Defense Threat Reduction Agency

Fiscal Year (FY) 2010 Budget Estimates

May 2009

Research, Development, Test and Evaluation, Defense-Wide

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

Appropriation: RDT&E, Defense-Wide **Date: May 2009**

OVERVIEW

The Defense Threat Reduction Agency (DTRA) brings a dedicated, full-time, and integrated focus to its mission of making the world safer by reducing the threat of weapons of mass destruction (WMD). Safeguarding the U.S. and its allies from WMD (chemical, biological, radiological, nuclear, and high-yield explosives) remains its primary focus by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects. DTRA provides integrated technical and operational solutions as well as the intellectual capital to shape both defense and national-level policies and strategies to address

Consistent with this mission, the FY 2010 budget has been developed to address the specific challenges facing Department of Defense today in the areas of homeland defense/civil support and combating WMD. DTRA is a principal source for the warfighter and other organizations to better understand and plan against WMD threats. As DTRA contributes across the range of military operations, successes in one area are leveraged in other areas, resulting in synergies and operational efficiencies.

This FY 2010 budget submission implements the Department's Fiscal Guidance, which provides for a minimal (less than 3 percent) increase to DTRA's funding across the Future Years Defense Program, despite the growing WMD challenge.

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

Appropriation: RDT&E, Defense-Wide **Date: May 2009**

R-1 Line Item No	Program Element Number	Item	Budget Activity	TOA, $ in Millions FY 2008 Cost	FY 2009 Cost	FY 2010 Cost
1	0601000BR	DTRA Basic Research Initiative	1	14.708	22.329	48.544
20	0602718BR	WMD Defeat Technologies	2	207.448	213.606	219.130
26	0603160BR	Proliferation, Prevention and Defeat	3	211.146	218.958	233.203
115	0605000BR	WMD Defeat Capabilities	5	15.291	15.896	8.735
142	0605502BR	Small Business Innovation Research	6	7.124	0.000	0.000
		Total RDT&E		455.717	470.789	509.612

Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 1 - Basic Research					R-1 ITEM NOMENCLATURE PE 0601000BR DTRA Basic Research Initiative					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	14.708	22.329	48.544						Continuing	Continuing
RU: *Fundamental Research for Combating WMD	14.708	22.329	48.544						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

The Defense Threat Reduction Agency (DTRA) safeguards America and its allies from Weapons of Mass Destruction (chemical, biological, radiological, nuclear, and high explosives) by providing capabilities to reduce, eliminate, and counter the threat, and mitigate its effects. The Basic Research Initiative program provides for the discovery and development of fundamental knowledge and understanding by research performers drawn primarily from academia and world-class research institutions in government and industry. This leverages Department of Defense $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 non-proliferation, counter proliferation and consequence management efforts.

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

Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 1 - Basic Research	**R-1 ITEM NOMENCLATURE** PE 0601000BR DTRA Basic Research Initiative

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	10.831	18.000	18.544	
Current BES/President's Budget	14.708	22.329	48.544	
Total Adjustments	3.877	4.329	30.000	
Congressional Program Reductions	0.000	-0.071		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	4.400		
Total Reprogrammings	4.061	0.000		
SBIR/STTR Transfer	-0.184	0.000		
Realignment	0.000	0.000	30.000	

Congressional Increase Details ($ in Millions)

	FY 2008	FY 2009
Project: RU, **Dual Use Technologies for Bio Defense Drug & Novel Therapeutics**		1.200
Project: RU, **University Strategic Partnership**		3.200

Change Summary Explanation

Basic Research Initiative provides expanded and detailed justification to include specific and articulable benefits to the Warfighter to support the increase of $30 million in FY 2010. The Defense Threat Reduction Agency basic research program is supporting high-payoff, novel research that will provide benefits to the warfighter in important areas of the countering Weapon of Mass Destruction (WMD) mission. Three exemplary areas are: (1) remote detection of fissile material; (2) defeat of WMD-related facilities and materials with acceptable collateral damage; and (3) advances in physical and social network analyses that fosters the means for countering electromagnetic pulse attacks and terrorism. Another very important benefit of basic research is the training of the next generation of scientists, who will be needed to support the warfighter in future operations against emerging WMD threats. The realignment in funding to basic research and systems engineering is to grow the scientific community in support of WMD research to provide far sighted, high payoff research to reduce, eliminate, and mitigate the effects of WMD to achieve the Department of Defense investment goal for Basic Research of 10-12% of total obligation authority.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 1 - Basic Research				R-1 ITEM NOMENCLATURE PE 0601000BR DTRA Basic Research Initiative					PROJECT NUMBER RU	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RU: *Fundamental Research for Combating WMD	14.708	22.329	48.544						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

Basic Research Initiative provides expanded and detailed justification to include specific and articulable benefits to the Warfighter to support the increase of $30 million in FY 2010. The Defense Threat Reduction Agency basic research program is supporting high-payoff, novel research that will provide benefits to the warfighter in important areas of the countering Weapon of Mass Destruction (WMD) mission. Three exemplary areas are: (1) remote detection of fissile material; (2) defeat of WMD-related facilities and materials with acceptable collateral damage; and (3) advances in physical and social network analyses that fosters the means for countering electromagnetic pulse attacks and terrorism. Another very important benefit of basic research is the training of the next generation of scientists, who will be needed to support the warfighter in future operations against emerging WMD threats. The realignment in funding to basic research and systems engineering is to grow the scientific community in support of WMD research to provide far sighted, high payoff research to reduce, eliminate, and mitigate the effects of WMD to achieve the Department of Defense investment goal for Basic Research of 10-12% of total obligation authority.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
Project RU: Fundamental Research for Combating WMD	14.708	22.329	48.544	
FY 2008 Accomplishments: - Expanded the FY 2007 basic research portfolio to 80 basic research initiatives dedicated to advancing knowledge across a broad spectrum of science and multi-disciplined research areas. The initial 30 grantees in FY 2007 were composed of universities and the FY 2008 portfolio expanded the portfolio to include research by Service and National Laboratories, as well as non-profit entities with university partners. - Conducted a technical review of each grant to assess the scientific advancements and progress in meeting the award's technical objectives and to foster collaborations and build relationships within the scientific community.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601000BR DTRA Basic Research Initiative	PROJECT NUMBER RU

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Conducted an external panel review of the basic research program, open to Department of Defense (DoD) research stakeholders, to assess the focus and scope of the program with respect to the Counter Weapons of Mass Destruction (CWMD) Challenges, and to assess the coordination of CWMD basic research across DoD mission space and across broader basic research community to avoid unintended duplication and ensure successful partnerships. *FY 2009 Plans:* - Expand the FY 2008 basic research portfolio to 100 basic research initiatives dedicated to developing better and new understanding of science principles that can underwrite science and technology to meet strategic challenges. Expand opportunities to include foreign universities. The overall research goal is to build a 6.1 portfolio that represents approximately 10-12% of the Defense Threat Reduction Agency (DTRA) research and development investment beginning in the FY 2010 timeframe. *FY 2010 Plans:* - Expand the FY 2009 basic research portfolio by adding an additional 180 research investigators to the basic research community dedicated to developing better and new understanding of science principals that can underwrite science and technology to meet strategic challenges. The expanded portfolio will include the combating Weapon of Mass Destruction (WMD) grand challenge for the DoD. The goal is to build a 6.1 basic research portfolio of approximately 10-12% of the DTRA research and development investment.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
20/0602718BR/WMD Defeat Technologies	20.287	19.456	11.564						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.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 1 - Basic Research	R-1 ITEM NOMENCLATURE PE 0601000BR DTRA Basic Research Initiative	PROJECT NUMBER RU

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 Department of Defense 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, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research					R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	207.448	213.606	219.130						Continuing	Continuing
RA: Systems Engineering and Innovation	50.500	28.342	55.857						Continuing	Continuing
RF: Detection Technology	47.087	39.498	48.073						Continuing	Continuing
RG: Advanced Energetics & Counter WMD Weapons	24.744	30.435	32.381						Continuing	Continuing
RI: Nuclear Survivability	13.063	10.414	18.660						Continuing	Continuing
RL: Nuclear & Radiological Effects	18.784	36.338	19.704						Continuing	Continuing
RM: WMD Battle Management	17.374	29.137	13.240						Continuing	Continuing
RR: Test Infrastructure	15.609	19.986	19.651						Continuing	Continuing
RU: *Fundamental Research for Combating WMD	20.287	19.456	11.564						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

The mission of the Defense Threat Reduction Agency (DTRA) is to safeguard America and its allies from Weapons of Mass Destruction (WMD) by reducing the present threat and preparing for the future threat. This mission directly reflects several national and Department of Defense level guidance/vision documents to include the National Security Strategy, Unified Command Plan, National Strategy to Combat WMD, Counter Proliferation 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 deter the use of WMD, reduce the present threat and prepare for the future threat. A focused, strong threat reduction technology base is critical to achieving these objectives and is closely tied with the operational

support programs that make up its combat support mission. DTRA has taken the steps to develop this technology base and provide a foundation for transformational activities within the WMD arena.

