Chemical and Explosive Incidents and sensor overlay functionality. - Completed transition of the high-fidelity, damage predicting code EXCALIBUR (Explicit Calculations of Interacting Blocks Under Rapid Loading) demonstrated under the Tunnel Target Defeat Advanced Concept Technology Demonstrations to U.S. Strategic Command and Defense Intelligence Agency. - Performed annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing - Provided Targeting and Weaponeering Analysis Cell academics and targeting support to 38 groups. *FY 2010 Plans:* - Complete Global Strike battle damage assessment Phase 2 field demonstration. - Continue development of WMD Aerial Collection System. - Operationalize Tactical Microsatellite Experiment 3's Hyperspectral Imaging sensor for Countering Weapons of Mass Destruction (WMD) using Countering WMD Analysis Cell exploitation. - Identify signatures and establish test beds for sensors to find fix and track WMD related items and people. - Validate and transition the near real time Contingency Operations (CONOPS) for Constant Hawk to the warfighter. - Enable High Altitude Long Endurance Unmanned Aerial Vehicles (UAV) to relay sensor data. - Demonstrate capability to control FINDER UAV from an airborne control station and demonstrate FINDER auto-recovery capability. - Promulgate collaboration and decision support tool solutions into the Defense Threat Reduction Agency (DTRA) Operations Center through identification and procurement of cutting-edge technologies, completion of security accreditation, installation upon approval, and implementation of a comprehensive training program for the user community.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Administer situational awareness solutions into the DTRA Operations Center through an analysis of alternatives of government off-the-shelf and commercial off-the-shelf products for next-generation data analysis and visualization. - Deliver Integrated Munitions Effects Assessment 2010 with Advanced Targeting Assessment Capability 1.0 integrated engine. - Perform annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing. - Provide Targeting and Weaponeering Analysis Cell academics and targeting support. *FY 2011 Base Plans:* - Conduct demonstration of the WMD Aerial Collection System. - Validate implemented solutions for command and control, collaboration, decision support, and situational awareness and identify any necessary support base for further enhancement. - Perform integration testing and begin Dynamic Toolset development for Advance Targeting Assessment Capability. - Perform annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing. - Begin development of algorithms for Dynamic Toolset support using High Performance Computing. - Provide Targeting/Weaponeering Analysis Cell academics and targeting support. - Deliver Vulnerability Assessment Protection Option (VAPO) version with Critical Infrastructure Protection modeling and vulnerability analysis. - Commence development of Phase 3 of the Global Strike battle damage assessment system (system optimization). - Design prototype capability for precision delivery of unattended ground sensors from a small UAV. - Enhance Wide Area Aerial Surveillance technology to produce persistent coverage of WMD targets to predict and counter threats from Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE).					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RM: *WMD Battle Management*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Develop, integrate and demonstrate miniaturized CBRNE sensors with radio frequency tags in support of Combating Weapons of Mass Destruction (CWMD) Tag, Track and Locate. - Develop CWMD P-ISR integration framework for the fusion of data from multiple sources that provide activity based intelligence - Complete system assessment and flight test of the Phase 2 Global Strike battle damage assessment system, to include the Chemical, Acoustic, Nuclear and Seismic sensor capabilities, mesh networking with two or more hubs, relay of BDA data via a long haul (satellite) interface and display on a Warfighter Interface.					
Accomplishments/Planned Programs Subtotals	37.647	31.939	28.260	0.000	28.260

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 20/0602718BR: *WMD Defeat Technologies*	25.210	14.440	10.899		10.899	10.303	11.435	11.727	12.107	Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Standoff detection range of Weapons of Mass Destruction (WMD) reconnaissance system.

Number of new capabilities delivered to Combatant Commands (COCOMs).

Number of weaponeering solutions delivered to COCOMs.

