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**Department of Defense  
Fiscal Year (FY) 2012 Budget Estimates**

February 2011



**Defense Threat Reduction Agency**

*Justification Book Volume 5*

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

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Defense Threat Reduction Agency • President's Budget FY 2012 • RDT&E Program

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Defense-Wide  
 FY 2012 President's Budget  
 Exhibit R-1 FY 2012 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

01 Feb 2011

Summary Recap of Budget Activities -----	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**
Basic Research	39,951	47,412		47,412	47,328		47,328
Applied Research	218,761	212,742		212,742	212,366		212,366
Advanced Technology Development (ATD)	236,408	295,163		295,163	294,642		294,642
System Development and Demonstration (SDD)	9,255	7,307		7,307	7,294		7,294
RDT&E Management Support	8,347						
Total Research, Development, Test & Evaluation	512,722	562,624		562,624	561,630		561,630
 Summary Recap of FYDP Programs -----							
Research and Development	512,722	562,624		562,624	561,630		561,630
Total Research, Development, Test & Evaluation	512,722	562,624		562,624	561,630		561,630

R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 1, 2011 at 16:00:47

\* Reflects the FY 2011 President's Budget with an undistributed adjustment to match the Annualized Continuing Resolution funding level by appropriation.

\*\* Adjusts each budget line included in the FY 2011 President's Budget request proportionally to match the Annualized Continuing Resolution funding level for each appropriation.

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Defense-Wide  
FY 2012 President's Budget  
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(Dollars in Thousands)

01 Feb 2011

Summary Recap of Budget Activities -----	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Basic Research	47,737		47,737
Applied Research	196,954		196,954
Advanced Technology Development (ATD)	283,073		283,073
System Development and Demonstration (SDD)	5,888		5,888
RDT&E Management Support			
Total Research, Development, Test & Evaluation	533,652		533,652
 Summary Recap of FYDP Programs -----			
Research and Development	533,652		533,652
Total Research, Development, Test & Evaluation	533,652		533,652

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Appropriation -----	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**
-----	-----	-----	-----	-----	-----	-----	-----
Defense Threat Reduction Agency	512,722	562,624		562,624	561,630		561,630
Total Research, Development, Test & Evaluation	512,722	562,624		562,624	561,630		561,630

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Defense-Wide  
FY 2012 President's Budget  
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01 Feb 2011

Appropriation -----	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Defense Threat Reduction Agency	533,652		533,652
Total Research, Development, Test & Evaluation	533,652		533,652

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Defense-Wide  
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01 Feb 2011

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

Program Line Element No Number	Item	Act	FY 2010 (Base & OCO)	FY 2011 Base Request with CR Adj*	FY 2011 OCO Request with CR Adj*	FY 2011 Total Request with CR Adj*	FY 2011 Annualized CR Base**	FY 2011 Annualized CR OCO**	FY 2011 Annualized CR Total**	S e c
1 0601000BR	DTRA Basic Research Initiative	01	39,951	47,412		47,412	47,328		47,328	U
	Basic Research		39,951	47,412		47,412	47,328		47,328	
24 0602718BR	Weapons of Mass Destruction Defeat Technologies	02	218,761	212,742		212,742	212,366		212,366	U
	Applied Research		218,761	212,742		212,742	212,366		212,366	
30 0603160BR	Counterproliferation Initiatives - Proliferation Prevention and Defeat	03	236,408	295,163		295,163	294,642		294,642	U
	Advanced Technology Development (ATD)		236,408	295,163		295,163	294,642		294,642	
123 0605000BR	Weapons of Mass Destruction Defeat Capabilities	05	9,255	7,307		7,307	7,294		7,294	U
	System Development and Demonstration (SDD)		9,255	7,307		7,307	7,294		7,294	
155 0605502BR	Small Business Innovation Research	06	8,347							U
	RDT&E Management Support		8,347							
Total Research, Development, Test & Eval, DW			512,722	562,624		562,624	561,630		561,630	

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1	0601000BR	DTRA Basic Research Initiative	01	47,737		47,737	U
		Basic Research		47,737		47,737	
24	0602718BR	Weapons of Mass Destruction Defeat Technologies	02	196,954		196,954	U
		Applied Research		196,954		196,954	
30	0603160BR	Counterproliferation Initiatives - Proliferation Prevention and Defeat	03	283,073		283,073	U
		Advanced Technology Development (ATD)		283,073		283,073	
123	0605000BR	Weapons of Mass Destruction Defeat Capabilities	05	5,888		5,888	U
		System Development and Demonstration (SDD)		5,888		5,888	
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Appropriation: 0400D Research, Development, Test &amp; Eval, DW

Line No	Program Element Number	Item	Act	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Se
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		Basic Research		47,737		47,737	
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30	0603160BR	Counterproliferation Initiatives - Proliferation Prevention and Defeat	03	283,073		283,073	U
		Advanced Technology Development (ATD)		283,073		283,073	
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		System Development and Demonstration (SDD)		5,888		5,888	
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R-1P: FY 2012 President's Budget (Published Official Position With FY 2011 CR Adjustments), as of February 1, 2011 at 16:00:47

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Defense Threat Reduction Agency • President's Budget FY 2012 • RDT&E Program

**Program Element Table of Contents (by Budget Activity then Line Item Number)**

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***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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01	01	0601000BR	DTRA Basic Research Initiative.....	Volume 5 - 629

***Budget Activity 02: Applied Research***  
***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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<b>Line Item</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
24	02	0602718BR	WMD Defeat Technologies.....	Volume 5 - 633

***Budget Activity 03: Advanced Technology Development (ATD)***  
***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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<b>Line Item</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
30	03	0603160BR	Counterproliferation Initiatives - Proliferation, Prevention and Defeat.....	Volume 5 - 675

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***Budget Activity 05: Development & Demonstration (SDD)***  
***Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide***

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<b>Line Item</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
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<b>Line Item</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
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Defense Threat Reduction Agency • President's Budget FY 2012 • RDT&E Program

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DTRA Basic Research Initiative	0601000BR	01	01.....Volume 5 - 629	
Small Business Innovation Research	0605502BR	155	06.....Volume 5 - 717	
WMD Defeat Capabilities	0605000BR	123	05.....Volume 5 - 707	
WMD Defeat Technologies	0602718BR	24	02.....Volume 5 - 633	

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

**Appropriation: RDT&E, Defense-Wide**

**Date: February 2011**

**OVERVIEW**

The threat to the nation's security presented by weapons of mass destruction (WMD) is immediate, persistent, growing, and evolving. The recently updated National Security Strategy (NSS) underscores this by stating ". . . there is no greater threat to the American people than weapons of mass destruction, particularly the danger posed by the pursuit of nuclear weapons by violent extremists and their proliferation to additional states." Accordingly, the Quadrennial Defense Review Report (QDR), February 2010, identifies numerous initiatives in support of the Department's priorities and key mission areas to provide a layered defense across the spectrum of the counter-WMD mission in order to provide the American people the most effective and efficient barriers to WMD.

The Defense Threat Reduction Agency (DTRA) is the Department of Defense's (DoD) combat support agency for the WMD mission, executing national missions related to countering WMD while working as an interagency and international team builder to stop WMD threats at their sources, interdict weapons and WMD materials at borders and in transit, as well as mitigate WMD effects. Additionally, the Director, DTRA heads the United States Strategic Command Center for Combating WMD (SCC-WMD) in a dual-hatted role. The SCC-WMD supports the development and advocacy of DoD doctrine, organization, training, material, leadership and education, personnel, and facilities (DOTMLPF) for countering WMD capabilities and synchronizes DoD component countering WMD-related planning efforts. The DTRA budget request implements DoD guidance and represents the Department's investment in securing the nation from the threat of WMD.

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## Acronyms

ACES	Arms Control Enterprise System
AI	Active Interrogation
ATD	Advanced Technology Development
AUV	Autonomous Underwater Vehicle
BAA	Broad Agency Announcement
BDA	Battle Damage Assessment
BDI	Battle Damage Information
BLADE	BDI Link Advanced Demonstrator
BLU	Bomb, Live Unit
CBRNE	Chemical, Biological, Radiological, Nuclear, and High-yield Explosives
COCOM	Combatant Command
CoE-NI	Consequence of Execution – Nuclear Integration
COI	Community of Interest
CONOPS	Concept of Operations
CONPLAN	Concept of Operation Plan
COOP	Continuity of Operations
CP	Counter-proliferation
CTR	Cooperative Threat Reduction
C-WAC	Counter-WMD Analysis Center
CWMD	Combating Weapons of Mass Destruction
CWMD-T	Combating Weapons of Mass Destruction -Terrorism
DARPA	Defense Advanced Research Projects Agency
DEL	DTRA Experimentation Lab
DIAMONDS	Defense Integration and Management of Nuclear Data Services
DITEC	DTRA Integration Technical Experimentation Center
DNDO	Domestic Nuclear Detection Office

DoD	Department of Defense
DOE	Department of Energy
DPOE	Dynamic Picture of the Operating Environment
DSP	Digital Signal Processing
DSWA	Defense Special Weapons Agency
DTRA	Defense Threat Reduction Agency
DTSA	Defense Technology Security Administration
EMP	Electromagnetic Pulse
EOD	Explosive Ordnance Disposal
EXCALIBUR	Explicit Calculations of Interacting Blocks Under Rapid Loading
FINDER	Flight Inserted Detector Expendable for Reconnaissance
FOC	Full Operational Capability
GDF	Global Development of Forces
GEF	Global Employment of Forces
GIG	Global Information Grid
GNDS	Global Nuclear Defense System
GUI	Graphical User Interface
HANE	High Altitude Nuclear Environments
HEMP	High Altitude Electro Magnetic Pulse
He3-RT	Helium 3 Replacement Technology
HDBT	Hard and Deeply Buried Targets
HPAC	Hazard Prediction and Assessment Capability
HPC	High Performance Computing
IBRD	Interagency Biological Restoration Demonstration
IED	Improvised Explosive Device
IMEA	Integrated Munitions Effects Assessment
IND	Improvised Nuclear Device

INDRAC	Interagency CWMD Database of Responsibilities, Authorities, and Capabilities
IPODS	Integrated Precision Ordnance Delivery System
ISIS	Integrated Standoff Inspection System
ISS	Integrated Sensor System
ITD	Integrated Technology Demonstration
IWMDT	Integrated Weapons of Mass Destruction Toolset
JAIEG	Joint Atomic Information Exchange Group
JCDE	Joint Concept Development & Experimentation
JCTD	Joint Concept Technology Demonstration
JECE	Joint Elimination Coordination Element
JEM	Joint Effects Model
JIPOE	Joint Intelligence Preparation of the Operational Environment
JSAF	Joint Semi-Automated Forces
JSIVA	Joint Staff Integrated Vulnerability Assessments
LIBS	Laser Induced Breakdown Spectroscopy
LTS	Large Test Structure
MAV	Micro Air Vehicle
MCNP	Monte Carlo N-Particle
MDA	Missile Defense Agency
M&S	Modeling and Simulation
MFK-R	Mobile Field Kit – Radiological
MMUAS	Multi-Mission Unmanned Aerial Systems
MOP	Massive Ordnance Penetrator
NATO	North Atlantic Treaty Organization
NIF	National Ignition Facility
NLGC	Nunn Lugar Global Cooperation

NMS	National Military Strategy
NMSP	National Military Strategic Plan
NPR	Nuclear Posture Review
NRTRS	Near Real Time Reachback Support
NSS	National Security Strategy
NTNF	National Technical Nuclear Forensics
NTPR	Nuclear Test Personnel Review
NuCS	Nuclear Capability Services
NWE	Nuclear Weapon Effects
NWEC	Nuclear Weapon Effects Center
NWRM	Nuclear Weapons Related Materiel
OCO	Overseas Contingency Operations
OCONUS	Outside the Continental United States
OPCW	Organization for the Prohibition of Chemical Weapons
OSCAR	Occluding Six-Crystal Array
OSD CAPE	Office of the Secretary of Defense Capability Assessment and Program Evaluation
OSIA	On-site Inspection Agency
P-ISR	Persistent Intelligence, Surveillance, and Reconnaissance
PITAS	Photonuclear Inspection and Threat Analysis System
PNAF	Prime Nuclear Airlift Forces
R2TD	Rapid Reaction Tunnel Detection
RDD	Radiological Dispersion Device
R&D	Research and Development
RadHard	Radiation Hardened
RHBD	Radiation Hardened by Design
RHM	Radiation Hardened Microelectronics
RHOC	Radiation Hardened Oversight Council

SBIR	Small Business Innovative Research
SCC WMD	USSTRATCOM Center for Combating Weapons of Mass Destruction
SHAPE	Supreme Headquarters Allied Powers, Europe
SOF	Special Operation Forces
SOX	Standoff Operational Exercise
SREMP	Source Region Electromagnetic Pulse
START	Strategic Arms Reduction Treaty
STIRS	Smart Threads Integrated Radiological Sensors
TACSAT	Technical Satellite
TDFD	Timed Delay Firing Device
TEAMS	Technical Evaluation Assessment and Monitor Site
TOA	Total Obligation Authority
UAV	Unmanned Aerial Vehicle
UCP	Unified Command Plan
UGF	Underground Facility
UHPC	Ultra-High Performance Concrete
USEUCOM	U.S. European Command
USNORTHCOM	U.S. Northern Command
USP	University Strategic Partnership
USPACOM	U.S. Pacific Command
USSOCOM	U.S. Special Operations Command
USSTRATCOM	U.S. Strategic Command
UTAS	Underground Targeting and Analysis System
VAPO	Vulnerability Assessment Protection Option
VOIP	Voice Over Internet Protocol
WACS	WMD Aerial Collection System
WCF	West Coast Facility

WESC                      Weapon Effects Steering Committee  
WMD                        Weapons of Mass Destruction



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>				PE 0601000BR: <i>DTRA Basic Research Initiative</i>							
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	39.951	47.412	47.737	-	47.737	48.071	48.493	48.925	49.757	Continuing	Continuing
RU: <i>Fundamental Research for Combating WMD</i>	39.951	47.412	47.737	-	47.737	48.071	48.493	48.925	49.757	Continuing	Continuing

**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, 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.

The increase from FY 2010 to FY 2011 is due to a FY 2010 Congressional budget reduction of \$7.500M which was levied on the program due to the rate of program growth. The FY 2011 to FY 2016 program reflects the DTRA corporate decision to fund the 6.1 Basic Research program to 8-10% of Total Obligation Authority.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	40.848	47.412	47.737	-	47.737
Current President's Budget	39.951	47.412	47.737	-	47.737
Total Adjustments	-0.897	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.061	-			
• SBIR/STTR Transfer	-0.836	-			