Project RA provides the research and development both for systems engineering and analysis support across all other projects and innovative counter proliferation research and technical reachback support. Increased funding in this project reflects the re-balancing of efforts within the research and development portfolio to enhance corporate systems engineering and innovation to promote high impact, short term, low-risk technology solutions to support the warfighter.

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, counter- and non-proliferation, 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 re-balancing 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. Funding in this project decreased beginning in FY 2010 and reflects a realignment of efforts in NWE nuclear counter proliferation/non proliferation activities and Electromagnetic Pulse survivability modeling efforts.

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. Funding in this project decreased beginning in FY 2010 to re-balance efforts in weapons effects, modeling, and reflect the transition of the Biological Combat Assessment System to the WMD Aerial Collection System.

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

Project RU provides (1) strategic studies to support DoD, (2) Decision support tools and analyses to support combating WMD research and development investments, and (3) early applied research for technology development. Funding in this project was realigned beginning in FY 2010 to transition decision support tools to Project

Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	**R-1 ITEM NOMENCLATURE** PE 0602718BR WMD Defeat Technologies

RA – Systems Engineering and Innovation. This realignment reflects the re-balancing of efforts to increase corporate capabilities in systems engineering and analysis support across all other projects within the research and development portfolio.

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	211.325	211.078	214.469	
Current BES/President's Budget	207.448	213.606	219.130	
Total Adjustments	-3.877	2.528	4.661	
Congressional Program Reductions	0.000	-0.672		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	3.200		
Total Reprogrammings	0.002	0.000		
SBIR/STTR Transfer	-3.879	0.000		
Realignment	0.000	0.000	4.661	

Congressional Increase Details ($ in Millions)	FY 2008	FY 2009
Project: RU, **Center for Nonproliferation Studies**		1.200
Project: RA, **Comprehensive National Incident Management System**		2.000

Change Summary Explanation

The increase of funding in the current President's Budget in FY 2010 from the previous President's Budget submission reflects the result of re-balancing efforts within projects to increase funding for systems engineering and innovation efforts to grow the scientific community in support of weapons of mass destruction research.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RA	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RA: Systems Engineering and Innovation	50.500	28.342	55.857						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides (1) systems engineering and analysis support across all other Projects, (2) innovative counter proliferation 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 the management of the Research and Development Enterprise to make 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 counter proliferation 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.

Increased funding beginning in FY 2010 reflects the re-balancing of efforts within Program Element 0602718BR for corporate systems engineering and innovation to promote high impact, short term, low-risk technology solutions to support the warfighter.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RA: Systems Engineering and Innovation	50.500	28.342	55.857	
FY 2008 Accomplishments: - Delivered an analysis of the DTRA investments against the identified technology requirements of the agencies program thrusts. - Continued support for the Research and Development Enterprise in requirements and gap analysis to assist program managers identify, conduct, and deliver innovative Science and Technology to combat Weapons of Mass Destruction (WMD). - Completed development of the Arms Control Enterprises System Strategic Module to incorporate nuclear reporting requirements of international treaties, and transition completed module.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RA

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Conducted studies and developed systems architectures to enable research and development efforts to meet capability gaps by translating Agency goals and Concept of Operations into actionable products. - Supported transition of successful programs to internal and external organizations to further develop and/or operationalize the technologies. - Collaborated with other innovation organizations across the federal government to further advance innovation capabilities. *FY 2009 Plans:* - Continue support for the Research and Development Enterprise in requirements and gap analysis to assist program managers identify, conduct, and deliver innovative Science and Technology to combat WMD. - Continue to conduct studies and develop systems architectures to enable research and development efforts to meet capability gaps by translating Agency goals and Concept of Operations into actionable products. - Initiate five new systems engineering based analyses for battle management, situational awareness, medical manufacturing readiness levels, nuclear enterprise, and 21st century technology needs. - Complete and transition innovative projects in threat anticipation, explosives detection, bio-agent sampling for real-time detection, and electronic device detection. - Solicit new innovative research projects. *FY 2010 Plans:* - Initial operational capability for systems engineering decision support tools. Direct support to Defense Threat Reduction Agency (DTRA) programs and projects for analyzing and determining key performance and key technical parameters to support investment strategies. - Continue requirements and gap analyses to enable research and development efforts to meet combating-WMD capability gaps. Support program and project managers by translating Agency goals and Concept of Operations into actionable products. - Initial 21st century nuclear threat assessment in support of the Nuclear Posture Review. - Initial Battle Management Architecture and Manufacturing Readiness Level Assessment studies vis a vis the DTRA mission and active projects.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Initial Nuclear Enterprise architecture analysis. - Initiate three new systems engineering-based special projects. - Receive transition, management and out year funding of decision-support tools from Project RU. - Complete and transition innovative projects in portable neutron sources for nuclear detection and radio systems for use in jamming environments. - Complete and transition micro miniature chemical detector for unattended sensors. - Solicit new innovative research projects.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0603160BR/Prolifeation Prevention and Defeat	22.844	6.372	5.394						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.

Number of exercise and operations supported.

Number of Defense Acquisition Workforce Improvement Act certified systems engineers.

New capabilities delivered and transitioned to operational capabilities.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RF	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RF: Detection Technology	47.087	39.498	48.073						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project develops technologies, systems and procedures to detect, identify, track, tag, locate, monitor and interdict strategic and improvised nuclear and radiological weapons, components, or materials in support of Department of Defense requirements for combating terrorism, counter- and non-proliferation, homeland defense, and international initiatives and agreements. This project researches, develops, demonstrates, and transitions advanced technologies to improve: operational capability to detect and identify nuclear and radiological weapons; post-detonation National Technical Nuclear Forensics capabilities; and to support the attribution process. Efforts under this project also support international peacekeeping and nonproliferation objectives, on-site and aerial inspections and monitoring, on-site sampling and sample transport, and on- and off-site analysis to meet forensic, verification, monitoring and confidence-building requirements.

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

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RF: Detection Technology	47.087	39.498	48.073	
FY 2008 Accomplishments: - Developed integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology, eliminating the logistical burden of cryogenic cooling as well as bulky gas detectors. - Completed a Joint Capability Technology Demonstration (JCTD) effort demonstrating a modular nuclear radiation detection system capable of being mounted on multiple platforms (vehicular, aerial, marine, and handheld) and being deployed in both overt and covert situations and that can be seamlessly integrated into a sensor network to provide battle space awareness for the theater commander. This JCTD should result in transitioning a viable modular nuclear detection system to Combatant Commands. - Completed development of a baseline Department of Defense large standoff Bremsstrahlung active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material.				

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APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RF

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Demonstrated standoff detection of nuclear material in a field environment. Stimulated fissions in nuclear material from 300 meters standoff using a Bremsstrahlung x-ray generator. - Executed evaluation of distributed sensor systems, their communications, and their signal processing to support a prioritized development program of networks for defense, security and tracking. - Conducted/supported end-to-end exercise/demonstration of global National Technical Nuclear Forensics capabilities. - Developed sensors to detect Weapons of Mass Destruction (WMD) threats as far forward as possible and in all operational environments. Developed the capability to integrate data with future interagency comprehensive, all-domain WMD detection architecture from collection to dissemination. - 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. - Maintained the Domestic Nuclear Event Attribution (DNEA) legacy and development of National Technical Nuclear Forensics thru monthly notification drills, quality assurance/quality control testing, and successfully conducted three table top exercises and five Field Training Exercises (FTX), the last being an external evaluation. The last FTX demonstrated a limited ground collection capability. - Improved the ANDROS robot via several modifications to improve range and ability to perform improved sampling, maneuverability, logistic requirements, and communications. - Developed Concept of Operations (CONOPS) and Standard Operating Procedures for ground sample collection. - Successfully transitioned DNEA legacy lab CONOPS and support to Department of Energy (DOE). - Successfully co-funded the development of DOE nuclear event device modeling and nuclear event characterization database. - Enhanced/maintained the Sentry/Sniper databases. Integrated chemical and biological weapon information and a decision matrix into a comprehensive WMD database. - Continued hardware and software improvements based on laboratory and user training sessions for the Hand Held Chemical Detector for Special Operation Forces. Began development at a library suite consisting of Chemical Warfare Agents, precursor, and Homemade Explosives.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Developed equipment that is waterproof, shockproof and resistant to extreme conditions and sustained employment without significant operational degradation. Developed smaller, lighter-weight detection systems for more adverse field employment. - Successfully transitioned eight near-term nuclear detection technologies to generate prototypes and design packages to assist ground forces. *FY 2009 Plans:* - Continue program for developing integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/ biological/chemical sensor technology. - Initiate a full scale test and evaluation campaign for Compton imagers and a second generation effort to develop more integrated and compact imagers with enhanced capability. These second generation imagers will be more optimized to operate with an active excitation source directed at the target item. - Continue program to develop systems that enable consequence management, to include the protection of forces. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue the extensive effort begun in the Joint Capability Technology Demonstration (JCTD) to integrate solid state detectors, communications, and processors into a robust self-configuring sensor network for detecting, identifying, and tracking nuclear materials in transit. - Continue to develop upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Develop technical information to support programmatic decisions regarding next-generation ground sampling capabilities, marine sampling capability, and next-generation Unmanned Aerial Systems for air and ground sampling. Support potential development/conduct of a Nuclear Forensics JCTD.				