Increase automation of the analytic process used by Defense Threat Reduction Agency Reachback, DTRA Operations Center and the U.S. Strategic Command Center for Combating WMD.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RT: *Target Assessment Technologies*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RT: *Target Assessment Technologies*	29.324	32.294	35.112	0.000	35.112	35.593	35.419	34.269	34.820	Continuing	Continuing

A. Mission Description and Budget Item Justification

For some hard and deeply buried targets, physical destruction is neither possible, nor practical, with current conventional weapons and employment techniques. It may be possible, however, to achieve target defeat objectives by denying or disrupting the mission or function of the target facility. Functional defeat, however, requires more information, more detailed analysis of the target. The functional defeat process includes finding and identifying a facility, characterizing its function and physical layout, determining its vulnerabilities to available weapons, planning and executing an attack, assessing damage, and if necessary, suppressing reconstitution efforts and re-attacking the facility. Target Assessment Technologies provides the Combatant Commands and the Intelligence Community with 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 and applying these processes to Weapons of Mass Destruction (WMD) target characterization and threat analysis presents the next technical challenge. The Target Assessment Technologies project now consists of three subordinate and related activities: (1) Targeting and Intelligence Community Technology Development; (2) Find, Characterize, Assess Technology Development; and (3) the newly added WMD Analysis Cell Technology Support.

The FY 2009 to FY 2010 increase in funding within this project is due to the rebalancing of efforts from Project RM – WMD Battle Management to enhance the Combating WMD Analysis Cell (C-WAC) effort, which is patterned after the Hard Target Research and Analysis Center model to develop and integrate new software, engineering, and modeling methodologies, technology, and vulnerability support.

The FY 2010 to FY 2011 increase is in support of the DoD and Presidential CWMD strategic priorities and will fill critical investment and sustainment gaps across the DTRA CWMD spectrum. This increase is in support of the C-WAC cell and will accelerate spiral development and deployment of new modeling capabilities across Nuclear, Biological Warfare (BW) and Chemical Warfare (CW) threat areas, enhancing fusion of R&D and intelligence support for the Combatant Commands.

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RT: *Target Assessment Technologies*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RT: Target Assessment Technologies	29.324	32.294	35.112	0.000	35.112

FY 2009 Accomplishments:

- Delivered enhanced Underground Targeting and Analysis System (UTAS) special operations mission planning capabilities to the special operations community.
- Analyzed and reported the findings of the Underground Facility (UGF) vulnerability assessment exercise conducted in FY 2008 to evaluate the effectiveness of our tools and processes to support the characterization of Underground Facility and Weapons of Mass Destruction (WMD) targets.
- Continued to provide target characterization training to the UGF and WMD target defeat communities. Taught five, one week classes reaching over 135 students from across DoD, the Intelligence Community and the defense industry.
- Continued development of a UGF signatures database to facilitate functional characterization of UGF targets for the Combatant Commands (COCOMs) and Intelligence Community.
- Continued development of enhanced site-specific geological characterization processes, completing one foreign geology template and 20 Geotechnical site characterizations to increase the fidelity and accuracy of our UGF characterizations.
- Maintained a trained and experienced cadre of 26 highly specialized engineers and produced over 100 UGF characterization reports for Defense Intelligence Agency and the COCOMs.
- Continued development and testing of the prototype Integrated Sensor System to support the UGF and WMD target characterization and assessment processes.
- Demonstrated the capability of the Combating WMD Analysis Cell to model and analyze nuclear weapons threats and issues.

FY 2010 Plans:

- Deliver Underground Targeting and Analysis System (UTAS) functional process modeling and point mensuration capability to the COCOMs and Intelligence Community.
- Fully integrate UTAS modeling capability into the DIA Underground Facility Analysis Center target characterization process and products.
- Continue to provide target characterization training for the UGF and WMD target defeat communities.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RT: *Target Assessment Technologies*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Demonstrate the capabilities of a prototype Integrated Sensor System to support the Underground Facility and Weapons of Mass Destruction (WMD) target characterization and assessment processes of the Combatant Commands (COCOMs) and Intelligence Community. - Demonstrate added Combating Weapons of Mass Destruction (CWMD) Analysis Cell capabilities to model and analyze biological weapons threats in support of COCOMs Command and Intelligence Community needs. - Research and develop models for analysis and assessment of weapons effects on WMD related equipment and systems for use by the Intelligence Community. *FY 2011 Base Plans:* - Add WMD systems and process characterization modeling and assessment capabilities to the UTAS functionality for support of the COCOMs and Intelligence Community targeting and weaponeering requirements. - Fully integrate models for analysis and assessment of weapons effects on WMD related equipment and systems into UTAS for use by the Intelligence Community. - Continue target characterization training for the Underground Facility (UGF) and WMD target defeat communities. - Design, develop and test on-node data fusion to enhance Integrated Sensor System surveillance capabilities for support of Combatant Commands (COCOMs) and Intelligence Community target characterization and assessment needs. - Demonstrate Combating Weapons of Mass Destruction (WMD) Analysis Cell initial capabilities to model and analyze chemical weapons threat development processes in response to COCOMs and Intelligence Community counter WMD requirements.					
Accomplishments/Planned Programs Subtotals	29.324	32.294	35.112	0.000	35.112

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 3: *Advanced Technology Development (ATD)*	R-1 ITEM NOMENCLATURE PE 0603160BR: *Counterproliferation Initiatives - Proliferation, Prevention and Defeat*	PROJECT RT: *Target Assessment Technologies*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Incorporation of Defense Threat Reduction Agency (DTRA) Underground Targeting and Analysis System (UTAS) 3-D models into Defense Intelligence Agency (DIA) standard targeting products by the end of FY 2010.

Attainment of final National Geospatial Intelligence Agency certification of UTAS geospatial information functionalities by the end of FY 2010.

Demonstration of an end-to-end hand emplaced Integrated Sensor System prototype by the end of FY 2010.

Demonstration against a realistic test target of the capability of a deployed sensor system to decrease uncertainty and improve fidelity of characterization and near-real-time damage assessment.

Demonstrate an initial Combating Weapons of Mass Destruction (CWMD) Analysis Cell capability to perform analysis of nuclear threats in response to COCOMs and Intelligence Community needs.

By FY 2010, demonstrate an initial CWMD Analysis Cell capability to perform analysis of biological weapons threats in response to COCOMs and Intelligence Community needs.

Demonstrate CWMD Analysis Cell capability to perform technical analysis of nuclear, biological or chemical weapons threats in response to Combatant Command and Intelligence Community needs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*				R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	15.499	9.489	7.307	0.000	7.307	6.660	5.432	5.508	5.587	Continuing	Continuing
RL: *Nuclear & Radiological Effects*	15.499	8.689	7.307	0.000	7.307	6.660	5.432	5.508	5.587	Continuing	Continuing
RR: *Test Infrastructure*	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Weapons of Mass Destruction (WMD) Defeat Capabilities program extends nuclear and radiological modeling and simulation development to system development and demonstration by developing nuclear and radiological assessment modeling tools and WMD integrated architecture to support military operational planning, weapon effects predictions, and strategic system design decisions; consolidate validated Defense Threat Reduction Agency (DTRA) modeling tools into net-centric environment for integrated functionality capable of predicting system responses to nuclear and radiological weapons producing electromagnetic, thermal, blast, shock and radiation environments in addition to chemical, biological, and conventional weapons. Key systems/environments include space assets, missiles, structures, networks, urban areas, and humans.