**Change Summary Explanation**

The FY 2010 decrease from the previous President's Budget submission is due to the internal SBIR reprogramming and

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	PE 0601000BR: <i>DTRA Basic Research Initiative</i>

the FY 10-11PA reprogramming action in support of higher priority Department needs.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0601000BR: <i>DTRA Basic Research Initiative</i>				<b>PROJECT</b> RU: <i>Fundamental Research for Combating WMD</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RU: <i>Fundamental Research for Combating WMD</i>	39.951	47.412	47.737	-	47.737	48.071	48.493	48.925	49.757	Continuing	Continuing

**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.

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 Programs (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>Title:</b> Project RU: Fundamental Research for Combating WMD	39.951	47.412	47.737
<b>FY 2010 Accomplishments:</b>			
<ul style="list-style-type: none"> <li>- Expanded the FY 2009 basic research portfolio, 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 attained goal was to build a 6.1 basic research portfolio of approximately 8-10% of the DTRA research and development investment.</li> <li>- Conducted a technical review of each grant that assessed the scientific advancements and progress met by the award's technical objectives, which also fostered collaboration and built relationships within the scientific community.</li> <li>- Conducted an external panel review of the basic research program that was open to DoD research stakeholders, which assessed the focus and scope of the program with respect to the CWMD challenges, and assessed the coordination of CWMD basic research across the DoD mission space and across the broader basic research community to avoid unintended duplication and ensure successful partnerships.</li> </ul>			
<b>FY 2011 Plans:</b>			
<ul style="list-style-type: none"> <li>- Program expected to be managing over 200 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 8-10% of the DTRA research and development investment.</li> </ul>			

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 1: <i>Basic Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0601000BR: <i>DTRA Basic Research Initiative</i>	<b>PROJECT</b> RU: <i>Fundamental Research for Combating WMD</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012
<p>- 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.</p> <p>- 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, 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.</p> <p><b><i>FY 2012 Plans:</i></b></p> <p>- Program expected to be managing over 200 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 8-10% of the DTRA research and development investment.</p> <p>- Plan to 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.</p> <p>- Plan to conduct an external panel review of the basic research program, which will be open to DoD research stakeholders, to assess the focus and scope of the program with respect to the 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.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	39.951	47.412	47.737

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 20/0602718BR: <i>WMD Defeat Technologies</i>	13.876	10.385	8.631		8.631	8.065	7.754	7.530	7.583	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 2012 Defense Threat Reduction Agency** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	218.761	212.742	196.954	-	196.954	191.786	191.547	195.336	198.406	Continuing	Continuing
RA: <i>Systems Engineering and Innovation</i>	49.387	53.464	42.112	-	42.112	41.379	40.652	41.600	41.440	Continuing	Continuing
RE: <i>Counter-Terrorism Technologies</i>	9.277	-	-	-	-	-	-	-	-	Continuing	Continuing
RF: <i>Detection Technology</i>	40.556	52.649	50.548	-	50.548	48.248	48.614	49.926	50.894	Continuing	Continuing
RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>	29.431	29.139	17.115	-	17.115	14.825	14.935	13.786	13.718	Continuing	Continuing
RI: <i>Nuclear Survivability</i>	22.048	17.902	17.503	-	17.503	17.261	17.388	17.855	18.718	Continuing	Continuing
RL: <i>Nuclear &amp; Radiological Effects</i>	21.813	16.776	25.343	-	25.343	23.922	23.968	25.202	25.620	Continuing	Continuing
RM: <i>WMD Battle Management</i>	15.239	10.899	13.761	-	13.761	18.569	16.366	17.288	17.693	Continuing	Continuing
RR: <i>Test Infrastructure</i>	16.648	21.528	21.941	-	21.941	19.517	21.870	22.149	22.740	Continuing	Continuing
RT: <i>Target Assessment Technologies</i>	0.486	-	-	-	-	-	-	-	-	Continuing	Continuing
RU: <i>Fundamental Research for Combating WMD</i>	13.876	10.385	8.631	-	8.631	8.065	7.754	7.530	7.583	Continuing	Continuing

**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 to prepare for the future threat. A focused and 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.

Project RA provides systems engineering and analysis support across all other Projects, innovative counterproliferation research, and technical advisory reachback support on Weapons of Mass Destruction (WMD) effects and consequences.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Defense Threat Reduction Agency DATE: February 2011

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	PE 0602718BR: <i>WMD Defeat Technologies</i>

Project RE provides initial funding for the Joint Intelligence Preparation of the Operational Environment (JIPOE) process to forecast plausible terrorist WMD threats for planning and conducting operations to combat WMD terrorism. Follow-on funding for this project can be found in the Proliferation Prevention and Defeat; 0603160BR, budget exhibit.

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 RT 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.

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.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	PE 0602718BR: <i>WMD Defeat Technologies</i>

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	221.185	212.742	206.170	-	206.170
Current President's Budget	218.761	212.742	196.954	-	196.954
Total Adjustments	-2.424	-	-9.216	-	-9.216
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.329	-			
• SBIR/STTR Transfer	-3.695	-			
• MisDirected Congressional Add (FY10-21IR)	1.600	-	-	-	-
• Realignment / Directed Efficiencies	-	-	-8.367	-	-8.367
• Inflation Reduction	-	-	-0.849	-	-0.849

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

**Project: RM: *WMD Battle Management***

Congressional Add: *National Center for Blast Mitigation & Protection*

Congressional Add Subtotals for Project: RM

**Project: RU: *Fundamental Research for Combating WMD***

Congressional Add: *University Strategic Partnership*

Congressional Add: *Center for Nonproliferation Studies – Monterey Institute*

Congressional Add Subtotals for Project: RU

Congressional Add Totals for all Projects

	<b>FY 2010</b>	<b>FY 2011</b>
	1.200	-
	1.200	-
	1.920	-
	1.600	-
	3.520	-
	4.720	-

**Change Summary Explanation**

The FY 2010 decrease from the previous President's Budget submission is due to the internal SBIR reprogramming and the FY 10-11PA reprogramming action in support of higher priority Department needs.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	PE 0602718BR: <i>WMD Defeat Technologies</i>

The FY 2012 decrease is predominately attributed to the net effect of a Departmental direction for increased efficiency in the area of Advisory & Assistance Services and other contractual services, an increased investment to build international partner capacity to combat weapons of mass destruction, and a realignment of 0603160BR funds to 0602718BR to better reflect the nature of the Radiation Hardened (RadHard) Microelectronics efforts in the RI-Nuclear Survivability budget project. RadHard efforts are developmental and involve the transition of promising basic research outputs into solutions for broadly defined military needs, short of major development projects, with a view towards development and evaluation of technical feasibility. Additionally, there is an increased investment and consolidation of key nuclear weapons effects functions in the Nuclear Weapons Effects Center (NWEC) for first-principles nuclear weapon effects modeling and analysis capability contributing to the National Effects Enterprise.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>				<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RA: <i>Systems Engineering and Innovation</i>	49.387	53.464	42.112	-	42.112	41.379	40.652	41.600	41.440	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 Programs (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> RA: Systems Engineering and Innovation	49.387	53.464	42.112	-	42.112
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b>					
- Delivered enhanced CBRNE modeling and simulation (M&S) capability in the Joint Semi-Automated Forces M&S environment.					
- Conducted requirements and gap analyses to enable research and development efforts to meet combating WMD capability gaps.					
- Developed an analytic capability to aid in requirements analysis and inform portfolio management system.					
- Supported program and project managers by translating Agency goals and Concept of Operations into actionable products.					
- Conducted one CONUS and one OCONUS Maritime Radiological Standoff Identification demonstrations in conjunction with US PACOM, DOE, US Navy, and the Republic of Singapore					
- Conducted requirements analysis and initiated spiral 1 software development efforts to update the Arms Control Enterprise System (ACES), incorporating requirements specified in the New START Treaty					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Fielded a web-based Technology Program Maturity Model (TPMM) tool for program Technology Readiness Levels (TRL) assessments</li> <li>- Initiated 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.</li> <li>- Initiated 21st century nuclear threat assessment in support of the Nuclear Posture Review.</li> <li>- Initiated Battle Management Architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA mission and active projects.</li> <li>- Initiated Nuclear Enterprise architecture analysis.</li> <li>- Initiated three new systems engineering-based special projects.</li> <li>- Completed and transition innovative projects in portable neutron sources for nuclear detection and radio systems for use in jamming environments.</li> <li>- Completed and transition micro miniature chemical detector for unattended sensors.</li> <li>- Solicited new innovative research projects.</li> <li>- Initiated 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.</li> <li>- Continued 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.</li> <li>- Initiated 21st century nuclear threat assessment in support of the Nuclear Posture Review.</li> <li>- Initiated Battle Management Architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA mission and active projects.</li> <li>- Initiated Nuclear Enterprise architecture analysis.</li> <li>- Initiated three new systems engineering-based special projects.</li> <li>- Completed and transitioned innovative projects in portable neutron sources for nuclear detection and radio systems for use in jamming environments.</li> <li>- Completed and transitioned micro miniature chemical detector for unattended sensors.</li> <li>- Solicited new innovative research projects.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Finalize 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.</li> <li>- 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.</li> <li>- Complete 21st century nuclear threat assessment.</li> <li>- Complete the Distributed Decision Support and Analysis architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA Mission and active projects.</li> <li>- Complete Nuclear Enterprise architecture analysis.</li> <li>- Initiate three new systems-engineering based special projects.</li> <li>- Solicit new innovative research projects.</li> <li>- 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.</li> <li>- Develop and integrate secure core infrastructure enhancements that remediate vulnerability issues.</li> <li>- Engineer and deploy full virtual infrastructure modeling and anomaly detection capability.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Develop next generation WMD Analysis Reachback Tool capabilities.</li> <li>- Continue to solicit new innovative research projects.</li> <li>- Solicit at least 5 new innovative research projects focused on Chemical-Biological detection, Countering Weapons of Mass Destruction (CWMD) / Improvised Explosive Device and Special Nuclear Materials detection.</li> <li>- 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.</li> <li>- Complete initial concept demonstrations for Standoff Detection in the Continental United States (CONUS) and Outside the Continental United States (OCONUS) environments to Combat WMD proliferation</li> <li>- Facilitate Joint Concept Development &amp; Experimentation (JCDE) for the CWMD Community of Interest.</li> <li>- Investigate and explore developmental technologies, such as Virtual Worlds.</li> <li>- Analyze, explore, and identify gaps, and barriers associated with CWMD Warfighter Challenges</li> <li>- Support STRATCOM requirements for an integrated strategic stockpile force structure planning tool.</li> <li>- Support Office of the Secretary of Defense Capability Assessment and Program Evaluation (OSD CAPE) with standoff nuclear detection analysis and modeling.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Perform analysis studies to predict new WMD threats.</li> <li>- Stimulate, identify, and execute high-impact projects to address long term resolution of WMD issues.</li> <li>- Provide long-range analytical support to the warfighter.</li> <li>- Develop and innovate a Nuclear Weapon-Related Materiel (NWRM) module in Defense Integration and Management of Nuclear Data Services with the ability to evolve to keep up with emerging mainstream technologies to consolidate various Department of Defense (DoD) tracking systems into a single worldwide accountability system that provides the ability to account, maintain, report, and track NWRM during peacetime, crisis, and wartime.</li> <li>- Design and implementation of Mission Domain IT architecture. Includes migration and integration of current R&amp;D IT capabilities leveraged by DTRA operational and combat support customers into the operational IT infrastructure.</li> <li>- Contract support to design, implement and manage the DTRA Integration, Test and Experimentation Center.</li> <li>- Provide capability to model, simulate and analyze existing DTRA systems, networks, enclaves and communications capabilities and perform regression testing for system changes and upgrades (including Information Assurance patches).</li> <li>- Building partner capacity through applied research to improve the security capabilities of our international partners.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	49.387	53.464	42.112	-	42.112

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 28/0603160BR: <i>Proliferation Prevention and Defeat</i>	8.435	7.270	7.161		7.161	7.826	8.891	9.174	10.028	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.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>

- Number of exercise and operations supported.
- Number of Defense Acquisition Workforce Improvement Act certified systems engineers.
- New capabilities delivered and transitioned to operational capabilities.
- Manage the strategic weapons stockpile and Nuclear Weapon-Related Materiel; maintain 100% accountability.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>				<b>PROJECT</b> RE: <i>Counter-Terrorism Technologies</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RE: <i>Counter-Terrorism Technologies</i>	9.277	-	-	-	-	-	-	-	-	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Counter-Terrorism Technologies project RE is primarily funded in Proliferation Prevention and Defeat, 0603160BR. This FY10 funding kicks off the USSOCOM Counter Weapons of Mass Destruction – Terrorism (CWMD T) Support Program (SCSP) that supports the Joint Intelligence Preparation of the 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 Commander, USSOCOM responsibilities under the Chairman, Joint Chiefs of Staff (CJCS) Unified Command Plan (UCP) and Concept of Operation Plans (CONPLANS) 7500 and 7520 for integrating and synchronizing Defense-wide operations and activities to prevent terrorists from developing, acquiring, proliferation or using WMD.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> Project RE: Counter-Terrorism Technologies	9.277	-	-	-	-
<b>Description:</b> Project RE provides initial funding for the Joint Intelligence Preparation of the Operational Environment (JIPOE) process to forecast plausible terrorist WMD threats for planning and conducting operations to combat WMD terrorism. Follow-on funding for this project can be found in the Proliferation Prevention and Defeat; 0603160BR, budget exhibit.					
<b>FY 2010 Accomplishments:</b> - Established SCSP Initial Operational Capability. - Integrated and federated national intelligence with operations research systems analysis capabilities to support planning and operations.					
<b>Accomplishments/Planned Programs Subtotals</b>	9.277	-	-	-	-

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 28 / 0603160BR: <i>Proliferation Prevention and Defeat</i>	59.627	102.395	114.337		114.337	114.657	115.798	115.798	115.964	Continuing	Continuing

**D. Acquisition Strategy**

N/A

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RE: <i>Counter-Terrorism Technologies</i>

**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 reduce 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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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RF: <i>Detection Technology</i>	40.556	52.649	50.548	-	50.548	48.248	48.614	49.926	50.894	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, and to support the attribution process through improved post-detonation National Technical Nuclear Forensics operational 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-site 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 Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RF: Detection Technology	40.556	52.649	50.548	-	50.548
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b> - Continued the extensive effort begun in the standoff Bremsstrahlung active interrogation system Joint Capability Technology Demonstration to develop a standoff active interrogation system to detect hidden and shielded nuclear material. - 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 development of 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.					