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APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RF

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue to provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure. - Commence an initial JCTD effort demonstrating portable stand off Bremsstrauhlung active interrogation system capable of being mounted on an aerial platform that can be seamlessly integrated into a bi-static or mono-static detector network to provide battle space awareness for hidden and shielded nuclear material for the theater commander. This JCTD should result in transitioning a viable stand off active interrogation system to Combatant Commands. - Demonstrate active interrogation as a safe method of stand off detection in situations where dosage to people and cargo are below the allowable limits. - Continue cooperation and acceptance of Research and Development Enterprise developed detection technologies for operational development. - Continue cooperation and acceptance of Research and Development Enterprise developed post nuclear event collection technologies for operational development. - Continue transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. - Exercise developmental collection capabilities with table top experiment, command post exercise, and field test experiment. - Continue enhancement/maintenance of the Sentry/Sniper databases. Integrate chemical and biological weapon information and a decision matrix into a comprehensive Weapons of Mass Destruction database. - Continue robotic ground sample collection improvements. - Continue development techniques, tactics, and procedures of a nuclear forensics ground sample collection team. - Conduct modeling, simulation and experiments to evaluate the feasibility of using muons and protons to stimulate fissions in nuclear materials from standoff ranges. *FY 2010 Plans:* - Complete design for a baseline Department of Defense large standoff proton active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RF

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue the extensive effort begun in the stand off Bremsstrauhlung active interrogation system Joint Capability Technology Demonstration to develop a stand off active interrogation system to detect hidden and shielded nuclear material. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - 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.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0603160BR/ Proliferation Prevention and Defeat	38.140	46.357	66.977						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

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

Successful completion of the individual digital dosimeter project.

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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Successful acceptance and operational development of transitional detection technologies.

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

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

Improve forensics tool capabilities.

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

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

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

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RG	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RG: Advanced Energetics & Counter WMD Weapons	24.744	30.435	32.381						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides applied research supporting defeat of Weapons of Mass Destruction (WMD) targets (including facilities with biological and chemical agents) while minimizing collateral damage and release of those agents when using air, land and sea assets brought to the theater by the warfighters. The effort also focuses on accelerating the development of advanced energetics technology (highly novel chemical and non-chemical energy systems), integrating disruptive payloads and technologies into existing and next generation weapon systems, developing a Hard and Deeply Buried Target (HDBT) bunker buster capability that produces a threshold of five-fold in defeat capability over current bunker buster capability by FY 2009, ten-fold over current capability by FY 2013 and providing residual and transition support of these products. These objectives will be accomplished by a combination of developing and/or maturing technologies, weapon systems, weapon concepts and methods. Supported products are: (1) counter force weapons, fuzing technology, and robotics; (2) counter force agents and methods; and (3) disruptive payloads and delivery systems.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RG: Advanced Energetics & Counter WMD Weapons	24.744	30.435	32.381	
FY 2008 Accomplishments: - Continued development of technologies for counterforce agent defeat, advanced payloads, counter WMD payload delivery systems, and advanced counter WMD weapons. - Conducted flight demonstration tests of the Massive Ordnance Penetrator to demonstrate it's capability against HDBTs. - Continued Integrated Precision Ordnance Delivery System (IPODS) previously known as Precision Large Payload Delivery Concept Development and Preliminary Design supporting a ten-fold increase of Combating WMD weapon effectiveness over fielded weapons. - Conducted IPODS design concepts. - Completed non-kinetic based capabilities concept studies. - Began non-kinetic payload development for functional defeat of WMD targets. - Conducted Advanced Fuzing sled tests.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
FY 2009 Plans: - Continue development of technologies for counterforce agent defeat, advanced payloads, counter Weapons of Mass Destruction (WMD) payload delivery systems, and advanced counter WMD weapons. - Develop non-kinetic based counter-WMD process modeling capability and integrate it into High Level Architecture backbone. - Conduct survey, analysis and down-select of non-kinetic test beds, models and capabilities. - Complete sub-scale testing of Sandia National Lab 3 axis digital data recorder. - Complete integration/testing of Insensitive Munitions Agent Defeat Bomb, Live Unit-109 Payload. - Complete Counter WMD Deny Payload component test. - Continue scale tunnel lethality tests on promising high-energy fills. - Continue Integrated Precision Ordnance Delivery System design, refinement of concepts, technology assessments, Concept of Operations, and downselect. *FY 2010 Plans:* - Complete Scaled High Speed Penetration Tests vs. Limestone Geological Targets. - Initiate High Speed Penetrator case/fill material development and characterization. - Support Hard Target Void Sensing Fuze full-scale Joint Capability Technology Demonstration survivability testing. - Complete fuze booster cup survivable recorder development. - Conduct Joint Direct Attack Munition Battle Damage Information system full-scale technology development. - Begin integration of kinetic and non-kinetic capabilities into single payload for counter-WMD. - Begin testing of novel high explosive materials developed under disruptive payloads technology. - Conduct small scale testing and modeling of non-kinetic payload capability.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RG

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0603160BR/ Proliferation Prevention and Defeat	20.029	20.550	21.396						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Number of large scale tests completed.

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RI	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RI: Nuclear Survivability	13.063	10.414	18.660						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

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

Funding in this project reflects the re-balancing of efforts within the research and development portfolio to augment the Radiation Hardened Microelectronics Program and enabling technologies to enhance the NWE experimentation capability.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RI: Nuclear Survivability	13.063	10.414	18.660	
FY 2008 Accomplishments: - Completed dismantlement of the Decade simulator at the Arnold Engineering Development Center. - Initiated new business model for the West Coast Facility (WCF) simulator with a no-cost contract.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Completed initial experiments on transfer of WCF cold and warm x-ray capabilities to the Saturn machine at Sandia National Laboratory (SNL). - Supported joint x-ray source demonstration and Nuclear Weapons Effects (NWE) experiments on the OMEGA laser at Department of Energy Laboratory for Laser. *FY 2009 Plans:* - Characterize the warm x-ray sources at the WCF using a time-resolved camera from the United Kingdom Atomic Weapons Establishment. - Conduct cold and warm x-ray source experiments on Saturn. - Initiate research & development for enabling technology to improve small experimentation capability for high fidelity gamma effects and model validation. - Research and publish beta-particle radiation dose probabilistic uncertainty analysis. *FY 2010 Plans:* - Demonstrate final Radiation Hardened by Design 90 nanometer (nm) reconfigurable Field-Programmable Gate Array. - Complete disposition of excess government-owned WCF equipment. - Complete a joint x-ray source and effects demonstration experiment at the National Ignition Facility with SNL, Lawrence Livermore National Laboratory, United Kingdom Atomic Weapons Establishment, and the Missile Defense Agency. - Develop new, enabling technologies for improved NWE experimentation capabilities for x-rays, gamma rays, and neutrons. - Development of modeling for prompt radiation environment in urban settings, noting in particular canyon effects and shielding by structures.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
25/0603168BR/ Proliferation Prevention and Defeat	21.432	18.654	13.935						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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

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

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COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RL: Nuclear & Radiological Effects	18.784	36.338	19.704						Continuing	Continuing

A. Mission Description and Budget Item Justification

Nuclear and Radiological Effects 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 (GIG), 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 Combatant Commands and Department of Defense.

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RL: Nuclear & Radiological Effects	18.784	36.338	19.704	
FY 2008 Accomplishments: - Enhanced and developed models allowing the predictions and analysis of nuclear survivability for military communication satellites, the power grid as supporting the GIG, and the Army's Future Combat System. - Continued to provide nuclear electromagnetic hardening and survivability support to the Joint Staff, Defense Information Systems Agency and Missile Defense Agency. Focus areas anticipated include the Nuclear Command and Control System and GIG. - Continued the high altitude nuclear weapon detonation data review in support of High Altitude EMP modeling. - Continued technical revisions to Redbook Volumes I-IV, Effects Manual-1, and further publishing of Joint Radiation Effects documentation.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continued to develop and integrate baseline database of 80% of current foreign nuclear infrastructure facilities into targeting and hazard prediction codes. - Continued improvement of modeling of nuclear facility vulnerability and human response to nuclear weapons effects. Significantly improved modeling of transport of radiological materials and disposition from nuclear events. Developed prototype capability to model radiation transport from an Improvised Nuclear Device in an urban environment. *FY 2009 Plans:* - Continue to provide nuclear electromagnetic hardening and survivability support to the Joint Staff, Defense Information Systems Agency (DISA), and Missile Defense Agency (MDA). Focus areas anticipated include the Nuclear Command and Control System and Global Information Grid (GIG). - Complete development and integration of the electromagnetic pulse (EMP) prediction model and low equivalent dose radiation cancer algorithms. - Assess EMP effects on power grid components to determine impacts to the Department of Defense's GIG. - Continue technical revisions to Redbook Volumes I-IV, Effects Manual (EM)-1, and further publishing of Joint Radiation Effects documentation. - Continue development of models allowing the predictions and analysis of nuclear survivability for military communication satellites. - Begin Air Conductivity Experimentation and Advanced HANE Engineering Code Development efforts. *FY 2010 Plans:* - Continue to provide nuclear electromagnetic hardening and survivability support to the Joint Staff, DISA, and MDA. Focus areas anticipated include the Nuclear Command and Control System and GIG. - Continue development of models allowing the predictions and analysis of nuclear survivability for ballistic missile defense system. - Provide small scale testing in support of modeling and simulation (M&S) validation. - Continue EM-1 development; integrate activities to include validation and verification, peer review, and coordination with experimentation efforts; continue publication of Joint Radiation Effects documentation.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Validate code for system response to X-Rays; validate and integrate M&S capability to understand thermo-structural response to X-Rays; validate and integrate M&S capability for satellite design.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
115/0605000BR/WMD Defeat Capabilities	15.291	15.896	8.735						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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