Efforts within this program element are rebalanced to enhance corporate capabilities in Program Element (PE) 0602718BR and PE 0603160BR to support Project RF – Detection Technology. The impacts delay full 3-D modeling and simulation efforts for electromagnetic pulse (EMP) response and consequence management predictions, to include second and third order effects.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605000BR: *WMD Defeat Capabilities*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	15.896	8.735	0.000	0.000	0.000
Current President's Budget	15.499	9.489	7.307	0.000	7.307
Total Adjustments	-0.397	0.754	7.307	0.000	7.307
• Congressional General Reductions		-0.046			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.800			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.397	0.000			
• Realignment / Internal Functional Transfer	0.000	0.000	-0.478	0.000	-0.478
• Inflation Reduction	0.000	0.000	-0.026	0.000	-0.026
• Other Program Adjustment	0.000	0.000	7.811	0.000	7.811

Congressional Add Details ($ in Millions, and Includes General Reductions)

	FY 2009	FY 2010
Project: RR: *Test Infrastructure*		
Congressional Add: *Electric Grid Reliability/Assurance*	0.000	0.800
Congressional Add Subtotals for Project: RR	0.000	0.800
Congressional Add Totals for all Projects	0.000	0.800

Change Summary Explanation

The decrease in funding between FY 2009 and FY 2010 reflects the rebalancing of projects to refocus research and development efforts to meet the 21st century Combating Weapons of Mass Destruction (WMD) needs in the Defense Threat Reduction Agency (DTRA) Basic Research Initiative and WMD Defeat Technologies programs. Efforts within this program element (PE) are rebalanced to enhance corporate capabilities in PE 0602718BR and PE 0603160BR to support Project RF – Detection Technology. The impacts delay full 3-D modeling and simulation efforts for electromagnetic pulse (EMP) response and consequence management predictions, to include second and third order effects.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605000BR: *WMD Defeat Capabilities*

The DoD did not estimate FY 2011 costs when the FY 2010 President's Budget was prepared. There is a FY 2011 decrease that reflects the internal functional transfer of advisory and assistance services from DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. This transfer reflects the internal functional realignment of advisory and assistance services and other business-related costs that were formerly captured under DTRA's Research, Development, Test & Evaluation, Defense-Wide account to the Operation and Maintenance, Defense-Wide account. As part of DTRA's continued effort to integrate and refine its functions and activities, this transfer more appropriately aligns this funding to the proper appropriation. At the Agency level, this functional transfer between appropriations will have a zero sum impact to these budget line items. An additional decrease of $.026 million is associated with changes in the inflation rates and therefore is a price change, not a program change.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RL: *Nuclear & Radiological Effects*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RL: *Nuclear & Radiological Effects*	15.499	8.689	7.307	0.000	7.307	6.660	5.432	5.508	5.587	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Advanced Modeling Systems includes three functional areas 1) Integrated Weapons of Mass Destruction Toolset (IWMDT), 2) Nuclear Capability Services (NuCS), and 3) Consequence of Execution (CoE)-Nuclear Integration. NuCS develops the capabilities for the U.S. and its allies for state-of-the-art, secure, accredited, nuclear & radiological Modeling & Simulation (M&S) capabilities. The IWMDT develops the architecture, defines and implements the standards to consolidate validated Defense Threat Reduction Agency tools, and through this architecture, enables rapid access for planning, emergency response and assessment capabilities. These capabilities are used by a wide range of planners, managers, and operational and technical personnel facing the full spectrum of chemical, biological, radiological, nuclear, and high-yield explosives threats. CoE-Nuclear Integration provides the modeling capability to U.S. Strategic Command as well as enhancing the consequence assessment integration and testing for transition of Chemical, Biological, Radiological, Nuclear, and Explosive Events Science & Technology to the Joint Effects Model, Chemical-Biological Defense Program for hazard prediction. This sub-project extends research and development to system development and demonstration.