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>- Investigated the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conducted experiments to validate the feasibility of the approach.</p> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Complete development of a fielded standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material.</li> <li>- 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.</li> <li>- 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.</li> <li>- Continue to develop and field (prototype) upgraded technical capabilities for prompt debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions.</li> <li>- Continue execution of the National Technical Nuclear Forensics Joint Concept Technology Demonstration (JCTD).</li> <li>- 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.</li> <li>- 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.</li> <li>- Develop methods to rapidly determine nuclear weapon yields post-event, by investigating alternative prompt nuclear weapons effects on the environment.</li> <li>- 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.</li> <li>- Transition alternative neutron detection materials and systems as an alternative to the use of helium-3.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Complete design and fabrication of a prototype passive interrogation system for determining the location of nuclear material.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Complete design of man-portable field instrument capable of passively locating and identifying nuclear materials.</li> <li>- Continue to develop and demonstrate neutron detection technology as an alternative to helium-3 neutron detectors.</li> <li>- Institute development of a rugged, mobile stand-off radiation detection system to provide detection and identification of nuclear materials in a field environment.</li> <li>- Research and develop new detector materials intended to improve the capability to detect, locate, and identify threat materials. Improve the manufacturing readiness level by maturing technologies, designs, and production processes.</li> <li>- Transition compact, high performing replacement electronics for detectors to commercial production.</li> <li>- Develop an advanced algorithm to increase speed and reliability of isotope identification in fielded hand-held and portable detectors.</li> <li>- Investigate viability of an Active Interrogation (AI) system integrated on an Autonomous Underwater Vehicle (AUV).</li> <li>- 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.</li> <li>- Complete execution, transition and fielding of the National Technical Nuclear Forensics (NTNF) Joint Concept Technology Demonstration (JCTD) capabilities and begin Limited Operational Use / Employment and Follow-on Sustainment activities</li> <li>- Continue development of a fieldable standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material.</li> <li>- Continue to 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.</li> <li>- Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing.</li> <li>- Expand the functionality of the Mobile Field Kit – Radiological (MFK-R) to add radiological situational awareness to the current suite of chemical sensors in the kit.</li> <li>- Investigate alternative methods to stimulate fissions in nuclear materials from standoff ranges, including the use of high-power lasers to generate beams of mono-energetic x-rays.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- 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.</li> <li>- Progressively advance the laboratory physics demonstrations of target stimulation, signature detection, and validated modeling capability.</li> <li>- Develop a system to produce, capture, steer, cool and re-accelerate negative muons in a reduced footprint and with fewer components than are being used in comparable muon generating systems.</li> <li>- Develop the ability and Concept of Operations (CONOPS) to detect radiation induced air fluorescence from special nuclear material (SNM) by passive and active means.</li> <li>- Investigate concept of a pulsed millimeter wave system which detects radioactive sources in both passive and active interrogation scenarios.</li> <li>- Improve the Monte Carlo N-Particle (MCNP) code to enhance its modeling capability for specific problems.</li> <li>- Continue development of a large standoff, directionally oriented, monoenergetic gamma (e.g. laser Wakefield/ inverse Compton scattering accelerator) source for integration with an active interrogation system.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	40.556	52.649	50.548	-	50.548

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 28/0603160BR: <i>Proliferation Prevention and Defeat</i>	64.986	90.688	77.784		77.784	76.298	77.863	78.528	80.321	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**E. Performance Metrics**

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

Successful completion of the individual digital dosimeter project.

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

Successful acceptance and operational development of transitional detection technologies.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	PE 0602718BR: <i>WMD Defeat Technologies</i>	RF: <i>Detection Technology</i>

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

Delivery of 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.

Improved forensics evaluation tool capabilities.

Support development of National Technical Nuclear Forensics (NTNF) capabilities 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.

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

Delivery of a series of documents that discuss the technical aspects of land and sea concepts of operations (CONOPS) for detecting radiological and nuclear threats, along with their supporting documents.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>				<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>	29.431	29.139	17.115	-	17.115	14.825	14.935	13.786	13.718	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Counter WMD Weapons & Capabilities 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 integrates disruptive payloads and technologies into existing and next generation weapon systems, develops a Hard and Deeply Buried Target (HDBT) Defeat capability against targets in deeply buried facilities and tunnels to provide an over ten times increase in capability to propagate weapon effects in tunnels compared to the current inventory weapons capability by FY 2017 and provides 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) advanced counter WMD weapons, fuzing technology, and autonomous systems; (2) agent defeat weapons and methods; and (3) disruptive payloads and delivery systems. The Advanced Energetics & Counter WMD Weapons Program, transferred from RG to RM between FY11 and FY12, develops new novel energetic materials and weapon design technology for rapid, directed and enhanced energy release, providing new capability to defeat difficult WMD/HDB targets. The Advanced Energetics Program also develops new high energy systems well above chemical energy levels to defeat WMD targets beyond the reach of traditional high explosive blast/frag warhead technology.

The decrease from FY 2011 to FY 2012 is predominately due to the transfer of Advanced Energetics effort to RM-Battle Management to properly align organizational responsibilities.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> RG: Advanced Energetics & Counter WMD Weapons	29.431	29.139	17.115	-	17.115
<b>Description:</b> Project RG develops advanced technologies and weapon concepts and validates their applicability as counter Weapons of Mass Destruction (WMD) weapon systems.					
<b>FY 2010 Accomplishments:</b> - Completed 1st year of four year joint activity between DTRA and Air Force Research Laboratory (AFRL) focused on survivable penetrator explosive development of transformational energetic material fill with enhanced survivability. - Initiated assessment of kinetic and non-kinetic capabilities into single payload for Counter WMD (CWMD). - Initiated HDBT Countermeasures Program to assess countermeasure effects on current weapons & tactics and identify gaps in defeat capability.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Continued development of process modeling capability for non-kinetic based CWMD and apply it to specific CWMD targets.</li> <li>- Developed inventory of survivable data recorders for use in DTRA funded FY10-11 penetration test efforts.</li> <li>- Initiated bulk neutralization research on innovative weapon fill concepts for chemical/biological agent defeat capability.</li> <li>- Demonstrated survivability of fuze booster cup recorder during multiple hard target penetration sled tests.</li> <li>- Continued development of integrated process model for use in DT&amp;E of non-kinetic CWMD capabilities.</li> <li>- Tested first crucial fuze component under static and dynamic harsh environment conditions.</li> <li>- Conducted sub-scale bio defeat testing of enhanced payload concepts (pre-formed fragment and jetting payloads).</li> <li>- Flight tested Battle Damage Information (BDI) system including Micro Air Vehicle (MAV) ejection and video coverage of target site.</li> <li>- Developed an algorithm for improving the capability to conduct DT&amp;E of non-kinetic CWMD capabilities.</li> <li>- Flight tested prototype BDI Link Advanced Demonstrator (BLADE) hardware that transmits pre-impact weapon data.</li> <li>- Developed advanced wireless sensor capability and advanced diagnostic capabilities to meet gaps in DT&amp;E for C-WMD payloads.</li> <li>- Designed infrastructure for long haul communication of BDI data from battlefield back to command centers.</li> <li>- Determined feasibility of combined chem/bio defeat testing.</li> <li>- Conducted detonations in a scaled complex tunnel facility in support of weapon and model development efforts.</li> <li>- Initiated functional defeat biological effects testing.</li> <li>- Conducted four full scale sled tests through multi-story structures to improve weapon penetration and survivability models.</li> <li>- Completed planning and development of representative threat WMD production target.</li> <li>- Supported Hard Target Void Sensing Fuze full-scale Joint Capability Technology Demonstration survivability testing.</li> <li>- Developed test plan for thermal evaluation of the JMEWS warhead.</li> <li>- Evaluated and assessed the Second-order Hydrodynamic Automatic Mesh Refinement Code (SHAMRC) ability to model multi-phase reactive flow, and identification of needed improvements.</li> <li>- Upgraded the SHAMRC code to add an ability to model multiple fuel types and liquid fuels.</li> <li>- Demonstrated tests and characterization experiments of fuel-augmented warhead concept.</li> <li>- Conducted reactive case fragmentation and blast performance tests for novel reactive structural materials.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Conducted performance characterization of highly Aluminized and packet design novel charge designs.</li> <li>- Developed and fabricated new capability to produce and characterize novel molecular-cluster organo-metallic energetic materials.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Conduct Scaled High Speed Penetrator Tests versus High Strength Concrete Targets to further characterize breakthrough penetrator technologies.</li> <li>- Incorporate improved material models into penetration codes for geological and concrete targets.</li> <li>- Complete development of fuze/fuze module sub-scale survivability test protocol to further characterize breakthrough penetrator technologies.</li> <li>- Continue maturing advanced non-energetic countering WMD payload components.</li> <li>- Initiate advanced testing of countering WMD sub-munitions.</li> <li>- Explore transformational energetic fills by performing Sub-scale characterization of next generation survivable penetrator energetic material fill.</li> <li>- Demonstrate robust survivable 3" fuze instrumentation weapon data recorder package in sub-scale tests.</li> <li>- Continue Thermite Multi-effort Basic Research, trade studies, tests and Demos.</li> <li>- Initiate Singlet Oxygen Compatibility studies/tests.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Downselect and qualify enhanced survivable energetic material fill and inert simulate.</li> <li>- Continue maturing advanced non-energetic WMD Defeat payload components.</li> <li>- Conduct subscale experiments to develop and verify prediction capability for countermeasure effects on projectile penetration.</li> <li>- Continue advanced testing of WMD Defeat sub-munitions.</li> <li>- Develop and test fuze well redundant data recorder for field and flight testing of both legacy and developmental hard target defeat weapons.</li> <li>- Initiate testing and demonstrations of Bulk Neutralization Payloads.</li> <li>- Develop a low-cost layer and void sensing target detection device for hard target defeat fuze and transition hardware to a fuze development.</li> <li>- Continue explore transformational energetic fills by performing Sub-scale characterizations of next generation survivable penetrator energetic material fill.</li> <li>- Develop miniature shock survivable fuze and integrate low cost layer and void sensing target detection device hardware.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continue development of process modeling capability for non-kinetic based CWMD and apply it to specific CWMD targets.</li> <li>- Conduct flight testing of operational BLADE system demonstrating capability to transmit BDI data into long haul communication infrastructure.</li> <li>- Continue to explore integration of kinetic and non-kinetic capabilities into single payload for counter WMD.</li> <li>- Demonstrate entire infrastructure for long haul communication of BDI data from battlefield back to command centers leveraging BDI flight tests.</li> <li>- Initiate testing and demonstrations of non-energetic countering WMD payloads.</li> <li>- Conduct full scale test against target with penetration countermeasures.</li> <li>- Initiate warhead integration of WMD Defeat sub-munitions.</li> <li>- Determine and catalog the accuracy and precision of bio-aerosol sampling equipment utilized in C-WMD testing.</li> <li>- Conduct the investigations necessary to develop a capability to conduct full-scale agent defeat testing with acceptable accuracy and precision.</li> <li>- Complete bio effects testing with insensitive munitions and other High Energy fills for bulk agent defeat.</li> <li>- Continue reduced scale target testing of functional and kinetic defeat.</li> <li>- Initiate testing for BLU-119/B conversion to safer, lower Life Cycle Cost payload fill.</li> </ul> <p><b><i>FY 2012 OCO Plans:</i></b> .</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	29.431	29.139	17.115	-	17.115

<b>C. Other Program Funding Summary (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 28/0603160BR: <i>Proliferation Prevention and Defeat</i>	16.688	17.386	15.186		15.186	20.631	21.477	21.768	22.442	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**E. Performance Metrics**

Number of large scale tests completed.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>

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

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RI: <i>Nuclear Survivability</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RI: <i>Nuclear Survivability</i>	22.048	17.902	17.503	-	17.503	17.261	17.388	17.855	18.718	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. The Nuclear Survivability project provides Radiation Hardened (RadHard) Microelectronics and Nuclear Weapons Effects (NWE) experimentation research. Funding in this project also supports the expanding role of the Nuclear Test Personnel Review (NTPR) program into Science & Technology development for human survivability.

The 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 (JAIEG) and the international Weapon Effects Steering Committee (WESC) that was called the NWE Users' Group. The WESC establishes standards for U.S. and U.K 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.

The increase from FY 2011 to FY 2012 in this project is due to the net effect of the conversion of 0603160BR funds to 0602718BR funds to better reflect the nature of the RadHard Microelectronics efforts in the RI-Nuclear Survivability budget project. RadHard efforts are applied research and involve the transition of promising basic research outputs into solutions for broadly defined military needs, short of major development projects, with a view towards development and evaluation of technical maturity.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RI: Nuclear Survivability	22.048	17.902	17.503	-	17.503
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RI: <i>Nuclear Survivability</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continued transition of reflex triode technology for warm X-rays on Saturn machine at Sandia National Laboratories. .</li> <li>- Completed a joint cold x-ray source and effects experiment at the National Ignition Facility (NIF) with Lawrence Livermore National Laboratory and the Missile Defense Agency.</li> <li>- Developed enabling technologies for improved NWE experimentation capabilities for x-rays, gamma rays, and neutrons.</li> <li>- Developed modeling for prompt radiation environment in urban settings, noting in particular canyon effects and shielding by structures.</li> <li>- Initiated short pulse gamma project to develop a compact, high fidelity source for dose rate testing.</li> </ul> <p><b>FY 2011 Plans:</b></p> <ul style="list-style-type: none"> <li>- Demonstrate initial 45nm RadHard prototype circuits to develop RadHard by design methods.</li> <li>- Complete prototype demonstration of a high-temporal fidelity gamma small experimentation capability.</li> <li>- Continue investigation of NIF as a potential NWE experimentation capability.</li> <li>- Complete Warm X-ray source experiments on Saturn.</li> <li>- Improve operational models of secondary and tertiary blast effects.</li> </ul> <p><b>FY 2012 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Demonstrate compatibility of 90nm RadHard by design library cells and macro with 90nm RadHard by process enhancements.</li> <li>- Perform full-scale MDA telescope response experiments on NIF</li> <li>- Investigate deuterium pinch neutron source on Z-machine at Sandia National Laboratories.</li> <li>- Implementation of human radiation induced performance decrement model into operational code.</li> </ul> <p><b>FY 2012 OCO Plans:</b></p> <p>.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	22.048	17.902	17.503	-	17.503

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RI: <i>Nuclear Survivability</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 28/0603160BR: <i>Proliferation Prevention and Defeat</i>	19.687	14.052	6.985		6.985	6.271	6.295	6.277	6.208	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RL: <i>Nuclear &amp; Radiological Effects</i>	21.813	16.776	25.343	-	25.343	23.922	23.968	25.202	25.620	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, develop and provide electromagnetic pulse assessment capabilities to support national and military operational planning, weapon effects predictions, and national strategic systems designs; and develop foreign nuclear weapon outputs.