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

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

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APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RM	
COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RM: WMD Battle Management	17.374	29.137	13.240						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

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

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

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RM: WMD Battle Management	17.374	29.137	13.240	
FY 2008 Accomplishments: - Enhanced modeling of Chemical and Biological effects on human entities and integrate Defense Threat Reduction Agency (DTRA) models with next-generation U.S. Army Chemical, Biological, Radiological and Nuclear (CBRN) simulation federates in experimentation. - Provided CBRN defense solutions for Joint Concept Development & Experimentation experiment focused on examining potential solutions to joint/combined urban operations challenges and multi-national collaboration to include Joint Forces Command Multi-National Experiment. - Integrated Agency technologies into the DTRA Experimentation Lab to provide capabilities demonstration and testing in support of experimentation, demonstration events, and to validate proof-of-concept solutions. - Initiated formal agreement between U. S. Strategic Command, U. S. Joint Forces Command and DTRA in support of a Combating WMD (CWMD) Experimentation Enterprise. - Established the Ultra High Performance Concrete response characteristics investigation plan. Conducted scaled penetration tests. - Initiated exploration of synthetic and virtual world application with intelligence communities to CWMD mission. - Completed testing and model development for multi-hit attacks to hardened bunker buster slabs. Assembled test plan and began testing on hardened bunker roof slabs. - Provided near/mid/long-term stand-off detection technology reviews for Combatant Commands and Service customers; prioritized best near-term capability investment recommendations. - Developed an improved high explosive equation-of-state, accounting for late-term burn during detonations in enclosed spaces, to improve high-fidelity calculations of quasi-static pressure (constrained pressure due to internal detonations). Conducted testing in full scale structure to validate computer model. - Conducted agency-wide Continuity of Operations Table-Top Experiment, identified process and resource shortfalls, and recommended comprehensive solutions.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Facilitated U. S. European Command Foreign Consequence Management Functional Needs Analysis Workshop in support of a Doctrine, Organization, Training, Materiel, Leadership and education, Personnel and Facilities change recommendation. - Initiated efforts to complete the Weapons of Mass Destruction (WMD) Agent Release Model. - Improved Tunnel Air Blast model to reduce error in the vicinity of tunnel intersections by 90%. - Delivered Improved Ground shock Vulnerability Number capability to Defense Intelligence Agency and U.S. Strategic Command to replace exist one dimensional vulnerability assessment models with fast-running two dimensional models for strategic targeting. *FY 2009 Plans:* - Conduct Advanced High Performance Concrete material analysis and update weapons effects models. - Complete testing and model development for multi-hit attacks to hardened bunker roof slabs. - Deliver 15 additional validated equipment fragility models. - Complete Quasi Static Pressure testing and modify model. - Conduct testing and modeling improvements to the WMD Agent Release Model. Finalize validation and verification wet agent release. - Complete structural response model for columns subjected to high explosive devises closer than 'scaled range' of 3, but not touching the column. - Complete testing to improve the column structural response model for high explosive devises directly touching columns (satchel charges). - Conduct blast door model testing and model modifications. - Continue research and development supporting counter WMD weapons effect modeling & testing and the Defense Threat Reduction Agency (DTRA) Experimentation Lab. - Conduct defeat demonstration of multi-story building with basement bunker using available air-delivered weapons and U.S. Air Force tactics, techniques, and procedures. - Implement multiple security levels across DTRA information domains to increase effectiveness of the DTRA Experimentation Lab. - Continue to provide leading technological integration capabilities to the combating WMD mission through utilization of the DTRA Experimentation Lab (DEL).				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue to support demonstrations and experimentation events for the counter WMD Community of Interest to include participation in Noble Resolve, Coalition Warrior Interoperability Demonstration, Urban Resolve, and Campaign X experimentation campaigns. - Continue facilitation of the internal Continuity of Operations Table Top Experiment through the DEL. *FY 2010 Plans:* - Conduct Ultra High Performance Concrete penetration tests and material analysis. Continue modeling. - Complete model for multi-hit attacks to hardened bunker roof slabs. Finalize or re-direct multi-hit research efforts. - Deliver 15 additional validated equipment fragility models. - Complete Quasi Static Pressure model. - Conduct testing and modeling improvements to the Weapons of Mass Destruction (WMD) Agent Release Model with emphasis on dry agents. - Complete column satchel charge model. - Conduct blast door model testing and model modifications. - Complete progressive collapse model. - Continue to provide leading technological integration capabilities to the combating WMD mission through utilization of the Defense Threat Reduction Agency (DTRA) Experimentation Lab (DEL). - Continue to support demonstrations and experimentation events for the Counter WMD Continuity of Interest to include participation in Noble Resolve, Coalition Warrior Interoperability Demonstration, Urban Resolve, and Campaign X experimentation campaigns. - Continue facilitation of the internal Continuity of Operations Table Top Experiment through the DEL.				

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C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0603160BR/ Proliferation, Prevention and Defeat	36.198	55.621	31.939						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Percent confidence in engineering models.

Percent confidence in assessment solutions.

Number of targets successfully planned.

Time require to complete assessments.

The DTRA DEL is occupied by planning or execution efforts 75% of the year.

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APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RR	
COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RR: Test Infrastructure	15.609	19.986	19.651						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RR: Test Infrastructure	15.609	19.986	19.651	
FY 2008 Accomplishments: - Continued to upgrade and integrate facilities and support personnel from the Technical Evaluation Assessment Monitoring Site. - Continued research and development activities for test and technology support, infrastructure development and improvement, and environmental restoration of sites and return of the sites to host facilities. - Completed Cultural Resource Assessment and seven of seven site studies (Nevada Test Site). - Improved test infrastructure by acquiring state of the art instrumentation, to include: Digital Direct Shear Machine, updated Global Positioning System, Global Information System, and a Vertical Wind Profiler. - Continued with environmental remediation of the Nevada Test Site.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RR

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continued to acquire microwave systems to remotely operate and monitor the instrumentation systems, transmit and receive video and data, control timing and firing, transmit and receive Voice Over Internet Protocol, and control and receive data from the Remote Instrumentation Platform. - Conducted nuclear detection and forensics testing for the Department of Homeland Security, Domestic Nuclear Detection Office (DNDO), in accordance with the Defense Threat Reduction Agency (DTRA)-DNDO Memorandum of Agreement. *FY 2009 Plans:* - Continue research and development activities for test and technology support, infrastructure development and improvement, and environmental restoration of sites and return of the sites to host facilities. - Complete classified test bed at Dugway Proving Grounds. - Complete Federal Facilities Agreement and Consent Order compliance. - Acquire a mobile command post capability for the Chestnut test site at Kirtland Air Force Base, NM. - Enhance our test infrastructure to provide support, as required, for chemical-biological sending test events. *FY 2010 Plans:* - Dismantle and environmentally remediate Large Test Structure (LTS)-2 and begin replacement setup for LTS-2 to support an integrated Counter Weapons of Mass Destruction (WMD) Technologies Directorate demonstration in FY 2012. - Begin designing and procurement of a add on structure for Component Test Structure-3 for structural stress tests with Singapore. - Conduct nuclear detection and forensics testing for the Nuclear Technology Directorate. - Conduct nuclear detection and forensics testing for the Department of Homeland Security, DNDO in accordance with the DTRA-DNDO Memorandum of Agreement. - Conduct WMD sensor testing at the Technical Evaluation Assessment and Monitor Site (TEAMS); provide infrastructure upgrades for TEAMS. - Continue environmental remediation and compliance activities at the Nevada Test Site, Dugway Proving Grounds, White Sands Missile Range and Kirtland Air Force Base Chestnut Site.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RR

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue infrastructure and instrumentation upgrades to ensure test beds meet customers' advanced technology testing needs.				

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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

Number of tests that go through the milestone review process.

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research				R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies					PROJECT NUMBER RU	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RU: *Fundamental Research for Combating WMD	20.287	19.456	11.564						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

This project (1) conducts strategic studies to support Department of Defense (DoD), (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 an 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 focuses increasing the stability and utility of mid-to-long term, moderate risk but high payoff science and emerging technologies for transition other Defense Threat Reduction Agency (DTRA) applied technology programs. This effort serves as the bridge between the bench scientist and the applied technologist.