Funds are realigned from this project due to rebalancing of efforts to project RF – Detection Technology. The impacts are in the areas of advanced modeling systems and delay of full 3-D modeling and simulation efforts for electromagnetic pulse response and consequence management predictions, to include second and third order affects.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RL: Nuclear & Radiological Effects	15.499	8.689	7.307	0.000	7.307
FY 2009 Accomplishments: - Complete Nuclear Weapon Effects Users Group accreditation of modeling and simulation in the Nuclear Capability Services (NuCS). - Provide fully distributed, transportable and mobile Chemical, Biological, Radiological and Nuclear (CBRN) capability solution meeting the CBRN requirements of forward deployed warfighters, first					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RL: *Nuclear & Radiological Effects*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
responders, analysts, and future planning users. Through this capability, users customize the CBRN portal to meet their decision support, analysis, and collaborative mission planning through a dynamically fused view. - Deliver NuCS Spiral 2 capabilities through the Integrated Weapons of Mass Destruction Toolset framework meeting 80% of customer-required nuclear weapon effects Modeling & Simulation (M&S), enabling technology transfer to Program of Record and external systems as required. - Initiate NuCS Spiral 3 development addressing the remaining 20% of customer-required nuclear weapon effect M&S capabilities. - Deliver nuclear weapon improved water/urban burst prototype. *FY 2010 Plans:* - Establish an operational baseline Continuity of Operations capability for geographically separated real-time backup of all CBRN and Explosive Events capabilities. - Initial implementation of Net Centric Enterprise Services messaging and collaboration for use across exercise and operational deployments. - Migrate nuclear effects framework and Consequence of Execution – Nuclear Integration efforts to program of records for community use and broader integration. - Data replication synchronization implemented for disparate deployment methods. - Complete updated data verification from Nevada Test Site digs conducted in FY 2008. *FY 2011 Base Plans:* - Enhance the Continuity of Operations (COOP) functionality to allow “hot” updates and full Rapid Assessment and Identification support of alternate sites and capabilities. - Enhanced implementation of Net Centric Enterprise Services messaging and collaboration for use across exercise and operational deployments. - All three programs complete legacy tools migration, enter into a pure integration paradigm focused on “plug and play” methodology for emergent technologies into the extant Chemical, Biological,					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RL: *Nuclear & Radiological Effects*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Radiological, Nuclear and Explosive Integrated Weapons of Mass Destruction Toolset (IWMDT) framework. - Integrate Nevada Test Site dig data into Consequence of Execution – Nuclear Integration science efforts resulting in enhanced capabilities across IWMDT and the nuclear community tools.					
Accomplishments/Planned Programs Subtotals	15.499	8.689	7.307	0.000	7.307

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 20/0602718BR: *WMD Defeat Technologies*	15.041	19.704	16.776		16.776	17.323	17.067	17.336	17.612	Continuing	Continuing

D. Acquisition Strategy

The programs for Integrated Weapons of Mass Destruction Toolset, Nuclear Capability Services, and Consequence of Execution are executed through competed, Cost Plus Award-Fee and Cost Plus Fixed-Fee contracts. These contracts are normally 3-year efforts for software development, test, and integration. Follow-on contracts will be competed for award to continue any out-year activities.

E. Performance Metrics

Demonstrate and provide over 80% of the customer-required Nuclear Weapons Effects (NWE) modeling and simulation capabilities over networks, e.g. Department of Defense Global Information Grid.

Transform 100% of the validated mission-required legacy Defense Threat Reduction Agency NWE codes to a net-centric implementation in a process-controlled Verification, Validation, and Accreditation standards-based method.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RL: *Nuclear & Radiological Effects*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Development - IWMDT	C/CPAF	SAIC San Deigo, CA	10.800	3.226	Nov 2009	2.564	Nov 2010	0.000		2.564	28.000	44.590	42.000
System Development - NuCS	C/CPFF	Applied Research Associates Albuquerque, NM	2.100	1.560	Nov 2009	1.270	Nov 2010	0.000		1.270	2.390	7.320	5.658
System Development - COE	C/CPFF	Titan Kingstowne, VA	4.149	0.942	Nov 2009	0.444	Nov 2010	0.000		0.444	2.390	7.925	4.490
System Development - Component Contracts	C/Various	Various Various	3.772	0.957	Dec 2009	0.344	Dec 2010	0.000		0.344	4.780	9.853	8.452
		Subtotal	20.821	6.685		4.622		0.000		4.622	37.560	69.688	60.600

Remarks

The "Various" reported reflects multiple contracts, mainly CPFF.