The increase from FY 2011 to FY 2012 is due predominately to increased investment in and consolidation of key nuclear weapons effects functions in the Nuclear Weapons Effects Network (NWEN). This network will encompass all nuclear weapons effects related activities and, with the establishment of a first-principles nuclear weapon effects modeling and analysis capability contributing to the National Effects Enterprise.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RL: Nuclear & Radiological Effects	21.813	16.776	25.343	-	25.343
<p><b>Description:</b> Project RL develops nuclear and radiological assessment modeling tools to support military operational planning, weapon effects predictions, and strategic system design decisions.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Provided nuclear electromagnetic hardening and survivability support to USSTRATCOM, Defense Information Systems Agency, and Missile Defense Agency, elements of the Nuclear Command and Control System, and White House Communications Agency (WHCA) systems.</li> <li>- Conducted tests on USS New Orleans and USS Fresno from the Inactive Ship Fleet in support of a maritime EMP standard development.</li> <li>- Demonstrated the DTRA Automated Shielding Effectiveness Recorder at an operational WHCA communication node.</li> <li>- Completed the Redbook Vol IV (foreign nuclear weapon effects models) and delivered to the Navy Strategic Systems Program office.</li> <li>- Continued development of models allowing the predictions and analysis of nuclear survivability for ballistic missile defense system.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<p>- Provided small scale testing in support of modeling and simulation (M&amp;S) validation.</p> <p>- Continued EM-1 development; integration activities to include validation and verification, peer review, and coordination with experimentation efforts; published Joint Radiation Effects documentation.</p> <p>- Validated code for system response to X-Rays; validate and integrate M&amp;S capability to understand thermo-structural response to X-Rays; validate and integrate M&amp;S capability for satellite design.</p> <p><b>FY 2011 Plans:</b></p> <p>- Conduct tests of vulnerabilities of reprocessing facilities.</p> <p>- Begin Electro Magnetic Pulse (EMP) E1 physics-based code.</p> <p>- Provide collateral effects M&amp;S for enrichment facilities.</p> <p>- Continue EM-1 development; continue publication of Joint Radiation Effects documentation.</p> <p>- Continue development of models allowing the predictions and analysis of nuclear survivability for Nuclear Command and Control System.</p> <p>- Continue to validate code for system response to X-Rays; validate and integrate Modeling and Simulation (M&amp;S) capability to understand thermo-structural response to X-Rays; validate and integrate M&amp;S capability for satellite design.</p> <p><b>FY 2012 Base Plans:</b></p> <p>- Standup of the Nuclear Weapons Effects Network (NWEN).</p> <p>- Model and code development, analyses at all computational levels of fidelity and run times.</p> <p>- Emphasize on re-initiation of quality NWE science via balanced modeling and simulation and experimentation.</p> <p>- Initial focus on first-principles model development and Uncertainty Quantification.</p> <p>- Complete non-ideal Source Region Electromagnetic Pulse (SREMP) Study.</p> <p>- Complete new version of United States Strategic Command's (USSTRATCOM) official strategic targeting code used to determine the probability of damage from nuclear weapon.</p> <p>- Complete new trapped radiation belt model.</p> <p>- Perform EMP test in support of the development of a maritime EMP standard for destroyer class ships.</p> <p>- Conduct EMP Assessment of Ramstein Global Communications Node and C4I EMP assessment on Nuclear Command and Control System facilities.</p> <p>- Develop techniques for assessing the High-Altitude EMP (HEMP) shielding and survivability of compact electronic subsystems used in DoD infrastructure.</p> <p>- Develop measurement procedures and test protocols for determining shielding effectiveness of composite materials and enclosures.</p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
- Provide technical support for EMP survivability of worldwide deployment of new Modern Enterprise Terminals for global telecommunications. - Continue EM-1 development; continue publication of Joint Radiation Effects documentation..  <b>FY 2012 OCO Plans:</b> .					
<b>Accomplishments/Planned Programs Subtotals</b>	21.813	16.776	25.343	-	25.343

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 117/0605000BR: <i>WMD Defeat Capabilities</i>	9.255	7.307	5.888		5.888	5.749	5.995	6.077	6.097	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RM: <i>WMD Battle Management</i>	15.239	10.899	13.761	-	13.761	18.569	16.366	17.288	17.693	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, and sensor performance, 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 of targets increases. 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 Advanced Energetics & Counter WMD Weapons Program, transferred from RG to RM between FY11 and FY12, develops new novel energetic materials and weapon design technology for rapid, directed and enhanced energy release, providing new capability to defeat difficult WMD/HDB targets. The Advanced Energetics Program also develops new high energy systems well above chemical energy levels to defeat WMD targets beyond the reach of traditional high explosive blast/frag warhead technology.

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.

The increase from FY 2011 to FY 2012 is predominately due to the transfer of Advanced Energetics effort from RG-Advanced Energetics to RM-Battle Management to properly align organizational responsibilities.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RM: WMD Battle Management	14.039	10.899	13.761	-	13.761
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<ul style="list-style-type: none"> <li>- Conducted Ultra High Performance Concrete penetration tests and material analysis. Continued modeling.</li> <li>- Completed model for multi-hit attacks to hardened bunker roof slabs.</li> <li>- Performed testing and analysis of equipment fragility models.</li> <li>- Began Internal Detonation (quasi-static and dynamic pressure) fast running model development.</li> <li>- Coordinated across service labs to consolidate testing data for Weapons of Mass Destruction (WMD) agent release tests to facilitate finalizing an Agent Release Model.</li> <li>- Completed column satchel charge model.</li> <li>- Conducted blast door model testing and model modifications.</li> <li>- Completed construction for a full-scale progressive collapse test structure.</li> <li>- Continued to provide leading technological integration capabilities to the combating WMD mission through utilization of the Defense Threat Reduction Agency (DTRA) Experimentation Lab (DEL).</li> <li>- Continued 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.</li> <li>- Continued facilitation of the internal Continuity of Operations Table Top Experiment through the DTRA Experimentation Lab DEL.</li> <li>- Conducted Ultra High Performance Concrete penetration tests and material analysis. Continue modeling.</li> <li>- Completed model for multi-hit attacks to hardened bunker roof slabs. Finalize or re-direct multi-hit research efforts.</li> <li>- Delivered 15 additional validated equipment fragility models.</li> <li>- Completed Quasi Static Pressure model.</li> <li>- Conducted testing and modeling improvements to the Weapons of Mass Destruction (WMD) Agent Release Model with emphasis on dry agents.</li> <li>- Completed column satchel charge model.</li> <li>- Conducted blast door model testing and model modifications.</li> <li>- Completed progressive collapse model.</li> <li>- Continued to provide leading technological integration capabilities to the combating WMD mission through utilization of the Defense Threat Reduction Agency (DTRA) Experimentation Lab (DEL).</li> <li>- Continued 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.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<p>- Facilitated internal Continuity of Operations Table Top Experiment through the DTRA Experimentation Lab DEL.</p> <p><b>FY 2011 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct Ultra-High Performance Concrete penetration tests and material analysis. Continue modeling and finalize evaluation of current models.</li> <li>- Deliver 15 additional validated equipment fragility models.</li> <li>- Complete validation and verification on Internal Detonation (quasi-static and dynamic pressure) model.</li> <li>- Conduct testing and modeling improvements to the WMD Agent Release Model. Complete validation and verification of dry agent model.</li> <li>- Conduct blast door model testing and model modifications.</li> <li>- Complete progressive collapse testing and model development for concrete frame structures.</li> <li>- Continue to provide leading technological integration capabilities to the combating WMD mission through utilization of the DTRA Experimentation Lab (DEL).</li> <li>- 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.</li> <li>- Continue facilitation of the internal Continuity of Operations Table Top Experiment through the DEL.</li> </ul> <p><b>FY 2012 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Integrate first principle modeling codes into Graphical User Interface (GUI)-based hazard prediction models.</li> <li>- Facilitate Joint Concept Development &amp; Experimentation (JCDE) for the Combating Weapons of Mass Destruction (C-WMD) Community of Interest.</li> <li>- Investigate and explore developmental technologies, such as Virtual Worlds.</li> <li>- Analyze, explore, and identify gaps, and barriers associated with CWMD Warfighter Challenges.</li> <li>- Complete facilitation of the internal Continuity of Operations Table Top Experiment through the DEL.</li> <li>- Plan, design, execute, and analyze warfighting experimentation in support of DTRA, and in coordination with the Services, Combatant Commands, Defense agencies, and the inter-agency as appropriate.</li> <li>- Develop capability to model equipment fragility for any generic equipment.</li> <li>- Finalize Internal Detonation (quasi-static and dynamic pressure) model.</li> <li>- Begin test program for blast propagation through failing bunker walls from blast and fragmentation.</li> <li>- Conduct testing and modeling improvements to the WMD Agent Release Model.</li> <li>- Complete blast door model verification and validation.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Conduct progressive collapse testing and begin modeling effort for steel frame structures.</li> <li>- Evaluate technology transfer to cruise missile payload.</li> <li>- Integrate bimodal fuel particles, packet charges and reactive cases into weapon payload.</li> <li>- Study agent defeat using hybrid enhanced blast explosives, reactive cases, target coherent energetic reactions, and target directed energetic reactions.</li> <li>- Incorporate SHAMRC Workshop recommendations into improved SHAMRC code; compare the simulated results with test results.</li> <li>- Document the progress made for antiparticle trap, super halogen molecule and high nitrogen explosives.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	14.039	10.899	13.761	-	13.761

<b>Congressional Add:</b>	FY 2010	FY 2011
<b>National Center for Blast Mitigation &amp; Protection</b> <b>FY 2010 Accomplishments:</b> - Improved high fidelity analyses for internal blast environments and weapon-target interactions. - Improved internal blast models to enhance DTRA's Vulnerability Assessment & Protection Option (VAPO) and Integrated Munitions Effects Assessment (IMEA) planning tools. - Enhanced computational ability for the Agency to save time in generating target solutions.	1.200	-
<b>Congressional Adds Subtotals</b>	1.200	-

<b>C. Other Program Funding Summary (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	<b>Cost To Complete</b>	<b>Total Cost</b>
• 28/0603160BR: <i>Proliferation, Prevention and Defeat</i>	33.888	28.260	22.303		22.303	20.403	20.727	21.137	21.700	Continuing	Continuing

**D. Acquisition Strategy**  
Not Applicable

**E. Performance Metrics**  
Percent confidence in engineering models.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
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<p>Percent confidence in assessment solutions.</p> <p>Number of targets successfully planned.</p> <p>Time required to complete assessments.</p> <p>The DTRA Experimentation Lab (DEL) is occupied by planning or execution efforts 75% of the year.</p>		

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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RR: <i>Test Infrastructure</i>	16.648	21.528	21.941	-	21.941	19.517	21.870	22.149	22.740	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. It 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 Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RR: Test Infrastructure	16.648	21.528	21.941	-	21.941
<p><b>Description:</b> 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.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Began design and procurement of an add-on structure for Component Test Structure-3 for structural stress tests with Singapore.</li> <li>- Conducted nuclear detection and forensics testing.</li> <li>- Conducted nuclear detection and forensics testing for the Department of Homeland Security (DHS), Domestic Nuclear Detection Office (DNDO) in accordance with the DTRA- Domestic Nuclear Detection Office (DNDO) Memorandum of Agreement.</li> <li>- Conducted WMD sensor testing at the Technical Evaluation Assessment and Monitor Site (TEAMS); provided infrastructure upgrades for TEAMS.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RR: <i>Test Infrastructure</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<p>- Continued environmental remediation and compliance activities at the Nevada Test Site, Dugway Proving Grounds, White Sands Missile Range, and Kirtland Air Force Base Chestnut Site.</p> <p>- Continued infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs.</p> <p>- Conducted testing in support of the USAF responsible test organization, the Air Armament Center (AAC), for the Massive Ordnance Penetrator (MOP) Quick Reaction Capability (QRC) Program.</p> <p><b>FY 2011 Plans:</b></p> <p>- 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.</p> <p>- Upgrade and integrate instrumentation mobile wireless "Mesh" infrastructure capabilities and improvements in support of the Department of Home Land Security/ Domestic Nuclear Detection Office (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.</p> <p>- Conduct Interagency Biological Restoration Demonstration (IBRD) testing in conjunction with DoD &amp; 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.</p> <p>- Construct facility for Integrated Test Demonstration to defeat credible and threat-based scenarios with an estimated start date for testing of third quarter FY 2011.</p> <p>- 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.</p> <p>- 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 &amp; 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.</p> <p>- 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 of fourth quarter FY 2011.</p> <p>- 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 of fourth quarter FY 2011.</p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RR: <i>Test Infrastructure</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<p>- 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 Environmental Protection Agency (EPA), Safety, &amp; Environmental guidelines throughout FY 2011.</p> <p>- 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.</p> <p>- 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; estimated for fourth quarter FY 2011.</p> <p>- Continue infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs.</p> <p>- Document, prioritize, and support test infrastructure requirements.</p> <p><b><i>FY 2012 Base Plans:</i></b></p> <p>- Develop and implement prototype Voice Over Internet Protocol (VOIP) system that can transfer both classified and unclassified data, voice communications, video, etc., to support test program execution starting first quarter FY 2012.</p> <p>- Modify existing test infrastructure or develop test infrastructure to support revitalized Weapons Effects Phenomenology Program supporting DTRA test programs.</p> <p>- Make improvements to existing test infrastructure and test articles, or construct new test articles to support DTRA Detection Technology Program starting in first quarter FY 2012.</p> <p>- Conduct testing in support of Treaty Verification Technologies Program and Source Physics Experiments to support Comprehensive Test Ban Treaty Initiatives, New START Warhead Verification, and detection and verification of Biological and Chemical Weapons.</p> <p>- Continue support of Weapons of Mass Destruction sensor testing at the Technical Evaluation Assessment and Monitor Site (TEAMS) to detect and prevent nuclear grade material from entering the U.S., U.S. Territories, and Allied Nations through rail, ship, and air ports.</p> <p>- Continue Interagency Biological Restoration Demonstration (IBRD) testing in conjunction with DoD and DHS to reduce the time and resources necessary to recover and restore wide urban areas, military installations, and critical infrastructure, following a biological incident.</p> <p>- Continue testing 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.</p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RR: <i>Test Infrastructure</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continue WMD Aerial Collection System testing that is designed to meet U.S. Forces Korea's requirement of an "all-in-one" Chemical, Biological, Radiological, and Nuclear sensor system for post-strike assessment (Battle Damage Assessment) of suspected WMD facilities and mobile time-sensitive targets.</li> <li>- Continue nuclear detection and forensics testing to prevent weapons grade material/dirty bombs from entering the U.S., U.S. Territories, and Allied Nations.</li> <li>- Continue Weapons of Mass Destruction sensor testing at the Technical Evaluation Assessment and Monitor Site to detect and prevent nuclear grade material from entering the U.S., U.S. Territories, and Allied Nations through rail, ship, and air ports.</li> <li>- 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, and Environmental guidelines throughout FY 2012.</li> <li>- Continue development of a 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 2012.</li> <li>- Continue 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.</li> <li>- Continue infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs.</li> <li>- Document, prioritize, and support test infrastructure requirements.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	16.648	21.528	21.941	-	21.941