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RU: Fundamental Research for Combating WMD	20.287	19.456	11.564	
FY 2008 Accomplishments: - Conducted strategic study supporting the update and publication of the DTRA Strategic Planning Guidance. - Initiated pilot program to support DoD effort to utilize a web-based system for research proposal submission, evaluation and status reporting.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RU

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Provided technical expertise and advice to generate the 17 new basic research topics. - Identified and transitioned all suitable investigatory Science and Technology research and development projects to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding. - Initiated a testbed for promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Initiated seven “bridging” projects for early applied development of counter Weapons of Mass Destruction (WMD) technologies. - Initiated efforts to establish a capability to facilitate transition of fundamental science to applied research and development. - Continued the sponsorship and education of the “Next Generation” of mission-critical scientific, technical and engineering expertise. - Continued examination of emerging technologies and underlying sciences applicable to combating WMD, with increased emphasis on avoiding technical surprise. *FY 2009 Plans:* - Identify and transition all suitable investigatory Science and Technology research and development projects to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding. - Identify and conduct strategic studies addressing challenges in reducing the threat from WMD. - Exercise testbed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Continue seven “bridging” projects for early applied development of counter WMD technologies. - Initial operational capability for pilot program to support Department of Defense effort to utilize a web-based system for research proposal submission, evaluation and status reporting. - Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation. - Initiate a Mentor program and continue the sponsorship and education of the “Next Generation” of mission-critical scientific, technical and engineering expertise.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RU

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue examination of emerging technologies and underlying sciences applicable to combating WMD, with increased emphasis on avoiding technical surprise. *FY 2010 Plans:* - Transition decision support tools with current and outyear funding to Project RA - Systems Engineering and Innovation. - Identify and conduct strategic studies addressing challenges in reducing the threat from WMD. - Continue to exercise the testbed to assess promising technologies to quantify and mitigate large area nuclear effects on systems, networks and equipment. - Complete seven “bridging” projects for early applied development of counter WMD technologies, initiate transition to appropriate long-term sponsors for concept/design validation, prototype fabrication, testing, and fielding. - Final operational capability for pilot program to support Department of Defense (DoD) effort to utilize a web-based system for research proposal submission, evaluation and status reporting. - Continue to provide technical expertise and advice to generate the new basic research topics in support of the semi-annual solicitation. - Continue examination of emerging technologies and underlying sciences applicable to combating Weapons of Mass Destruction (WMD), with increased emphasis on avoiding technical surprise. - Initiate new “bridging” projects for early applied development of counter WMD Technologies. - Continue the mentoring, sponsorship, and education of the “Next Generation” of mission-critical scientific, technical and engineering expertise.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 2 - Applied Research	R-1 ITEM NOMENCLATURE PE 0602718BR WMD Defeat Technologies	PROJECT NUMBER RU

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
1/0601000BR/ Fundamental Research for Combating WMD	14.708	22.329	48.544						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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

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

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

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Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)					R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	211.146	218.958	233.203						Continuing	Continuing
RA: Systems Engineering and Innovation	22.844	6.372	5.394						Continuing	Continuing
RE: Counter-Terrorism Technologies	44.576	45.211	61.268						Continuing	Continuing
RF: Detection Technology	38.140	46.357	66.977						Continuing	Continuing
RG: Advanced Energetics & Counter WMD Weapons	20.029	20.550	21.396						Continuing	Continuing
RI: Nuclear Survivability	21.432	18.654	13.935						Continuing	Continuing
RL: Nuclear & Radiological Effects	0.300	0.000	0.000						Continuing	Continuing
RM: WMD Battle Management	36.198	55.621	31.939						Continuing	Continuing
RT: Target Assessment Technologies	26.442	26.193	32.294						Continuing	Continuing
RU: *Fundamental Research for Combating WMD	1.185	0.000	0.000						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

The Proliferation, Prevention and Defeat program reduces Weapons of Mass Destruction (WMD) proliferation and enhances WMD defeat capabilities through advanced technology development. To accomplish this objective, seven project areas were developed: RA - Systems Engineering and Innovation, RE - Counter-Terrorism Technologies, RF - Detection Technology, RG - Advanced Energetics and Counter WMD Weapons, RI - Nuclear Survivability, RM - WMD Battle

Exhibit R-2, PB 2010 Defense Threat Reduction Agency **RDT&E Budget Item Justification**	**DATE:** May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	**R-1 ITEM NOMENCLATURE** PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat

Management and RT - Target Assessment Technologies. This revision supports technology requirements in line with the Joint Functional Concepts (Chairman, Joint Chiefs of Staff Instruction 3170.01). The missions and plans of these projects are described below in the R-2a Budget Exhibits.

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	215.609	211.325	215.254	
Current BES/President's Budget	211.146	218.958	233.203	
Total Adjustments	-4.463	7.633	17.949	
Congressional Program Reductions	0.000	-0.687		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	8.320		
Total Reprogrammings	-3.843	0.000		
SBIR/STTR Transfer	-0.620	0.000		
Realignment	0.000	0.000	17.949	

Congressional Increase Details ($ in Millions)	**FY 2008**	**FY 2009**
Project: RF, **Next Generation Intelligent Portable Radionuclide Detection & Identification System**	0.000	1.600
Project: RF, **ALED IED Electronic Signature Detection**	0.000	3.200
Project: RF, **Continuation of Advanced Materials Research for Nuclear Detection, CP and Imaging for CBRNE Special Ops**	0.000	0.800
Project: RA, **NNSA Metals Declassification for Reuse by DoD in Armaments**	0.000	2.720

Change Summary Explanation

The increase in FY 2010 is to refocus research and development efforts to meet the 21st century combating weapons of mass destruction needs. Efforts within the program element are re-balanced to enhance corporate capabilities in the Defense Threat Reduction Agency Basic Research Initiative (PE 0601000BR) and the WMD Defeat Technologies (PE 0602718BR) programs.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					PROJECT NUMBER RA	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RA: Systems Engineering and Innovation	22.844	6.372	5.394						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides the research and development operations analysis support to the Agency in understanding, analysis, integration and execution of Defense Threat Reduction Agency (DTRA) operational missions. 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 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, 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 in the COCOMs Areas of Responsibility and 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 provide a platform to ensure continued sustainability and viability of the nuclear weapon stockpile.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RA: Systems Engineering and Innovation	22.844	6.372	5.394	
FY 2008 Accomplishments: - Supported development of institutionalized plans for national response to pandemic flu. - Completed development of all DTRA Security Cooperation Planning and associated annexes to support DoD nonproliferation, counter proliferation, and consequence management activities in selected nations within COCOMs Areas of Responsibility. - Completed gap analysis roadmap of combating WMD mission and attendant issues with Combating Terrorism and Homeland Defense mission areas. - Continued to support development and update of Defense Threat Reduction Agency (DTRA) annexes to the U. S. European Command (USEUCOM) Theater Security Cooperation Plans to insure DTRA assets are used to further combating Weapons of Mass Destruction (WMD) mission in that theater.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat			PROJECT NUMBER RA	
B. Accomplishments/Planned Program ($ in Millions)		**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
- Continued to work with Supreme Headquarters Allied Powers, Europe (SHAPE) J3 and J6 for survivable, reliable communications to assure command, control and positive control of the nuclear mission with the goal of North Atlantic Treaty Organization (NATO) Infrastructure Committee procurement. - Completed strategic analyses on Iran's Nuclear Potential and NATO Strategic Relevance. - Organized/conducted senior Combatant Commands (COCOMs), Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/combating the WMD threat. *FY 2009 Plans:* - Institutionalize development of Combating WMD lessons learned in regional COCOMs theaters and with appropriate international staffs. - Continue to support development and update of DTRA annexes to USEUCOM Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater. - Institutionalize linkage with NATO/SHAPE and USEUCOM in international research and development collaboration. - Continue to work with SHAPE J3 and J6 for survivable, reliable communications to assure command, control and positive control of the nuclear mission with the goal of NATO Infrastructure Committee procurement. - Continue to conduct strategic analyses and assessments on emerging WMD threats. - Continue to organize/conduct senior COCOMs, Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/combating the WMD threat. *FY 2010 Plans:* - Institutionalize development of Combating WMD lessons learned in regional COCOMs theaters and with appropriate international staffs. - Continue to support development and update of DTRA annexes to USEUCOM Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RA

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Institutionalize linkage with NATO/SHAPE and USEUCOM in international research and development collaboration. - Continue to work with SHAPE J3 and J6 for survivable, reliable communications to assure command, control and positive control of the nuclear mission with the goal of NATO Infrastructure Committee procurement. - Continue to conduct strategic analyses and assessments on emerging WMD threats. - Continue to organize/conduct senior COCOMs, Interagency, and International workshops, symposiums, and table top exercises to address key national/international strategies for reducing/combating the WMD threat.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
20/0602718BR/WMD Defeat Technologies	50.500	28.342	55.857						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Development of a DoD annex to the National Response plan for a pandemic flu and subsequent national-level exercises to test plan.

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

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

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RA

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 weapons of mass destruction threat.