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Configuration Management	C/Various	SAIC, ARA, Titan Various	0.122	0.000		0.024	Nov 2010	0.000		0.024	0.180	0.326	0.302
Software Integration	C/Various	SAIC, ARA, Titan Various	2.600	0.000		0.500	Nov 2010	0.000		0.500	6.079	9.179	8.679
Technical Data	C/Various	SAIC, ARA, Titan	0.042	0.000		0.008	Nov 2010	0.000		0.008	0.070	0.120	0.112

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
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Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Various											
Engineering Services	C/Various	SAIC, ARA, Titan Various	1.264	0.000		0.200	Nov 2010	0.000		0.200	1.540	3.004	2.804
Accreditation & Certification	C/Various	SAIC, ARA, Titan Various	0.122	0.000		0.024	Nov 2010	0.000		0.024	0.180	0.326	0.302
		Subtotal	4.150	0.000		0.756		0.000		0.756	8.049	12.955	12.199

Remarks

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/Various	SAIC, ARA, Titan Various	1.050	0.513	Nov 2009	0.505	Nov 2010	0.000		0.505	2.012	4.080	3.050
Operational Test & Evaluation	C/Various	SAIC, ARA, Titan Various	1.050	0.512	Nov 2009	0.505	Nov 2010	0.000		0.505	2.012	4.079	3.050
		Subtotal	2.100	1.025		1.010		0.000		1.010	4.024	8.159	6.100

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
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Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	C/Various	SAIC, ARA, Titan Various	1.050	0.467	Nov 2009	0.479	Nov 2010	0.000		0.479	2.012	4.008	3.050
Travel	C/Various	SAIC, ARA, Titan Various	0.528	0.256	Nov 2009	0.220	Nov 2010	0.000		0.220	1.006	2.010	1.525
Overhead	C/Various	SAIC, ARA, Titan Various	0.528	0.256	Nov 2009	0.220	Nov 2010	0.000		0.220	1.006	2.010	1.525
		Subtotal	2.106	0.979		0.919		0.000		0.919	4.024	8.028	6.100

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	29.177	8.689		7.307		0.000		7.307	53.657	98.830	84.999

Remarks

"All PY Costs" costs and activities for Integrated Weapons of Mass Destruction Toolset (IWMDT), Nuclear Capability Server (NuCS), and Consequence of Execution (COE) were assigned under Project BD of PE 0602716BR. IWMDT was funded in 2004 by a competed, CPAF contract for $12,425,028 over a 3-year period. At end of FY 2006, its follow-on contract was awarded with an initial $300,000 increment. IWMDT program efforts have continued into FY 2010 with $28,961,730.49 now applied. Likewise, the NuCS program was funded under a competed, CPFF contract over a 3-year period with funding of $5,913,235 applied through FY 2008; a follow-on contract has now been awarded with initial funding to date of $2,355,880.00 to continue program efforts. COE was funded under a competed, CPFF contract with increments to date of $6,566,087 total. Beginning in FY 2008, these activities began funding under PE 0605000BR. Beginning in FY10 the COENI follow-on contract anticipates funding $1M.

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Defense Threat Reduction Agency		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605000BR: *WMD Defeat Capabilities*	**PROJECT** RL: *Nuclear & Radiological Effects*