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**D. Acquisition Strategy**

Not Applicable

**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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>				<b>PROJECT</b> RT: <i>Target Assessment Technologies</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RT: <i>Target Assessment Technologies</i>	0.486	-	-	-	-	-	-	-	-	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

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 consists of three subordinate and related activities: (1) Targeting and Intelligence Community Technology Development; (2) Find, Characterize, Assess Technology Development; and (3) Counter WMD Analysis Cell Technology Support. Additionally, this project is researching technology applications for treaty verification mission.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> Project RT: Target Assessment Technologies	0.486	-	-	-	-
<b>Description:</b> Project RT 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.					
<b>FY 2010 Accomplishments:</b> - Researched treaty verification mission support technology applications.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.486	-	-	-	-

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 28/0603160BR: <i>Proliferation, Prevention, and Defeat</i>	33.097	35.112	32.837		32.837	32.014	31.084	31.759	32.429	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RT: <i>Target Assessment Technologies</i>

**E. Performance Metrics**

Not Applicable

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>			
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>				PE 0602718BR: <i>WMD Defeat Technologies</i>				RU: <i>Fundamental Research for Combating WMD</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RU: <i>Fundamental Research for Combating WMD</i>	13.876	10.385	8.631	-	8.631	8.065	7.754	7.530	7.583	Continuing	Continuing

**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 was 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 Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RU: Fundamental Research for Combating WMD	10.356	10.385	8.631	-	8.631
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b> - Transitioned decision support tools with current and out year funding to Project RA - Systems Engineering and Innovation. - Identified and conducted strategic studies addressing challenges in reducing the threat from WMD. - Exercised the test bed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Initiated "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.					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RU: <i>Fundamental Research for Combating WMD</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Completed the 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.</li> <li>- Provided technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation.</li> <li>- Continue examination of emerging technologies and underlying sciences applicable to combating WMD with increased emphasis on avoiding technical surprise.</li> <li>- Continued the mentoring, sponsorship, and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise.</li> </ul> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Identify and conduct strategic studies addressing challenges in reducing the threat from WMD.</li> <li>- Assess utility of continuing test bed; continue to exercise the test bed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment.</li> <li>- Continue "bridging" projects for early applied development of combating WMD technologies.</li> <li>- Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation.</li> <li>- Continue the mentoring, sponsorship, and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Identify and conduct strategic studies addressing challenges in reducing the threat from WMD.</li> <li>- Continue "bridging" projects for early applied development of combating WMD technologies.</li> <li>- Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation.</li> <li>- Continue the mentoring, sponsorship, and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise.</li> </ul> <p><b><i>FY 2012 OCO Plans:</i></b></p>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RU: <i>Fundamental Research for Combating WMD</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Accomplishments/Planned Programs Subtotals</b>	10.356	10.385	8.631	-	8.631

	<b>FY 2010</b>	<b>FY 2011</b>
<b>Congressional Add:</b> University Strategic Partnership <i>FY 2010 Accomplishments:</i> CON02 – University Strategic Partnership (\$1,920) -Supported early technology development for the Counter-WMD mission area across multiple science areas including new materials for radiation detectors, survivable electronics, and computational modeling. -Collaborated 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.	1.920	-
<b>Congressional Add:</b> Center for Nonproliferation Studies – Monterey Institute <i>FY 2010 Accomplishments:</i> -Supported early technology development for the Counter-WMD mission area across multiple science areas including new materials for radiation detectors, survivable electronics, and computational modeling. -Collaborated 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.	1.600	-
<b>Congressional Adds Subtotals</b>	3.520	-

**C. Other Program Funding Summary (\$ in Millions)**

<b>Line Item</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• 1/0601000BR: <i>DTRA Basic Research Initiative</i>	40.848	47.412	47.737		47.737	48.071	48.493	48.925		Continuing	Continuing

**D. Acquisition Strategy**  
Not Applicable

**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.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 2: <i>Applied Research</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0602718BR: <i>WMD Defeat Technologies</i>	<b>PROJECT</b> RU: <i>Fundamental Research for Combating WMD</i>

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 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	236.408	295.163	283.073	-	283.073	278.100	282.135	284.607	290.856	Continuing	Continuing
RA: <i>Systems Engineering and Innovation</i>	8.435	7.270	13.641	-	13.641	7.826	8.891	9.174	10.028	Continuing	Continuing
RE: <i>Counter-Terrorism Technologies</i>	59.627	102.395	114.337	-	114.337	114.657	115.798	115.964	117.728	Continuing	Continuing
RF: <i>Detection Technology</i>	64.986	90.688	77.784	-	77.784	76.298	77.863	78.528	80.321	Continuing	Continuing
RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>	16.688	17.386	15.186	-	15.186	20.631	21.477	21.768	22.442	Continuing	Continuing
RI: <i>Nuclear Survivability</i>	19.687	14.052	6.985	-	6.985	6.271	6.295	6.277	6.208	Continuing	Continuing
RM: <i>WMD Battle Management</i>	33.888	28.260	22.303	-	22.303	20.403	20.727	21.137	21.700	Continuing	Continuing
RT: <i>Target Assessment Technologies</i>	33.097	35.112	32.837	-	32.837	32.014	31.084	31.759	32.429	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 - Counter WMD Weapons & Capabilities, RI - Nuclear Survivability, RM - WMD Battle Management, and RT - Target Assessment Technologies. This 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 and in the R-2a Budget Exhibits.

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 RE provides research and development support to Joint U.S. Military Forces, specifically U.S. Special Operations Command (USSOCOM) in the areas of Device Defeat, counter WMD technologies for warfighters, USSOCOM Counter Weapons of Mass Destruction – Terrorism (CWMD T) Support Program (SCSP) supports the Joint Intelligence Preparation of the Operational Environment (JIPOE) process to forecast plausible terrorist WMD threats for planning and conducting operations to combat WMD terrorism, and oversight of Counterproliferation (CP) research and development resources sent directly to USSOCOM for Special Operations Forces (SOF)-unique CP technologies.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>

Project RF develops technologies, systems and procedures for post-detonation nuclear forensics, and 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.

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 RT 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.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	238.773	295.163	302.977	-	302.977
Current President's Budget	236.408	295.163	283.073	-	283.073
Total Adjustments	-2.365	-	-19.904	-	-19.904
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	1.230	-			
• SBIR/STTR Transfer	-3.595	-			
• Realignment / Directed Efficiencies	-	-	-19.904	-	-19.904

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

**Project:** RF: *Detection Technology*

Congressional Add: *AELED IED Electronic Signature Detection*

	<b>FY 2010</b>	<b>FY 2011</b>
	4.800	-
Congressional Add Subtotals for Project: RF	4.800	-
Congressional Add Totals for all Projects	4.800	-



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>
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**Change Summary Explanation**

The FY 2010 decrease from the previous President's Budget submission is due to the internal SBIR reprogramming action, the FY 10-23IR reprogramming action to realign a \$1,920 Congressional Add to the proper executing agency, and the FY 10-11PA reprogramming action in support of higher priority Department needs.

The FY 2012 decrease is predominately attributed to the net effect of Departmental direction for increased efficiency in the area of Advisory & Assistance Services and other contractual services, increased investment for expanded capacity in Technical Reachback. support of increased user requests for information on Weapons of Mass Destruction (WMD) effects and their consequences, and the conversion of 0603160BR funds to 0602718BR to better reflect the nature of the Radiation Hardened (RadHard) Microelectronics efforts in the RI-Nuclear Survivability budget project. The RadHard efforts are developmental and involve the transition of promising basic research outputs into solutions for broadly defined military needs, short of major development projects, with a view toward development and evaluation of technical feasibility. Also contributing to the reduction are program reductions made to comply with Department guidance to identify funds to support higher priority mission areas.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>			
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				RA: <i>Systems Engineering and Innovation</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RA: <i>Systems Engineering and Innovation</i>	8.435	7.270	13.641	-	13.641	7.826	8.891	9.174	10.028	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. This includes analysis of National, Department of Defense (DoD) 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 the Defense Threat Reduction Agency (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 Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> RA: Systems Engineering and Innovation</p> <p><b>Description:</b> 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.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Institutionalized development of Combating WMD lessons learned in regional COCOMs theaters and with appropriate international staffs.</li> <li>- Continued to support development and update of the 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.</li> <li>- Institutionalized linkage with NATO/SHAPE and USEUCOM in international research and development collaboration.</li> </ul>	8.435	7.270	13.641	-	13.641

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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- Continued 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.

- Continued to conduct strategic analyses and assessments on emerging WMD threats.

- Continued 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.

**FY 2011 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 COCOMs, incorporating lessons learned from partner activities.

- Continue to develop and update the 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.

**FY 2012 Base Plans:**

- Develop and innovate a Nuclear Weapon-Related Materiel (NWRM) module in Defense Integration and Management of Nuclear Data Services with the ability to evolve to keep up with emerging mainstream technologies to consolidate various DoD tracking systems into a single worldwide accountability system that provides the ability to account, maintain, report, and track NWRM during peacetime, crisis, and wartime.

- 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 COCOMs, incorporating lessons learned from partner activities.

- Continue to develop and update DTRA Support Plan as directed in the GEF to further Combating WMD mission across all theaters while balancing DTRA assets and managing risks as prioritized within the GEF.

- Continue to 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.

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continue to conduct strategic analyses and assessments on emerging WMD threats.</li> <li>- Increase the capacity of Technical Reachback through the development and integration of high performance computing and geospatial services for decision support – support projected workload of over 1,800 requests for information.</li> <li>- Building partner capacity through advanced technology demonstrations to increase the technical capacity of international partners.</li> <li>- Develop, test, and deploy Arms Control Enterprise System (ACES) New START Treaty (NST) Increment #2 mid FY12 providing production facility, weapon transfer, annual nuclear weapons platform Conversion or Elimination plans and flight route notification capability</li> <li>- Develop, test, and deploy ACES NST Increment #3 end FY12 providing prototypes, new equipment, demonstrations and telemetry notification capability. Increment #3 will be fully operational capability (FOC) of ACES NST software upgrade.</li> </ul> <p><b><i>FY 2012 OCO Plans:</i></b> .</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	8.435	7.270	13.641	-	13.641

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012 Base</u>	<u>FY 2012 OCO</u>	<u>FY 2012 Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• 22/0602718BR: <i>WMD Defeat Technologies</i>	49.387	53.464	42.112		42.112	41.379	40.652	41.600	41.440	Continuing	Continuing

**D. Acquisition Strategy**  
Not Applicable

**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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>	<b>R-1 ITEM NOMENCLATURE</b>	<b>PROJECT</b>
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>	RA: <i>Systems Engineering and Innovation</i>

- 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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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				<b>PROJECT</b> RE: <i>Counter-Terrorism Technologies</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RE: <i>Counter-Terrorism Technologies</i>	59.627	102.395	114.337	-	114.337	114.657	115.798	115.964	117.728	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Counter-Terrorism Technologies project is an over-arching project that develops and transitions the full spectrum of new technologies for Joint U.S. Military Forces to counter WMD enabling warfighters, specifically Special Operations Forces (SOF), to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, nuclear production, storage, and weaponization facilities. This project supports Joint U.S. Military Forces, and in particular, the U.S. Special Operations Command (USSOCOM). This 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 FY 2011 increase built upon the FY 2010-2015 request in support of the Combating WMD-Terrorism (CWMD-T) over guidance instruction to increase funding for USSOCOM Counterproliferation (CP) R&D, Explosive Ordnance Disposal (EOD) Device Defeat, alternative WMD defeat program, and the USSOCOM CWMD T Support Program (SCSP). The following efforts are included in this project:

Provide oversight for Counterproliferation (CP) research and development resources sent directly to USSOCOM that are used to develop 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 EOD 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. DTRA has been delegated the responsibilities and authority to act as Task Lead on behalf of the Department of Defense (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. EOD Device Defeat began with minimal funding in FY 2008 and received its first increment of funding in FY 2010, thus starting the multi-year development effort. The Bold Gambler (BG) program is an EOD Device Defeat effort that transferred to this RE Project from RF-Detection technology. BG adds targeted rapid development of tools, techniques and procedures for the access, and advanced diagnostics and defeat of WMD systems and improvised devices. The focus of the activity is prototype development and transition of promising technologies to the user for procurement.

The SCSP supports the Joint Intelligence Preparation of the 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 Commander USSOCOM responsibilities under the Chairman, Joint Chiefs of Staff (CJCS) Unified Command Plan and Concept of Operation Plans (CONPLANS) 7500 and 7520 for integrating and synchronizing Defense-wide operations and activities to prevent terrorists from developing, acquiring, proliferation or using WMD.