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

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					PROJECT NUMBER RE	
COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RE: Counter-Terrorism Technologies	44.576	45.211	61.268						Continuing	Continuing

A. Mission Description and Budget Item Justification

The Counter-Terrorism Technologies Project is an over-arching project that has three distinct functional areas in support of Joint U.S. Military Forces, specifically U.S. Special Operations Command (USSOCOM). The research and development support to USSOCOM is one of the highest priority mission areas in the Overseas Contingency Operations and a top priority for Defense Threat Reduction Agency (DTRA). The following efforts are included in this project:

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

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

Provide oversight for Counter-proliferation (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 Counter WMD-Terrorism Support Cell and Arctic Mist are two new efforts that begin in FY 2010. Arctic Mist builds upon the collaborative effort with the warfighter that delivered a proof of concept to USSOCOM in June 2007 and provides a multi-mission oriented critical capability that may be applied throughout the entire spectrum of warfare while significantly eliminating collateral damage. It will develop technologies to enable the warfighter to locate, identify, characterize and access WMDs, their production and storage facilities and associated enablers anywhere within the terrorist pathway to disrupt, delay, degrade, destroy or deny Chemical, Biological, Radiological and Nuclear WMDs while minimizing risk to US forces in support of Counter Proliferation and Counter-Terrorism Offensive operations. Arctic Mist specifically addresses USSOCOM Directive 70-1 Appendix C, Special Mission Area Programs and 71-4 Force Development Special Operations Forces Capabilities Integration and Development Systems.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RE

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RE: Counter-Terrorism Technologies	44.576	45.211	61.268	
FY 2008 Accomplishments: - Researched and developed technologies to enhance the capabilities of U.S. Forces in the Overseas Contingency Operations (OCO) to counter Weapons of Mass Destruction (WMD) and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Delivered Special Operations Forces (SOF)-unique technologies. Projects completed: Non-intrusive Detection, Gellants Phase I, Chemical Detection and Identification, Phase II of Integrated Micro-Climatization System (IMCS). - Provided management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities in coordination with U.S. Special Operations Command (USSOCOM). - Initiated terrorist pathway counter proliferation Advanced Technology Demonstrations (ATD). - Conducted Military Unit Assessment/Independent Validation and Verification of proven technologies. *FY 2009 Plans:* - Continue to support research and development of technologies to enhance the capabilities of U.S. Forces in the OCO to counter WMD and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Deliver SOF-unique technologies under the SOF Venture program. Projects planned for completion: Gellants Phase II, Global Positioning Systems-Denied Navigation and Mapping, Phase III (final) of Integrated IMCS, NanoCatalysts. - Continue development of various SOF-unique technologies under the SOF Venture program. - Continue terrorist pathway counter proliferation ATD. - Conduct Military Unit Assessment/Independent Validation and Verification of proven technologies. Provide management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities in coordination with USSOCOM. - Develop WMD/Improvised Explosive Device anti-terrorism technologies that will increase Explosive Ordnance Disposal capabilities to identify, defeat and contain a radiological dispersal devise. - Initiate Pilot Phase to establish the Counter Weapons of Mass Destruction – Terrorism Support Cell.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RE

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
FY 2010 Plans: - Continue development and then transition new technologies for Joint U.S. Military Forces to counter Weapons of Mass Destruction (WMD), enabling warfighters, specifically Special Operations Forces (SOF), to improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities. - Characterize networks. - Characterize material properties of Ultra-High Performance Concrete. - Initiate funding for three 48-month technology solutions. - Knowledge Management Objectives: Threat Assessment, acquire emergent fireset design and build; characterization & testing; classified Research and Development programs to counter emergent threat(s). - Integrate and federate national intelligence with operations research systems analysis capabilities to support planning and operations.				

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					PROJECT NUMBER RF	
COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RF: Detection Technology	38.140	46.357	66.977						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project develops technologies, systems and procedures to detect, identify, track, tag, locate, monitor and interdict strategic and improvised nuclear and radiological weapons, components, or materials in support of Department of Defense requirements for combating terrorism, counter- and non-proliferation, homeland defense, and international initiatives and agreements. This project researches, develops, demonstrates, and transitions advanced technologies to improve: operational capability to detect and identify nuclear and radiological weapons; post-detonation National Technical Nuclear Forensics capabilities; and to support the attribution process. Efforts under this project also support international peacekeeping and nonproliferation objectives, on-site and aerial inspections and monitoring, on-site sampling and sample transport, and on- and off-site analysis to meet forensic, verification, monitoring and confidence-building requirements.

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

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RF: Detection Technology	38.140	46.357	66.977	
FY 2008 Accomplishments: - Developed integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology, eliminating the logistical burden of cryogenic cooling as well as bulky gas detectors. - Completed a Joint Capability Technology Demonstration (JCTD) effort demonstrating a modular nuclear radiation detection system capable of being mounted on multiple platforms (vehicular, aerial, marine, and handheld) and being deployed in both overt and covert situations and that can be seamlessly integrated into a sensor network to provide battle space awareness for the theater commander. This JCTD should result in transitioning a viable modular nuclear detection system to Combatant Commands.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Completed development of a baseline Department of Defense large standoff Bremsstrahlung active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Demonstrated standoff detection of nuclear material in a field environment. Stimulated fissions in nuclear material from 300 meters standoff using a Bremsstrahlung x-ray generator. - Executed evaluation of distributed sensor systems, their communications, and their signal processing to support a prioritized development program of networks for defense, security and tracking. - Prepared for and executed Inter-Agency end-to-end exercise/demonstration of global National Technical Nuclear Forensics for Attribution capabilities. - Developed sensors to detect Weapons of Mass Destruction (WMD) threats as far forward as possible and in all operational environments. Develop the capability to integrate data with future interagency comprehensive, all-domain WMD detection architecture from collection to dissemination. - 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. - Maintained the Domestic Nuclear Event Attribution legacy and development of National Technical Nuclear Forensics thru monthly notification drills, quality assurance/quality control testing, and successfully conducted three table top exercises and five Field Training Exercises (FTX), the last being an external evaluation. The last FTX demonstrated a limited ground collection capability. - Improved the ANDROS robot via several modifications to improve range and ability to perform improved sampling, maneuverability, logistic requirements, and communications. - Developed an initial Concept of Operations and Standard Operating Procedures for ground sample collection. - Enhanced/maintained the Sentry/Sniper databases. Integrated chemical and biological weapon information and a decision matrix into a comprehensive WMD database. - Continued hardware and software improvements based on laboratory and user training sessions for the Hand Held Chemical Detector for Special Operation Forces. Began development at a library suite consisting of Chemical Warfare Agents, precursor, and Homemade Explosives.				

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B. Accomplishments/Planned Program ($ in Millions)		**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
- Developed equipment that is waterproof, shockproof and resistant to extreme conditions and sustained employment without significant operational degradation. Developed smaller, lighter-weight detection systems for more adverse field employment. - Successfully transitioned eight near-term nuclear detection technologies to generate prototypes and design packages to assist ground forces. *FY 2009 Plans:* - Continue program for developing integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/ biological/chemical sensor technology. - Initiate a full scale test and evaluation campaign for Compton imagers and a second generation effort to develop more integrated and compact imagers with enhanced capability. These second generation imagers will be more optimized to operate with an active excitation source directed at the target item. - Continue program to develop systems that enable consequence management, to include the protection of forces. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue the extensive effort begun in the Joint Capability Technology Demonstration (JCTD) to integrate solid state detectors, communications, and processors into a robust self-configuring sensor network for detecting, identifying, and tracking nuclear materials in transit. - Complete a testing and evaluation program to assess the capabilities of biomarker expression for monitoring acute radiation exposure in Messenger Ribonucleic Acid and proteins utilizing voluntary human subjects, probably oncology patients, to evaluate the ability of the biodosimeter to accurately measure exposure. - Continue to develop upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions.					

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Develop technical information to support programmatic decisions regarding next-generation ground sampling capabilities, marine sampling capability, and next-generation Unmanned Aerial Systems for air and for ground sampling. Support potential development/conduct of a Nuclear Forensics JCTD. - Continue to provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure. - Commence an initial JCTD effort demonstrating portable stand off Bremsstrahlung active interrogation system capable of being mounted on an aerial platform that can be seamlessly integrated into a bi-static or mono-static detector network to provide battle space awareness for hidden and shielded nuclear material the theater commander. This JCTD should result in transitioning a viable stand off active interrogation system to Combatant Commands. - Demonstrate active interrogation as a safe method of stand off detection where dose to people and cargo are below the allowable limits. - Continue cooperation and acceptance of Research and Development Enterprise developed detection technologies for operational development. - Continue cooperation and acceptance of Research and Development Enterprise developed post nuclear event collection technologies for operational development. - Continue transitioning multiple near term technologies to generate prototypes and design packages to assist ground forces. - Exercise developmental collection capabilities with table top exercises, command post exercises, and field training exercises. - Continue Enhancement/maintenance of the Sentry/Sniper databases. Integrate chemical and biological weapon information and a decision matrix into a comprehensive weapons of mass destruction database. - Continue robotic ground sample collection improvements. - Continue development Techniques, Tactics, and Procedures of a nuclear forensics ground sample collection team. - Conduct modeling, simulation and experiments to evaluate the feasibility of using muons and protons to stimulate fissions in nuclear materials from standoff ranges. - Conduct/support Inter-Agency end-to-end exercise/demonstration of global National Technical Nuclear Forensics for attribution capabilities.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continue refinement of the Concept of Operations (CONOPS) and Standard Operating Procedures (SOP) for ground sample collection. - Continue to enhance/maintain the Sentry/Sniper databases. Continue integrating chemical and biological weapon information and a decision matrix into a comprehensive weapons of mass destruction database. *FY 2010 Plans:* - Complete design for a baseline Department of Defense large standoff proton active interrogation system to provide a reference standard for evaluating progress and capabilities in standoff detection and warning of hidden and shielded nuclear material. - Continue the extensive effort begun in the stand off Bremsstrahlung active interrogation system Joint Capability Technology Demonstration to develop a system capable of detecting hidden and shielded nuclear material. - Perform field demonstrations of new detector technologies for handheld detectors, distributed sensors, and vehicle-mountable detector systems, to improve the ability of fielded forces to detect, locate, and identify nuclear materials in the battle space. Continue to improve performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods through rigorous field testing. - Continue to develop and field (prototype) upgraded technical capabilities for prompt and debris sample collection, sample analysis, and integration of design modeling and forensic data to support development of technical conclusions. - Provide enhanced technical support and analysis to the Nuclear Weapons Council and Nuclear Weapons Council Standing and Safety Committee and other high-level committees and senior decision-makers to transform the nuclear stockpile and infrastructure. Investigate the use of muon and proton beams for standoff stimulation of fission in nuclear materials. Conduct experiments to validate the feasibility of the approach. - Continue refinement of the CONOPS and SOP for ground sample collection. - Continue to enhance/maintain the Sentry/Sniper databases. Continue integrating chemical and biological weapon information and a decision matrix into a comprehensive weapons of mass destruction database.				