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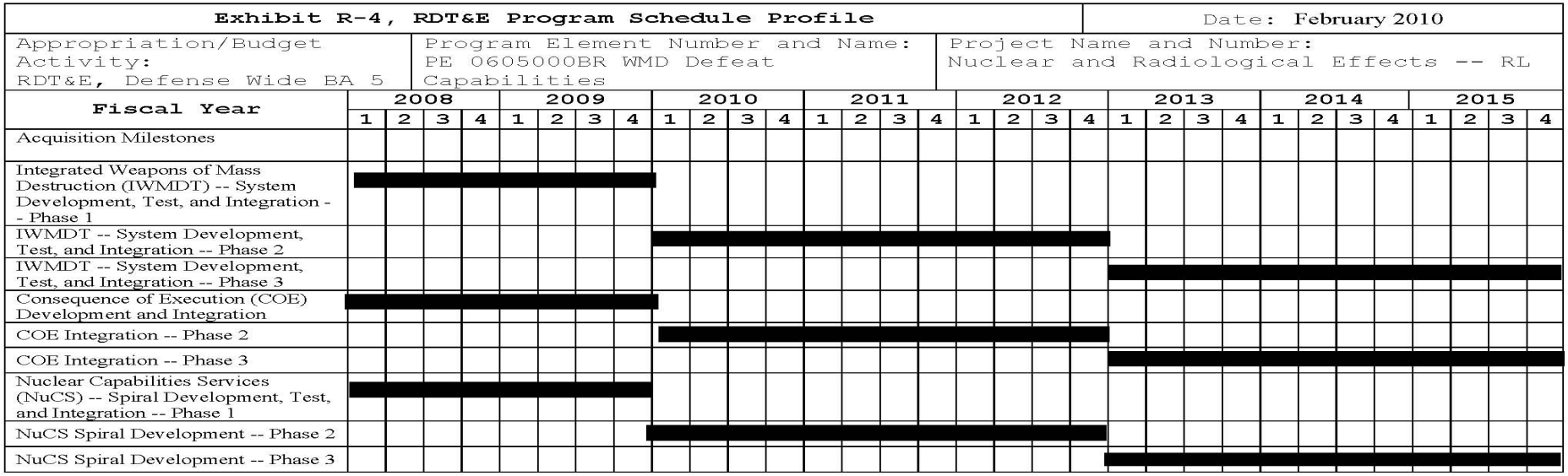
Exhibit R-4, RDT&E Program Schedule Profile		Date: February 2010
Appropriation/Budget Activity: RDT&E, Defense Wide BA 5	Program Element Number and Name: PE 0605000BR WMD Defeat Capabilities	Project Name and Number: Nuclear and Radiological Effects -- RL



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R-4 Program Schedule Profile

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	**R-1 ITEM NOMENCLATURE** PE 0605000BR: *WMD Defeat Capabilities*	**PROJECT** RL: *Nuclear & Radiological Effects*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Integrated Weapons of Mass Destruction Toolset (IWMDT) - System Development , Test, and Integration - Phase I	1	2009	4	2009
IWMDT - System Development, Test, and Integration - Phase 2	1	2010	4	2012
IWMDT - System Development, Test, and Integration - Phase 3	1	2013	4	2015
Consequence of Execution (COE) Development and Integration	1	2009	4	2009
COE Integration - Phase 2	1	2010	4	2012
COE Integration - Phase 3	1	2013	4	2015
Nuclear Capabilities Services (NuCS) - Spiral Development, Test, and Integration - Phase 1	1	2009	4	2009
NuCS - Spiral 2 Development	1	2010	4	2012
NuCS - Spiral 3 Development	1	2013	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RR: *Test Infrastructure*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RR: *Test Infrastructure*	0.000	0.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles											