The CWMD-T alternate defeat program 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 along multiple nodes concurrently or simultaneously within the terrorist pathway to disrupt, delay, degrade, destroy or deny Chemical, Biological, Radiological and Nuclear

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RE: <i>Counter-Terrorism Technologies</i>
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WMDs while minimizing risk to US forces in support of Counterproliferation and Counterterrorism Offensive operations. The program specifically addresses USSOCOM Directive 70-1 Appendix C, Special Mission Area Programs and 71-4 Force Development SOF Capabilities Integration and Development Systems.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> RE: Counter-Terrorism Technologies</p> <p><b>Description:</b> Project RE provides research and development support to Joint U.S. Military Forces, specifically U.S. Special Operations Command (USSOCOM) in the areas of Device Defeat, counter WMD technologies for warfighters, USSOCOM Counter Weapons of Mass Destruction – Terrorism (CWMD T) Support Program (SCSP) supports the Joint Intelligence Preparation of the Operational Environment (JIPOE) process to forecast plausible terrorist WMD threats for planning and conducting operations to combat WMD terrorism, and oversight of Counterproliferation (CP) research and development resources sent directly to USSOCOM for Special Operations Forces (SOF)-unique CP technologies.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued development and then transition new technologies for Joint U.S. Military Forces to counter 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.</li> <li>- Characterized material properties of Ultra-High Performance Concrete and delivered Final Report to Coalition Warfare partners.</li> <li>- Initiated funding for three 48-month technology solutions.</li> <li>- Began EOD work on following Knowledge Management Objectives: threat assessment on fireset designs; characterization &amp; testing; classified Research and Development programs to counter emergent threat(s).</li> <li>- Developed and began transitioning 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.</li> <li>- Established Initial Operational Capability (IOC) for SCSP.</li> <li>- Integrated and federated national intelligence with operations research systems analysis capabilities to support planning and operations.</li> </ul> <p><b>FY 2011 Plans:</b></p> <ul style="list-style-type: none"> <li>- 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 Chemical, Biological, Radiological, Nuclear Effects (CBRNE) WMD production facilities.</li> </ul>	59.627	102.395	114.337	-	114.337

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RE: <i>Counter-Terrorism Technologies</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Develop test articles for development of Ultra High-Performance Concrete tactics, techniques, and procedures.</li> <li>- Develop tools to enable the warfighter to combat against WMDs, their production and storage facilities and associated enablers anywhere within the terrorist pathway.</li> <li>- Initiate funding for three 48-month technology solutions.</li> <li>- Continue work on following Knowledge Management Objectives: Threat Assessment, acquire emergent fire set design and build; characterization &amp; testing; classified R&amp;D programs to counter emergent threat(s).</li> <li>- 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.</li> <li>- 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).</li> <li>- 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).</li> <li>- 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).</li> <li>- Explosive Ordnance Disposal (EOD) Device Defeat: Develop technologies and tools that characterize and identify the electronic environment and any improvised electronic triggering and firing system (EOD Device Defeat).</li> <li>- Develop tools to enable warfighters to locate, identify and render safe improvised WMD systems (EOD Device Defeat).</li> <li>- Enhance the threat assessment to replicate WMD triggering designs to be reproduced and tested in order to develop render safe procedures (EOD Device Defeat).</li> <li>- 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).</li> <li>- Production Defeat will develop tools that enable ground forces to destroy “critical nodes” used in the production and support of WMD (Target Defeat).</li> <li>- Structural Defeat will provide tools for the destruction of key entry points while collapsing the structure or rendering it unusable (Target Defeat).</li> <li>- 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.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p>					

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- 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.</li> <li>- 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.</li> <li>- Continue funding and manage progress for three 48-month technology solutions that began in FY10</li> <li>- CWMD-T Support Program will continue to develop the Dynamic Picture of the Operating Environment (DPOE) for the CWMD Community of Interest.</li> <li>- Improve methodologies for anticipating plausible terrorist WMD threats to support operational planning and research.</li> <li>- Develop systemic operational plans for integrating diplomatic, military, economic, financial, intelligence and law enforcement to counter proliferation of WMD and acquisition by known terrorist organizations.</li> <li>- Begin development of next generation imaging capabilities to allow EOD forces advanced diagnostic capabilities.</li> </ul> <p><b><i>FY 2012 OCO Plans:</i></b> .</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	59.627	102.395	114.337	-	114.337

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**D. Acquisition Strategy**

Not Applicable

**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 SOF capabilities to counter weapons of mass destruction when conducting Overseas Contingency Operations.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>			
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				RF: <i>Detection Technology</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RF: <i>Detection Technology</i>	64.986	90.688	77.784	-	77.784	76.298	77.863	78.528	80.321	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; and to support the attribution process through improved post-detonation National Technical Nuclear Forensics (NTNF) operational 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 (JCTD) to employ mature technologies and to improve procedures to address gaps identified by the 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 (He-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. . Additionally, it supports Arms Control Monitoring & Verification Technology by developing systems and technologies to improve monitoring and verification capabilities that are responsive to the new security environment, but without compromising sensitive US information in the international arena for the arms control treaty regime.

The decrease from FY 2011 to FY 2012 is predominately due to the transfer of the Bold Gambler program to project RE-Counter Terrorism Technologies to better reflect the progression of that program and also to fund increased investment for the nuclear weapons effects, modeling, and simulation capabilities.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RF: Detection Technology	60.186	90.688	77.784	-	77.784

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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<p><b>Description:</b> Project RF develops technologies, systems and procedures for post-detonation nuclear forensics, and 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.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Continued 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.</li> <li>- 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.</li> <li>- Continued development of 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.</li> <li>- Provided 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.</li> <li>- Investigated the use of muon and proton beams for standoff stimulation of fission in nuclear materials and conducted experiments to validate the feasibility of the approach.</li> <li>- Continued development of next generation ground sample collection platforms for Improvised Nuclear Device (IND) and Radiological Dispersion Device (RDD) collections.</li> <li>- Continued development of prototype sensor suite for mapping rad field to be mounted on rotor wing Unmanned Aerial Vehicles (UAV) in support of ground sample collections.</li> <li>- Continued cooperation and acceptance of DTRA developed detection technologies for operational deployment.</li> <li>- Continued transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces.</li> <li>- Exercised developmental collection capabilities with table top experiment, command post exercise, and field test experiment.</li> <li>- Continued robotic ground sample collection improvements.</li> </ul>					
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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>-- Completed first round of development of unattended sensor technologies for rapid detection and identification of radiological material.</p> <p>- Continue development of contour mapping technologies for radiation field analysis.</p> <p><b>FY 2011 Plans:</b></p> <p>- Complete development of a fielded standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material.</p> <p>- 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.</p> <p>- 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.</p> <p>- 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.</p> <p>- Begin development of fieldable (integrated and deployable) enhanced/rapid separation, dissolution and analysis laboratory capabilities and prototype novel technologies to shorten the analysis timeline.</p> <p>- 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.</p> <p>- 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.</p> <p>- 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.</p> <p>- 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.</p> <p>- Complete development of contour mapping technology prototype for radiation field analysis.</p> <p>- 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</p>					

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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>forensics results. Field improved debris diagnostic codes; accelerate design signatures database development and base lining of weapon design analysis capability.</p> <ul style="list-style-type: none"> <li>- Complete operational characterization of select shape charges in support of WMD defeat technologies.</li> <li>- Complete operational testing of classified defeat capability against specific WMD targets.</li> <li>- Continue update/enhancement and maintenance of Sniper family of data bases.</li> <li>- Complete development of next generation of man portable battery powered X-ray systems for diagnostics of WMD.</li> <li>- Complete development of next generation Timed Delay Firing Device.</li> <li>- Complete development of Next Generation Metal Detector.</li> <li>- Continue Concept of Operations development &amp; Standard Operating Procedures development for more complex Outside the Continental United States (OCONUS) demonstrations for detection, and collection capabilities.</li> <li>- Continue cooperation and acceptance of DTRA developed detection technologies for operational development.</li> <li>- Continue cooperation and acceptance of DTRA developed post nuclear event collection technologies for operational development.</li> <li>- Continue transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces.</li> <li>- Exercise developmental collection capabilities with table top experiment, command post exercise, and field test experiment.</li> <li>- 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).</li> <li>- Continue development techniques, tactics, and procedures of a nuclear forensics ground sample collection team.</li> <li>- Continue development and testing of remote information awareness capability for radiation sensor systems and data integration for increased area of detection capability.</li> <li>- Complete operational characterization of select shape charges in support of Weapons of Mass Destruction (WMD) defeat technologies.</li> <li>- Complete operational testing of classified defeat capability against specific WMD targets.</li> <li>- Continue update/enhancement and maintenance of Sniper family of data bases.</li> <li>- Complete development of next generation of man portable battery powered X-ray systems for diagnostics of WMD.</li> <li>- Complete development of next generation Timed Delay Firing Device.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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- 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.

***FY 2012 Base Plans:***

- Complete design and fabrication of a prototype passive interrogation system for determining the location and signature of nuclear material.
- Continue development of a rugged, mobile stand-off radiation detection system to provide mid to long-range detection and identification of nuclear materials in a field environment.
- Complete development and testing of a small, light-weight, low-cost, and low-power real-time secondary dosimeter to provide a single design for the Navy, Army, and Air Force. Continue development on a real-time primary dosimeter providing beta, gamma, and neutron sensitivity.
- Continue to develop and demonstrate alternative neutron detection technologies for replacement of helium-3 neutron detectors.
- Continue developing and improving high performing microelectronics to determine the location of a radiological source.
- Develop, test, verify, assist with validation, and use additions to the Joint Semi-Automated Forces (JSAF) tool intended to provide nuclear detection simulation capability into the JSAF environment, an integrated, accurate, environment where the Concept of Operations (CONOPS) and physics of nuclear detection can be studied in tandem.
- Continue to develop, accelerate development where appropriate, demonstrate, and field (prototype) upgraded technical capabilities for prompt diagnostics and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions.
- Continue development of fieldable (integrated and deployable) enhanced/rapid separation, dissolution and analysis laboratory capabilities and prototype novel technologies to shorten the analysis timeline.
- Continue development of methods to rapidly determine post-event nuclear weapon yields by investigating alternative prompt nuclear weapons effects, effects on the environment, and developing/fielding prototype capabilities.
- Continue robotic air/ground sample collection improvements; complete development and prototype fielding of enhanced semi-autonomous ground and airborne debris collection capabilities in conjunction with completion of the NTFN JCTD.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continue development of a fielded standoff active interrogation system for standoff detection and warning of hidden and shielded nuclear material.</li> <li>- Continue to 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.</li> <li>- Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous laboratory and field testing.</li> <li>- Complete execution of the National Technical Nuclear Forensics Joint Concept Technology Demonstration (JCTD) and begin Limited Operational Use / Employment and Follow-on Sustainment activities</li> <li>- Continue expanding the functionality of the Mobile Field Kit – Radiological (MFK-R) by increasing radiological situational awareness and mission review to current and future suites of sensors.</li> <li>- Investigate capability gaps and opportunities for insertion of radiation detection technology for treaty monitoring and verification.</li> <li>- Continue transitioning multiple near term technologies to generate prototypes and design packages to assist operational users.</li> <li>- Standoff Operational Exercise (SOX) Range will continue to support standoff experiments with the Photonuclear Inspection and Threat Analysis System (PITAS), a Bremsstrahlung beam generating system.</li> <li>- Establish the Integrated Standoff Inspection System (ISIS) as an Advanced Technology Demonstration.</li> <li>- Continue development of a large standoff, directionally oriented, monoenergetic gamma (e.g. laser Wakefield/ inverse Compton scattering accelerator) source for integration with an active interrogation system.</li> <li>- Complete execution of the National Technical Nuclear Forensics Joint Concept Technology Demonstration (JCTD) and begin Limited Operational Use / Employment and Follow-on Sustainment activities</li> <li>- Begin systems engineering approach for integration of technologies needed to enhance verification and monitoring of the follow-on to the New Strategic Arms Reduction Treaty (START).</li> <li>- Demonstrate Spiral I of the Arms Control Enterprise System (ACES) that enhances the database for strategic bomber movements and inspection operations.</li> <li>- Initiate Spiral II of ACES that addresses production facilities and weapons transfers.</li> <li>- Complete Phase I near source strong motion-small scale tests and high fidelity analysis for detection and identification of low yield and evasive testing.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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<ul style="list-style-type: none"> <li>- Initiate Phase I near source strong motion-small scale tests and high fidelity to address detection of deliberate evasive testing.</li> <li>- Begin exploring technologies for man portable detection and analysis capability for the Fissile Material Cutoff Treaty.</li> <li>- Demonstrate field portable gamma ray and neutron detection system for New and Future START warhead counting and identification.</li> <li>- Start experimental assessment of advanced concepts for warhead counting and assessment for Future START.</li> <li>- Initiate upgrade analysis system for radioactive noble gases to detect underground nuclear explosions for CTBT.</li> <li>- Complete operational characterization of the imaging and high spectral resolution systems for man portable, vehicle borne and stationary radiological detectors.</li> <li>- Begin development of the next generation NIMBLE ELDER network technologies.</li> <li>- Begin operational characterization of the emerging radiological active detection prototypes.</li> <li>- Continue development of the Force protection improvement for NIMBLE ELDER detection equipment.</li> <li>- Continue development of NIMBLE ELDER maritime detection capabilities.</li> <li>- Continue cooperation and acceptance of DTRA developed detection technologies for operational development.</li> <li>- Complete ground robotic sample collection improvements.</li> <li>- Begin transitioning ground robotic sample collection capability to a program of record.</li> <li>- Continue testing and evaluation nuclear forensics sample collection procedures through demonstrations and exercises.</li> </ul> <p><b>FY 2012 OCO Plans:</b> .</p>					
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<b>Accomplishments/Planned Programs Subtotals</b>	60.186	90.688	77.784	-	77.784
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	<b>FY 2010</b>	<b>FY 2011</b>
<p><b>Congressional Add:</b> AELED IED Electronic Signature Detection</p> <p><b>FY 2010 Accomplishments:</b> - Continued active source technology development and integration with passive capability.</p> <ul style="list-style-type: none"> <li>- Continued frequency agile source development and integration.</li> <li>- Researched phenomenology for better assessment of target responses to illumination.</li> </ul>	4.800	-

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RF: <i>Detection Technology</i>
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	<b>FY 2010</b>	<b>FY 2011</b>
- Developed phenomenology for WMD/Improvised Explosive Device (IED) applications for signature detection of WMD/IED triggers. - Developed advanced receiver and algorithm enhancement for detection of evolving signatures to improve Digital Signal Processing (DSP) capability specific to this application and the identification/design of emerging hardware for electronics detection.		
<b>Congressional Adds Subtotals</b>	4.800	-

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> Base	<u>FY 2012</u> OCO	<u>FY 2012</u> Total	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> Complete	<u>Total Cost</u>
• 22/0602718BR: <i>WMD Defeat Technologies</i>	40.556	52.649	50.548		50.548	48.248	48.614	49.926	50.894	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**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.
- Complete laboratory testing of CZT-based Compton imaging spectrometer.
- Successful testing of prototype components of a large area gamma detection system.
- Successful completion of the real-time secondary dosimeter project.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>			
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>	16.688	17.386	15.186	-	15.186	20.631	21.477	21.768	22.442	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.