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C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0602718BR/WMD Defeat Technologies	47.087	39.498	48.073						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Use an active interrogation system to interrogate and differentiate Special Nuclear Materials and an inert material in the field.

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.

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COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RG: Advanced Energetics & Counter WMD Weapons	20.029	20.550	21.396						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RG: Advanced Energetics & Counter WMD Weapons	20.029	20.550	21.396	
FY 2008 Accomplishments: - Continued development of advanced Counter-WMD weapons and counter-force agent defeat weapons. - Completed GSI33 robustness test series. - Completed successfully kinetic fireball test series. - Continued matrix testing of WMD simulants. - Continued diagnostics development for WMD defeat - Conducted high speed munitions warhead component level tests supporting demonstration of improved penetration over fielded weapons. - Characterized and develop defeat mechanisms for ultra-hard target materials. - Initiated development of Directed Energy payload for demonstration of a counter WMD deny/disrupt mission concept. - Completed static detonation of Bomb, Live Unit (BLU)-121 in tunnel (Midway Indigo 21) for weapons effects. - Completed integration of BLU-121 warhead with Guided Bomb Unit-24 guidance kit. - Completed Alternate BLU-121 Manufacturing Process Qualification Testing.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Continued development of deployable weapon-borne Battle Damage Information sensor for use on conventional weapons. - Conducted Advanced Fuzing sled tests at Holloman Air Force Base. *FY 2009 Plans:* - Continue development of advanced counter-Weapons of Mass Destruction (WMD) weapons and counter-force agent defeat weapons. - Integrate/test Insensitive Munitions Agent Defeat Bomb, Live Unit (BLU)-109 payload supporting U.S. Air Force tactics, techniques and procedures for the Shredder program. - Complete Joint Direct Attack Munitions Guidance Kit Integration and Demonstration with BLU-121. - Produce BLU-121 technical data package for transition to program of record. - Conduct sub-scale testing of counter-WMD kinetic and non-kinetic based payloads. - Continue development of non-kinetic payloads and novel materials. - Support the Acquisition Transition Program Support and Weapon Effects Targeting Analysis for BLU-121. - Support Thermobaric Advanced Concept Technology Demonstrations All Up Round Penetration Sled Test. - Continue Integrated Precision Ordnance Delivery System (IPODS) Production Decision Review and contractor down select. - Develop penetrating munitions concepts to defeat ultra-hard targets. - Conduct full-scale sled tests of advanced void-sensing fuze for a 1000 pound penetrator system. *FY 2010 Plans:* - Conduct Massive Ordnance Penetrator validation tests for Advance Payloads. - Conduct IPODS Concept Design (aero & warhead). - Conduct IPODS scaled lethality/effects test. - Initiate Modular Autonomous Counter WMD System Concept Development trade studies. - Continue development of non-kinetic based counter-WMD process modeling capability and apply it to specific counter-WMD targets - Continue development of novel thermal based payloads.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Conduct live stimulant matrix testing.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
26/0602718BR/WMD Defeat Technologies	24.744	30.435	32.381						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RI: Nuclear Survivability	21.432	18.654	13.935						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

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

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

Funding in this project reflects the re-balancing of efforts within the research and development portfolio to augment the Radiation Hardened Microelectronics Program and enabling technologies to enhance the Nuclear Weapons Effects experimentation capability in Program Element 0602718BR.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RI: Nuclear Survivability	21.432	18.654	13.935	

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
FY 2008 Accomplishments: - Demonstrated bulk silicon 90 nanometer (nm) radiation hardened by design (RHBD) technology and design libraries. - Demonstrated intermediate RHBD 90nm digital, analog and mixed-signal System on a Chip (SOC). - Performed initial characterization of single event effects in 90nm technology and 65nm technologies. - Demonstrated that greater than 4 gigahertz high speed radiation effects test capability. - Demonstrated radiation hardened 90/150nm analog/mixed-signal Phased/Delay Lock Loop circuits. - Demonstrated 150nm radiation hardened bulk silicon & silicon-on-insulator libraries and electronic design automation technology. - Conducted exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services. - Completed Mighty Guardian XI at White Sands Missile Range, NM in December 2007 to evaluate nuclear security policy as it applies to Fast Burn Reactor Security. - Planned, started and executed Mighty Guardian at Minot Air Force Base, ND in March 2008 to evaluate nuclear security policy as it applies to Launch Facility Security. The exercise was postponed; and will be re-scheduled, location to be determined. - Planned Mighty Guardian XIII Force-On-Force test at Naval Base Kitsap, WA to evaluate nuclear security policy as it applies to weapons movement convoys from the limited area to the explosives handling wharf. *FY 2009 Plans:* - Demonstrate final RHBD 90nm digital, analog and mixed signal SOC. - Demonstrate radiation hardened 150nm combined digital and analog/mixed signal Application-Specific Integrated Circuit. - Demonstrate bulk silicon 90nm RHBD digital and analog/mixed signal libraries and SOC electronic design automation technology. - Demonstrate intermediate RHBD 90nm reconfigurable Field Programmable Gate Array. - Demonstrate 90nm radiation hardened by process development structure and methods.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Conduct Mighty Guardian XII Force-On-Force test at Naval Base Kitsap, WA to evaluate nuclear security policy as it applies to weapons movement convoys from the limited area to the explosives handling wharf. - Planning Mighty Guardian XI Force-On-Force test to evaluate nuclear security policy as it applies to bomber generation at a location to be determined in the Air Combat Command area of operations. - Conduct exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services. *FY 2010 Plans:* - Perform initial characterizations of single event effects in commercial 45nm bulk and silicon-on-insulator technology. - Conduct Mighty Guardian XIII Force-On-Force test to evaluate nuclear security policy as it applies to bomber generation at a location to be determined in the Air Combat Command area of operations. - Planning Mighty Guardian XIV Force-On-Force test at Kings Bay, GA, to evaluate nuclear security policy as it applies to Launch Facility Security. - Planning Mighty Guardian to evaluate nuclear security policy as it applies to the waterfront. - Conduct exploratory research on physical security equipment and technology designed to enhance protection of the nuclear stockpile as determined by the Services.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
25/0602718BR/WMD Defeat Technologies	13.063	10.414	18.660						Continuing	Continuing

D. Acquisition Strategy

N/A

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E. Performance Metrics

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

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

Successful completion of Mighty Guardian exercises is measured by completing all necessary planning and logistics steps, troops arriving when required, training completed, execution of the exercise, redeployment of forces, and publishing a final report within 90 days of completion.

Successful completion of exploratory research for physical security equipment and technology is determined by performers completing the project on-time and within budget, all stated tasks in the statement of objectives being met, proper reporting and coordination of decision areas, receipt of final reports closing out the project, and transitioning the project to the requesting Service.

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COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RL: Nuclear & Radiological Effects	0.300	0.000	0.000						Continuing	Continuing

A. Mission Description and Budget Item Justification

Nuclear and Radiological Effects 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 Combatant Commands and Department of Defense.

Efforts in the areas of advanced modeling systems and survivability technology are re-balanced to increase corporate capabilities in systems engineering and analysis support across all other projects within the research and development portfolio. The impacts delay full 3-D modeling and simulation efforts for electromagnetic pulse response and consequence management predictions, to include second and third order effects.

FY 2008 Funds were applied and executed as 6.3 Project RL funding. All future funding for this effort will be in 6.2 Project RM.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RL: Nuclear Survivability	0.300	0.000	0.000	
FY 2008 Accomplishments: - Continued technical revisions to Redbook Volumes I-IV, Effects Manual-1, and further publishing of Joint Radiation Effects documentation.				