A. Mission Description and Budget Item Justification

Test Infrastructure performs research and testing for the effects of Electromagnetic Pulse (EMP) attacks on the electric power grid and associated control systems, critical communications systems, and other defense critical infrastructures. Current modeling capabilities would be enhanced to include EMP effects and to allow analysis of multiple infrastructures supporting key Department of Defense facilities. This enhanced capability is needed by U.S. Strategic Command and other Department of Defense (DoD) components to address critical mission assurance concerns in the event of EMP attacks.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RR - Test Infrastructure	0.000	0.000	0.000	0.000	0.000
Test Infrastructure performs research and testing for the effects of Electromagnetic Pulse (EMP) attacks on the electric power grid and associated control systems, critical communications systems, and other defense critical infrastructures. Current modeling capabilities would be enhanced to include EMP effects and to allow analysis of multiple infrastructures supporting key Department of Defense facilities. This enhanced capability is needed by U.S. Strategic Command and other Department of Defense (DoD) components to address critical mission assurance concerns in the event of EMP attacks. *FY 2009 Accomplishments:* [*** PLEASE ENTER ACCOMPLISHMENT/PLANNED PROGRAM TEXT FOR PRIOR YEAR. ***]					
Accomplishments/Planned Programs Subtotals	0.000	0.000	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 5: *Development & Demonstration (SDD)*	R-1 ITEM NOMENCLATURE PE 0605000BR: *WMD Defeat Capabilities*	PROJECT RR: *Test Infrastructure*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Electric Grid Reliability/Assurance *FY 2009 Accomplishments:* [*** PLEASE ENTER CONGRESSIONAL ADD TEXT FOR PRIOR YEAR. ***] *FY 2010 Plans:* - Determine and define the effects on the three elements of the power grid - Incorporate EMP effects and coupling models into tools to allow for analysis of power grid and communications impacts on the DoD mission assurance for key facilities and such as command and control nodes. - Develop and evaluate technologies to mitigate effects of EMP attacks	0.000	0.800
Congressional Adds Subtotals	0.000	0.800

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• 20/0602718BR: *WMD Defeat Technologies*	17.411	19.651	21.528		21.528	21.437	21.354	21.705	22.101	Continuing	Continuing

D. Acquisition Strategy

Interagency Cost Reimbursement Order (IACRO) to the National Nuclear Security Administration (NNSA).

E. Performance Metrics

Adapt EMP coupling models for DoD application and identify new Electromagnetic Pulse (EMP) mitigation technology for command and control facilities (fixed or mobile).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Defense Threat Reduction Agency	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605502BR: *Small Business Innovation Research*

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	8.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
RA: *Systems Engineering and Innovation*	8.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Note

* Funding is not allocated until the year of execution. Program Element 0605502BR “Small Business Innovative Research (SBIR)” is used in reporting year-end actual expenses only.

A. Mission Description and Budget Item Justification

The SBIR program provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting Department of Defense (DoD) research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of DoD supported research and development results. These efforts are responsive to Public Law 106-554.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	8.076	0.000	0.000	0.000	0.000
Total Adjustments	8.076	0.000	0.000	0.000	0.000
• Congressional General Reductions		0.000			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		0.000			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	8.076	0.000			

Change Summary Explanation

Funding for the FY 2009 SBIR Program has been consolidated in this program element for execution.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605502BR: *Small Business Innovation Research*	PROJECT RA: *Systems Engineering and Innovation*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RA: *Systems Engineering and Innovation*	8.076	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles											

Note

* Funding is not allocated until the year of execution. Program Element 0605502BR "Small Business Innovative Research (SBIR)" is used in reporting year-end actual expenses only.

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 Department of Defense (DoD) research and development needs; fosters and encourages participation of minority and disadvantaged businesses in technological innovation; and increases the commercial application of DoD supported research and development results. These efforts are responsive to Public Law 106-554.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
RA: Systems Engineering and Innovation	8.076	0.000	0.000	0.000	0.000
FY 2009 Accomplishments: - Completed execution of 8 FY 2007 Phase II contracts. - Continued execution of 7 FY 2008 Phase II contracts. - Awarded 12 Phase I contracts to perform feasibility studies on FY 2009 topics. - Awarded 8 FY 2009 Phase II contracts on successful FY 2008 Phase I efforts. - Transitioned FY 2006 and prior Phase II efforts to Phase III, Commercialization, as results and funding permit.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Defense Threat Reduction Agency		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 6: *RDT&E Management Support*	R-1 ITEM NOMENCLATURE PE 0605502BR: *Small Business Innovation Research*	PROJECT RA: *Systems Engineering and Innovation*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: N/A					
Accomplishments/Planned Programs Subtotals	8.076	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Number of Phase I awards supporting innovative technology development.

Number of Phase II and III awards leading to technology transition.

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