The decrease from FY 2011 to FY 2012 is predominately for increased investment for nuclear weapons effects in project RF-Detection Technology and also for program reductions made to comply with Department guidance to identify funds to support higher priority mission areas.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p><b>Title:</b> RG: Advanced Energetics &amp; Counter WMD Weapons</p> <p><b>Description:</b> Project RG develops advanced technologies and weapon concepts and validates their applicability as counter Weapons of Mass Destruction (WMD) weapon systems.</p> <p><b>FY 2010 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Supported USAF Quick Reaction Capability Program Massive Ordnance Penetrator validation tests.</li> <li>- Continued development of novel thermal based payloads.</li> <li>- Completed Phase I: Concept Refinement of the Integrated Precision Ordnance Delivery System (IPODS) Program.</li> <li>- Conducted live simulatant matrix testing.</li> <li>- Initiated Air Force Research Laboratory (AFRL) risk reduction program for IPODS end-game seeker technology maturation.</li> <li>- Conducted small scale testing and modeling of kinetic and non-kinetic payload capability.</li> <li>- Initiated Modular Autonomous Countering Weapons of Mass Destruction System (MACS) Concept Development trade studies.</li> <li>- Developed advanced wireless sensor capability for DT&amp;E.</li> <li>- Identified MACS critical component technologies.</li> <li>- Completed Kinetic Fireball Analysis of Alternatives and associated critical design review.</li> </ul>	16.688	17.386	15.186	-	15.186

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>- Completed initial High Power Microwave production equipment damage and disruption testing.</p> <p><b><i>FY 2011 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Complete IPODS concept design and initiate scaled model tests of selected design.</li> <li>- Finalize Modular Autonomous Countering Weapons of Mass Destruction (WMD) System Concept Development Studies and initiate technology maturation efforts.</li> <li>- Evaluate Defense Advanced Research Projects Agency Strategic Hardened Facility Defeat technology maturity.</li> <li>- Continue development of enhancements to Weapons Effects Modeling for Agent Defeat and integrate non-kinetic based Countering WMD capabilities.</li> <li>- Initiate improvements for soft target Countering WMD capability.</li> <li>- Conduct initial full-scale flight test against a multi-story test structure.</li> <li>- Initiate advancements in Bulk Neutralization Payload Development.</li> </ul> <p><b><i>FY 2012 Base Plans:</i></b></p> <ul style="list-style-type: none"> <li>- Develop IPODS preliminary Hardware Design and Software Architecture.</li> <li>- Continue development of enhancements to Weapons Effects Modeling for Agent Defeat.</li> <li>- Conduct computerized fit checks on carriage platforms and scale model IPODS wind tunnel testing.</li> <li>- Continue improvements for soft target CWMD capabilities.</li> <li>- Continue AFRL end-game seeker technology maturation testing.</li> <li>- Continue maturing diagnostic capability to meet emerging needs and field improved capabilities.</li> <li>- Initiate development of MACS architecture.</li> <li>- Continue improvements for soft target WMD Defeat capability.</li> <li>- Develop initial MACS prototype.</li> <li>- Integrate Kinetic Fireball sub-munitions into warhead.</li> <li>- Conduct High Power Microwave disruption and forensics testing.</li> <li>- Complete Counter Electronics High Power Microwave Advanced Missile Project (CHAMP) JCTD Operational Utility Assessment against a WMD target.</li> </ul> <p><b><i>FY 2012 OCO Plans:</i></b></p> <p>.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	16.688	17.386	15.186	-	15.186

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RG: <i>Advanced Energetics &amp; Counter WMD Weapons</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR: <i>WMD Defeat Technologies</i>	29.431	29.139	17.115		17.115	14.825	14.935	13.786	13.718	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**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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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>				<b>PROJECT</b>			
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				RI: <i>Nuclear Survivability</i>			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RI: <i>Nuclear Survivability</i>	19.687	14.052	6.985	-	6.985	6.271	6.295	6.277	6.208	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 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 Services by providing denial of access to nuclear resources 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 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.

The decrease from FY 2011 to FY 2012 in RI Nuclear Survivability is predominately due to the conversion of 0603160BR funding to 0602718BR funding to better reflect the nature of the Radiation Hardened Microelectronics efforts in the RI-Nuclear Survivability budget project. Radiation Hardened efforts are developmental and involve the transition of promising basic research outputs into solutions for broadly defined military needs, short of major development projects, with a view toward development and evaluation of technical feasibility.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RI: Nuclear Survivability	19.687	14.052	6.985	-	6.985

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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
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**Description:** 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.

**FY 2010 Accomplishments:**

- Completed development of 90nm Static Random Access Memory (SRAM) compiler for use in designing Application Specific Integrated Circuits (ASIC).
- Completed initial investigation of 90nm RadHard by process enhancements and developed a baseline for circuit demonstrations
- Performed initial characterizations of single event effects in commercial 45nm bulk and silicon-on-insulator technology.
- Conducted Mighty Guardian XIII Force-On-Force test to evaluate nuclear security policy as it applies to missile launch facility security at Minot AFB, ND.
- Planned Mighty Guardian XIV Force-On-Force test to evaluate bomber generation operations at an Air Force Global Strike Command installation.
- Conducted research, development, test, and evaluation on physical security technologies designed to enhance protection of the nuclear stockpile as determined by the Services.

**FY 2011 Plans:**

- Develop mitigation techniques for 45nm Radiation Hardened by Design (RHBD) Technology.
- Develop initial Technology Computer-Aided Design modeling for 45nm.
- 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.
- Plan 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.

**FY 2012 Base Plans:**

- Develop 90nm RHBD qualification vehicle for ASIC design flow capability.
- Continue investigation of 45nm RHBD mitigation techniques on a technology characterization vehicle.
- Demonstrate 45nm RHBD Test Circuit Vehicle.
- Demonstrate initial 90nm radiation hardened 64Mb Static Random Access Memory (SRAM).

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RI: <i>Nuclear Survivability</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Conduct 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.</li> <li>- Plan Mighty Guardian XVI Force-on-Force test to evaluate nuclear security policy for Prime Nuclear Airlift Forces (PNAF).</li> <li>- Plan Mighty Guardian XVI Force-On-Force Test to evaluate nuclear security policy as it applies to submarine in transit at a location still to be determined.</li> <li>- Conduct research, development, test, and evaluation on physical security technologies designed to enhance protection of the nuclear stockpile as determined by the Services.</li> </ul>					
<b>Accomplishments/Planned Programs Subtotals</b>	19.687	14.052	6.985	-	6.985

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 22/0602718BR: <i>WMD Defeat Technologies</i>	22.048	17.902	17.503		17.503	17.261	17.388	17.855	18.718	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**E. Performance Metrics**

Achieve Radiation Hardened and Radiation Hardened by Design (RHBD) 90nm Application Specific Integrated Circuit design flow capability.

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 research, development, test, and evaluation for physical security technologies is determined by performers completing the project on-time and within budget, all stated tasks in the statement of work/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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RM: <i>WMD Battle Management</i>	33.888	28.260	22.303	-	22.303	20.403	20.727	21.137	21.700	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 decrease from FY 2011 to FY 2012 is predominately due to program reductions made to comply with Department guidance to identify funds to support higher priority mission areas and program changes for increased investment in detection technologies.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RM: WMD Battle Management	33.888	28.260	22.303	-	22.303
<b>Description:</b> 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.					
<b>FY 2010 Accomplishments:</b>					
- Conducted Global Strike Battle Damage Assessment (BDA) Phase 2 field demonstration of remote ground and air-based BDA sensors.					
- Continued development of the WMD Aerial Collection System (WACS).					
- Identified signatures and establish test beds for sensors to find fix and track WMD related items and people.					
- Validated and transitioned the near real time Concept of Operations (CONOPS) for Constant Hawk to the warfighter.					



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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Participated in the development of High Altitude Long Endurance Unmanned Aerial Vehicles (UAV) to relay sensor data.</li> <li>- Demonstrated capability to launch and control Flight Inserted Detector Expendable for Reconnaissance (FINDER) UAV from the Predator MQ-1 and conduct AFSOC missions through SATCOM.</li> <li>- Promulgated 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.</li> <li>- Administered 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.</li> <li>- Delivered Integrated Munitions Effects Assessment 2010 incorporating JSOW-C planning capability for the Navy and a new capability to calculate WMD release &amp; dispersion from tunnel facilities.</li> <li>- Performed annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing.</li> <li>- Provided Targeting and Weaponing Analysis Cell academics and targeting support.</li> </ul> <p><b>FY 2011 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct demonstration of the WMD Aerial Collection System.</li> <li>- Validate implemented solutions for command and control, collaboration, decision support, and situational awareness and identify any necessary support base for further enhancement.</li> <li>- Perform integration testing and begin Dynamic Toolset development for Advance Targeting Assessment Capability.</li> <li>- Perform annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing.</li> <li>- Begin development of algorithms for Dynamic Toolset support using High Performance Computing.</li> <li>- Provide Targeting/Weaponing Analysis Cell academics and targeting support.</li> <li>- Deliver Vulnerability Assessment Protection Option (VAPO) version with Critical Infrastructure Protection modeling and vulnerability analysis.</li> <li>- Commence development of Phase 3 of the Global Strike battle Battle Damage Assessment (BDA) (system optimization).</li> <li>- Design prototype capability for precision delivery of unattended ground sensors from a small UAV.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<p>- 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).</p> <p>- Develop, integrate and demonstrate miniaturized CBRNE sensors with radio frequency tags in support of Combating Weapons of Mass Destruction (CWMD) Tag, Track and Locate.</p> <p>- Develop CWMD Persistent Intelligence, Surveillance, and Reconnaissance (P-ISR) integration framework for the fusion of data from multiple sources that provide activity based intelligence.</p> <p>- 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.</p> <p><b>FY 2012 Base Plans:</b></p> <p>- Continue to support the Combatant Commands with the further refinement and development of operation center critical technologies that will enhance the capability of rapid response in regards to next generational reach back capabilities.</p> <p>- Conduct demonstration of the WMD Aerial Collection System (WACS).</p> <p>- Conduct Spectre-FINDER Phase 2 Demonstration.</p> <p>- Initiate the transition of WACS prototypes to the U.S. Army.</p> <p>- Develop and demonstrate novel tag technologies for C-WMD Tag, Track and Locate Program.</p> <p>- Complete system assessment of the Phase 2 conventional 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.</p> <p>- Conduct an operationally representative flight test of a near real-time Battle Damage Assessment (BDA) system for conventional strikes.</p> <p>- Deliver Integrated Munitions Effects Assessment 2012.</p> <p>- Perform annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing.</p> <p>- Provide Targeting and Weaponing Analysis Cell academics and targeting support.</p> <p>- Continue the effort to integrate first principle modeling codes into GUI-based hazard prediction models.</p> <p><b>FY 2012 OCO Plans:</b></p> <p>.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	33.888	28.260	22.303	-	22.303

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RM: <i>WMD Battle Management</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR: <i>WMD Defeat Technologies</i>	15.239	10.899	13.761		13.761	18.569	16.366	17.288	17.693	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>				<b>PROJECT</b> RT: <i>Target Assessment Technologies</i>			
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
RT: <i>Target Assessment Technologies</i>	33.097	35.112	32.837	-	32.837	32.014	31.084	31.759	32.429	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 2010 to FY 2011 increase is in support of the Department of Defense (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 Counter-WMD Analysis Cell (C-WAC) 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 Programs (\$ in Millions)**

	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
<b>Title:</b> RT: Target Assessment Technologies	33.097	35.112	32.837	-	32.837
<b>Description:</b> Project RT 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.					
<b>FY 2010 Accomplishments:</b>					
- Delivered Underground Targeting and Analysis System (UTAS) functional process modeling and point mensuration capability to the COCOMs and Intelligence Community.					
- Fully integrated UTAS modeling capability into the DIA Underground Facility Analysis Center target characterization process and products.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency	<b>DATE:</b> February 2011
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives</i> - <i>Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RT: <i>Target Assessment Technologies</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Continued to provide target characterization training for the UGF and WMD target defeat communities.</li> <li>- Demonstrated 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.</li> <li>- Demonstrated added Counter-WMD Analysis Cell (C-WAC) capabilities to model and analyze biological weapons threats in support of COCOMs Command and Intelligence Community needs.</li> <li>- Researched and developed models for analysis and assessment of weapons effects on WMD related equipment and systems for use by the Intelligence Community.</li> </ul> <p><b>FY 2011 Plans:</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Fully integrate models for analysis and assessment of weapons effects on WMD related equipment and systems into UTAS for use by the Intelligence Community.</li> <li>- Continue target characterization training for the Underground Facility (UGF) and WMD target defeat communities.</li> <li>- 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.</li> <li>- Demonstrate Counter-WMD Analysis Cell (C-WAC) initial capabilities to model and analyze chemical weapons threat development processes in response to COCOMs and Intelligence Community counter WMD requirements.</li> </ul> <p><b>FY 2012 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Demonstrate Integrated Sensor System (ISS) version 1 capabilities as part of the USNORTHCOM Rapid Reaction Tunnel Detection (R2TD) Joint Concept Technology Demonstration (JCTD).</li> <li>- Demonstrate Integrated Sensor System (ISS) version 1 capabilities as part of the DTRA Counter WMD Technologies Directorate's Integrated Technology Demonstration 1 (ITD-1).</li> <li>- Develop and demonstrate C-WAC integrated counter-WMD strategic analysis capability.</li> <li>- Develop and demonstrate an UTAS version that combines buildings, bunkers and tunnels into a common operating picture (COP) and demonstrate this capability during the DTRA ITD-1.</li> <li>- Demonstrate a UTAS version that integrates analysis of facilities and WMD functional process models.</li> </ul>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 3: <i>Advanced Technology Development (ATD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603160BR: <i>Counterproliferation Initiatives - Proliferation, Prevention and Defeat</i>	<b>PROJECT</b> RT: <i>Target Assessment Technologies</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
- Continue target characterization training for the UGF and WMD target defeat communities.					
<b><i>FY 2012 OCO Plans:</i></b> .					
<b>Accomplishments/Planned Programs Subtotals</b>	33.097	35.112	32.837	-	32.837

**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 22/0602718BR: <i>WMD Defeat Technologies</i>	0.486	0.000	0.000		0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

**D. Acquisition Strategy**

Not Applicable

**E. Performance Metrics**

Increased WMD target characterization capability thru successful incorporation of WMD systems and process characterization modeling and assessment capabilities into the UTAS functionality.

Remotely determine geotechnical UTAS calculation properties within 35 percent.

Increased analysis of weapons effects on WMD targets thru successful integration of models for analysis and assessment of weapons effects on some WMD related equipment and systems in UTAS by the end of FY 2011.

Demonstrated improved Integrated Sensor System (ISS) on-node data fusion capability.

Improved chemical weapons analysis capability thru Counter-WMD Analysis Cell (C-WAC) modeling and analysis of chemical weapons threat.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	9.255	7.307	5.888	-	5.888	5.749	5.995	6.077	6.097	Continuing	Continuing
RL: <i>Nuclear &amp; Radiological Effects</i>	9.255	7.307	5.888	-	5.888	5.749	5.995	6.077	6.097	Continuing	Continuing

**A. Mission Description and Budget Item Justification**

The Weapons of Mass Destruction Toolset is the real-time globally accessible net-centric framework which migrates the Defense Threat Reduction Agency (DTRA) chemical, biological, nuclear, radiological, and high explosive (CBRNE) modeling and simulation codes to provide the an integrated suite of CWMD decision support capabilities. The framework is the only extant CBRNE framework in the world which provides capabilities through web applications, net-centric web services, and stand-alone mobile deployments which are validated and accredited for operational use by International, National, State, and local authorities.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	9.489	7.307	6.660	-	6.660
Current President's Budget	9.255	7.307	5.888	-	5.888
Total Adjustments	-0.234	-	-0.772	-	-0.772
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.013	-			
• SBIR/STTR Transfer	-0.221	-			
• Realignment / Directed Efficiencies	-	-	-0.772	-	-0.772

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

**Project:** RL: *Nuclear & Radiological Effects*

Congressional Add: *Electric Grid Reliability/Assurance*

	FY 2010	FY 2011
Congressional Add Subtotals for Project: RL	0.800	-
Congressional Add Totals for all Projects	0.800	-

**Change Summary Explanation**

The FY 2010 decreases from the previous President's Budget submission are due to the internal SBIR reprogramming and the FY 10-11PA reprogramming action in support of higher priority Department needs.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

**APPROPRIATION/BUDGET ACTIVITY**  
0400: *Research, Development, Test & Evaluation, Defense-Wide*  
BA 5: *Development & Demonstration (SDD)*

**R-1 ITEM NOMENCLATURE**  
PE 0605000BR: *WMD Defeat Capabilities*

FY 2012 decrease is predominately attributed to Departmental guidance for increased efficiency in the area of Advisory & Assitance services and other contractual support services.



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<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RL: <i>Nuclear &amp; Radiological Effects</i>	9.255	7.307	5.888	-	5.888	5.749	5.995	6.077	6.097	Continuing	Continuing
Quantity of RDT&E Articles											

**A. Mission Description and Budget Item Justification**

Net-Centric Architecture includes three functional areas 1) Integrated Weapons of Mass Destruction Toolset (IWMDT), 2) IWMDT Codes, and 3) Software Assurance and Certification and Accreditation. The IWMDT functional area 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. The IWMDT Codes functional area develops analysis and simulation codes, and then integrates the codes into the IWMDT architecture. These efforts are unique to this effort across the Department of Defense (DoD) and directly supports analysis capabilities in the Office of the Secretary Defense (OSD) Studies and Analysis Group, and Cost Assessment and Program Evaluation (OSD CAPE), US Pacific Command and United States Forces Korea offices, Republic of Korea Ministry of Defense, Ministry of Defense Taiwan, as well as providing unique simulation capabilities to US Joint Forces Command and the Air Force Distributed Mission Operation Center. This sub-project extends research and development to system development and demonstration.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<b>Title:</b> RL: Nuclear & Radiological Effects	8.455	7.307	5.888	-	5.888
<b>FY 2010 Accomplishments:</b>					
- Operationally implemented a globally accessible integrated net-centric CBRNE capability used across exercise and operational deployments on unclassified, classified and exercise networks.					
- Migrated nuclear effects framework and Consequence of Execution tools – Completed FY10 nuclear integration efforts to Joint Program Offices for community use and broader integration across DoD Command and Control (C2) systems.					
- Operationally deployed a “fly-away” implementation of an IWMDT virtual machine (VM) on a single laptop for disconnected use at USSTRATCOM, USJFCOM, and SHAPE.					
- Deployed IWMDT v3.0 and v. 3.1 employing a role-based accredited system operationally available to partner nations, and state and local users for collaborative real-time planning and assessment.					
- Developed integrated within the IWMDT framework, technologies to mitigate effects of Electromagnetic Pulse (EMP) attacks through the Nuclear Capability Services (NuCS) program.					
<b>FY 2011 Plans:</b>					
- Enhance the Continuity of Operations (COOP) functionality to allow “hot” updates and full Rapid Assessment and Identification support of alternate sites and capabilities.					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
<ul style="list-style-type: none"> <li>- Enhanced implementation of Net Centric Enterprise Services messaging and collaboration for use across exercise and operational deployments.</li> <li>- 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, Radiological, Nuclear and Explosive Integrated Weapons of Mass Destruction Toolset (IWMDT) framework.</li> <li>- 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.</li> </ul> <p><b>FY 2012 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop and provide an initial cyberspace capability through internal agency integration efforts.</li> <li>- Integrate advanced capabilities within the Net-Centric Architecture with the Global Strike Mission.</li> <li>- Complete and release IWMDT framework version 3.4.</li> <li>- Complete and release CBRNE Explosive IWMDT framework version 3.4.</li> </ul> <p><b>FY 2012 OCO Plans:</b></p> <p>.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	8.455	7.307	5.888	-	5.888

	FY 2010	FY 2011
<b>Congressional Add:</b> Electric Grid Reliability/Assurance	0.800	-
<b>FY 2010 Accomplishments:</b> - Planned EMP long pulse (E3) power grid test at Idaho National Laboratory.		
<b>Congressional Adds Subtotals</b>	0.800	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>

**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u>			<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• 22/0602718BR: <i>WMD Defeat Technologies</i>	21.813	16.776	25.343		25.343	23.922	23.968	25.202	25.620	Continuing	Continuing

**D. Acquisition Strategy**

The programs for IWMDT, 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 CBRNE 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 CBRNE codes to a net-centric implementation in a process-controlled Verification, Validation, and Accreditation standards-based method.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Defense Threat Reduction Agency** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
System Development - IWMDT	C/CPAF	SAIC:San Deigo, CA	14.026	2.564	Dec 2010	3.100	Nov 2011	-		3.100	14.510	34.200	37.949
System Development - NuCS	C/CPFF	Applied Research Associates:Raleigh, NC	3.660	1.270	Mar 2011	-		-		-	0.000	4.930	6.300
System Development - COE	C/CPFF	Titan:Kingstowne, VA	5.091	0.444	Mar 2011	-		-		-	0.000	5.535	7.100
System Development - Component Contracts	C/Various	Various:Various	4.729	0.344	Mar 2011	-		-		-	0.000	5.073	6.800
<b>Subtotal</b>			27.506	4.622		3.100		-		3.100	14.510	49.738	58.149

**Remarks**

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

<b>Support (\$ in Millions)</b>				<b>FY 2011</b>		<b>FY 2012 Base</b>		<b>FY 2012 OCO</b>		<b>FY 2012 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Total Prior Years Cost</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Configuration Management	C/Various	SAIC, ARA, Titan:Various	0.122	0.024	Nov 2010	0.060	Nov 2011	-		0.060	1.353	1.559	2.074
Software Integration	C/Various	SAIC, ARA, Titan:Various	2.600	0.500	Nov 2010	0.200	Nov 2011	-		0.200	1.100	4.400	6.168
Technical Data	C/Various	SAIC, ARA, Titan:Various	0.042	0.008	Nov 2010	0.573	Nov 2011	-		0.573	0.938	1.561	2.300
Engineering Services	C/Various	SAIC, ARA, Titan:Various	1.264	0.200	Nov 2010	0.503	Nov 2011	-		0.503	0.786	2.753	3.727
Accreditation & Certification	C/Various	SAIC, ARA, Titan:Various	0.122	0.024	Nov 2010	0.420	Nov 2011	-		0.420	0.983	1.549	1.944
<b>Subtotal</b>			4.150	0.756		1.756		-		1.756	5.160	11.822	16.213

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Defense Threat Reduction Agency** **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	1.563	0.505	Nov 2010	0.350	Nov 2011	-		0.350	1.300	3.718	5.228
Operational Test & Evaluation	C/Various	SAIC, ARA, Titan:Various	1.562	0.505	Nov 2010	0.070	Nov 2011	-		0.070	0.925	3.062	4.456
<b>Subtotal</b>			3.125	1.010		0.420		-		0.420	2.225	6.780	9.684

<b>Management Services (\$ in Millions)</b>				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	1.817	0.479	Nov 2010	0.132	Nov 2011	-		0.132	2.100	4.528	5.278
Travel	C/Various	SAIC, ARA, Titan:Various	0.850	0.220	Nov 2010	0.240	Nov 2011	-		0.240	1.300	2.610	3.530
Overhead	C/Various	SAIC, ARA, Titan:Various	0.984	0.220	Nov 2010	0.240	Nov 2011	-		0.240	1.600	3.044	3.582
<b>Subtotal</b>			3.651	0.919		0.612		-		0.612	5.000	10.182	12.390

	Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		38.432	7.307	5.888	-	5.888	26.895	78.522	96.436

**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 competitive CPAF contract for \$12.425M over a 3-year period. At end of FY 2006, its follow-on contract was awarded with an initial \$.300M increment. IWMDT program efforts have continued into FY 2010 with \$28.962M now applied. Likewise, the NuCS program was funded under a competitive CPFF contract over a 3-year period with funding of \$5.913M applied through FY 2008; a follow-on contract has now been awarded with initial funding to date of \$2.356M to continue program efforts. COE was funded under a competitive CPFF contract with increments to date of \$6.566M total. Beginning in FY 2008, these activities began funding under PE 0605000BR. A new vehicle will be awarded November 2010 for a period of 24 months on the base contract and then one option year with \$8.300M scope for each year for IWMDT. NUCS and COE will no longer be funded under this line. In CY 2013 IWMDT will be openly competed under the new DTRA ID/IQ for approx \$24.000M for FY2014-16.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2012 Defense Threat Reduction Agency</b>		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>

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<b>Exhibit R-4, RDT&amp;E Program Schedule Profile</b>													<b>Date: February 2011</b>																			
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																						
Fiscal Year	2010				2011				2012				2013				2014				2015				2016							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones																																
IWMDT -- System Development, Test, and Integration -- Phase 2																																
IWMDT -- System Development, Test, and Integration -- Phase 3/4																																
Consequence of Execution (COE) Development and Integration																																
Nuclear Capabilities Services (NuCS) -- Spiral Development, Test, and Integration -- Phase 1																																

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R-4 Program Schedule Profile

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 5: <i>Development &amp; Demonstration (SDD)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605000BR: <i>WMD Defeat Capabilities</i>	<b>PROJECT</b> RL: <i>Nuclear &amp; Radiological Effects</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IWMDT - System Development, Test, and Integration - Phase 2	1	2010	4	2012
IWMDT - System Development, Test, and Integration - Phase 3/4	1	2013	4	2016
COE Integration - Phase 2	1	2010	4	2011
NuCS - Spiral 2 Development	1	2010	4	2011

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b>				<b>R-1 ITEM NOMENCLATURE</b>							
0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 6: <i>RDT&amp;E Management Support</i>				PE 0605502BR: <i>Small Business Innovation Research</i>							
<b>COST (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	8.347	-	-	-	-	-	-	-	-	Continuing	Continuing
RA: <i>Systems Engineering and Innovation</i>	8.347	-	-	-	-	-	-	-	-	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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012 Base</b>	<b>FY 2012 OCO</b>	<b>FY 2012 Total</b>
Previous President's Budget	-	-	-	-	-
Current President's Budget	8.347	-	-	-	-
Total Adjustments	8.347	-	-	-	-
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	8.347	-			

**Change Summary Explanation**

Funding for the FY 2010 SBIR Program has been consolidated in this program element for execution.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2012 Defense Threat Reduction Agency **DATE:** February 2011

<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 6: <i>RDT&amp;E Management Support</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605502BR: <i>Small Business Innovation Research</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RA: <i>Systems Engineering and Innovation</i>	8.347	-	-	-	-	-	-	-	-	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 the 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 the DoD supported research and development results. These efforts are responsive to Public Law 106-554.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2010	FY 2011	FY 2012
<b>Title:</b> RA: Systems Engineering and Innovation	8.347	-	-
<b>Description:</b> This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting the 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 the DoD supported research and development results. These efforts are responsive to Public Law 106-554.			
<b>FY 2010 Accomplishments:</b> - Completed execution of 7 FY 2008 Phase II contracts. - Coordinated transition plans with the small business for the 8 FY 2007 and 7 FY2008 PH II contracts. - Continued the second-year of development and execution for the 8 FY 2009 Phase II contracts. - Awarded 21 Phase I contracts to perform feasibility studies on FY 2010 topics. - Awarded 8 Phase II contracts on successful FY 2009 Phase I efforts. - Transitioned FY 2007 and prior Phase II efforts to Phase III, Commercialization, as results and funding permitted. - Participated in educational outreach during DoD sponsored SBIR events.			
<b>Accomplishments/Planned Programs Subtotals</b>	8.347	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2012 Defense Threat Reduction Agency		<b>DATE:</b> February 2011
<b>APPROPRIATION/BUDGET ACTIVITY</b> 0400: <i>Research, Development, Test &amp; Evaluation, Defense-Wide</i> BA 6: <i>RDT&amp;E Management Support</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0605502BR: <i>Small Business Innovation Research</i>	<b>PROJECT</b> RA: <i>Systems Engineering and Innovation</i>

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**D. Acquisition Strategy**

Not Applicable

**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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