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C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
115/0605000 /WMD Defeat Capabilities	15.296	15.896	8.735						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RM: WMD Battle Management	36.198	55.621	31.939						Continuing	Continuing

A. Mission Description and Budget Item Justification

This 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.

Funding in this project is realigned as part of the Agency decision to re-balance efforts within its research and development portfolio to realize the Department of Defense investment goal for basic research of 10-12% of Total Obligation Authority. The reductions are in the areas of advanced modeling systems and survivability technology. The impacts are delayed full 3-D modeling and simulation efforts for electromagnetic pulse response and consequence management predictions to include third order effects.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RM: WMD Battle Management	36.198	55.621	31.939	
FY 2008 Accomplishments: - Continued development of WMD reconnaissance technologies and WMD planning tools. - Conducted demonstration to validate tunnel facility defeat using optimized inventory weapons attack on Capitol Peak Tunnel facilities, White Sands Missile Range.				

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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Developed an enhanced capability to launch and control FINDER Unmanned Aerial Vehicle MQ-1 Predator to address U.S. Air Force Special Operations Command requirement for off-board, below the weather imagery for pre-strike target identification and post-strike battle damage assessment. - Conducted Spiral 1 demonstration of the Biological Combat Assessment System. - Conducted full scale static testing of taggant technology in Bomb, Live Unit-116 Advanced Unitary Penetrator. - Conducted risk reduction studies for Weapons of Mass Destruction (WMD) Aerial Collection System (WACS). - Delivered Integrated Munitions Effects Assessment (IMEA) with improved groundshock model. - Delivered Vulnerability Assessment and Protection Option (VAPO) with improved models for global response of framed structures. - Integrated advanced command and control capabilities into Defense Threat Reduction Agency (DTRA) Operations Center such as the Army's Command Post of the Future (CPoF) and Joint Forces Command's “Joint” variant of CPoF for improved situational awareness. - Integrated WMD data from the Intelligence Community, Combatant Commands (COCOMs), Services, and Agencies into the WMD Common Operating Picture and continued research and development to provide that information to existing command, control, communications, computers, and intelligence systems. - Started transition of technologies demonstrated under the Tunnel Target Defeat Advanced Concept Technology Demonstrations to U.S. Strategic Command and Defense Intelligence Agency. *FY 2009 Plans:* - Continue development of WMD reconnaissance technologies and WMD planning tools. - Study/develop prototype dispense delivery mechanisms for high speed weapons in support of Global Strike combat assessment requirements. - Complete developmental testing of sensor suite for real-time, weapon-borne Battle Damage Indication system. - Award integration contract for the WMD WACS. - Develop IMEA with integration of additional net-centric components for weaponeering. - Develop VAPO integrating a computational fluid dynamic capability.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RM

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Conduct demonstration to validate command, control and communications tunnel facility defeat using optimized inventory weapons attack on Hard Target Defeat Facility 2 tunnel (Nevada Test Site). - Continue to integrate advanced command and control capabilities into DTRA Operations Center including the Global Command and Control System version 4 software suites which will allow DTRA to seamlessly share information between COCOMs and the inter-agency community. - Integrate improved geospatial information, such as that provided by National Geospatial-Intelligence Agency, National Reconnaissance Office, and Wide Field of View Electro-Optical/Infra red data, into the WMD Common Operating Picture and other Command and Control capabilities for enhanced decision support. - Enable Data discovery of WMD related activity propagating from all sources and data repositories using the Persistent Surveillance Test bed, Network Intelligence Surveillance and Reconnaissance, and Smart Agent technologies. - Provide common standards to network sensors, and data sources into common operating pictures providing WMD intelligence fusion. - Characterize Hyperspectral sensors and data for proactively identifying WMD precursor activity and post strike Battle Damage Assessment. - Develop near real time Concept of Operations (CONOPS) for Constant Hawk and enable on board processing of the camera upgrade Electro-Optical sensor with Chemical, Biological, Radiological, Nuclear, and Explosive Incidents and sensor overlay functionality. - Complete transition of technologies demonstrated under the Tunnel Target Defeat Advanced Concept Technology Demonstrations to U.S. Strategic Command and Defense Intelligence Agency. *FY 2010 Plans:* - Complete Global Strike battle damage assessment Phase 2 field demonstration. - Continue development of WMD Aerial Collection System. - Operationalize Tactical Microsatellite Experiment 3's Hyperspectral Imaging sensor for Counter WMD using Counter WMD Analysis Cell exploitation. - Identify signatures and establish test beds for sensors to find fix and track WMD related items and people. - Validate and transition the near real time CONOPS for Constant Hawk to the warfighter.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
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B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Enable High Altitude Long Endurance Unmanned Aerial Vehicles (UAV) to relay sensor data. - Demonstrate capability to control FINDER UAV from an airborne control station and demonstrate FINDER auto-recovery capability. - Promulgate collaboration and decision support tool solutions into the Defense Threat Reduction Agency (DTRA) Operations Center through identification and procurement of cutting-edge technologies, completion of security accreditation, installation upon approval, and implementation of a comprehensive training program for the user community. - Administer situational awareness solutions into the DTRA Operations Center through an analysis of alternatives of government off-the-shelf and commercial off-the-shelf products for next-generation data analysis and visualization. - Deliver Integrated Munitions Effects Assessment 2010 with Advanced Targeting Assessment Capability 1.0 integrated engine. - Perform annual cycle of requirements collection, challenge proposals, resource allocation and tech support through High Performance Computing. - Provide Targeting and Weaponeering Analysis Cell academics and targeting support.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
20/0602718BR/WMD Defeat Technologies	17.374	29.137	13.240						Continuing	Continuing

D. Acquisition Strategy

N/A

E. Performance Metrics

Stand off detection range of WMD reconnaissance system.

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RM

Number of weaponeering solutions delivered to COCOMs.

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					PROJECT NUMBER RT	
COST ($ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
RT: Target Assessment Technologies	26.442	26.193	32.294						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 increase in funding within this project is due to the re-balancing of efforts from Project RM – WMD Battle Management to enhance the Combating WMD Analysis Cell effort, which is patterned after the Hard Target Research and Analysis Center model to develop and integrate new software, engineering, and modeling methodologies, technology, and vulnerability support.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RT: Target Assessment Technologies	26.442	26.193	32.294	
FY 2008 Accomplishments: - Enhanced the Underground Targeting and Analysis System software capability to model additional Underground Facility structural details and WMD functional features. - Conducted a Underground Facility (UGF) vulnerability assessment exercise with the operations and intelligence participants to gauge the effectiveness of target characterization tools and processes.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat			PROJECT NUMBER RT	
B. Accomplishments/Planned Program ($ in Millions)		**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
- Developed additional geological models and enhanced site-specific geological characterization processes to increase the fidelity and accuracy of UGF characterizations. - Continued to provide target characterization training to increase the size and expertise of the UGF and Weapons of Mass Destruction (WMD) target defeat communities. - Started prototype development and testing of an Integrated Sensor System for support of Combatant Commands (COCOMs) and Intelligence Community UGF characterization and assessment needs. - Continued development of a UGF signatures database to facilitate functional characterization of UGF targets by the COCOMs and Intelligence Community. - Established the Counter WMD Analysis Cell activity in collaboration with Defense Intelligence Agency. *FY 2009 Plans:* - Deliver enhanced Underground Targeting and Analysis System (UTAS) special operations mission planning capabilities to the special operations community. - Analyze and report the findings of the UGF vulnerability assessment exercise conducted in FY 2008 to evaluate the effectiveness of our tools and processes to support the characterization of UGF and WMD targets. - Continue to provide target characterization training to the UGF and WMD target defeat communities. - Continue development of a UGF signatures database to facilitate functional characterization of UGF targets for the COCOMs and Intelligence Community. - Continue development of enhanced site-specific geological characterization processes and foreign geology templates to increase the fidelity and accuracy of our UGF characterizations. - Continue development and testing of the prototype Integrated Sensor System to support the UGF and WMD target characterization and assessment processes. - Demonstrate the capability of the Counter WMD Analysis Cell to model and analyze nuclear weapons threats and issues. *FY 2010 Plans:* - Deliver UTAS functional process modeling and point mensuration capability to the COCOMs and Intelligence Community.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RT

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Fully integrate UTAS modeling capability into the DIA Underground Facility Analysis Center target characterization process and products. - Continue to provide target characterization training for the UGF and WMD target defeat communities. - Demonstrate the capabilities of a prototype Integrated Sensor System to support the Underground Facility and Weapons of Mass Destruction (WMD) target characterization and assessment processes of the Combatant Commands (COCOMs) and Intelligence Community. - Demonstrate added Counter WMD Analysis Cell capabilities to model and analyze biological weapons threats in support of COCOMs Command and Intelligence Community needs. - Research and develop models for analysis and assessment of weapons effects on WMD related equipment and systems for use by the Intelligence Community.				

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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

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

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

By FY 2009, demonstrate an initial Counter Weapons of Mass Destruction (CWMD) Analysis Cell capability to perform analysis of nuclear threats in response to Combatant Command and Intelligence Community needs.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	**R-1 ITEM NOMENCLATURE** PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	**PROJECT NUMBER** RT

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

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)				R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat					PROJECT NUMBER RU	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RU: *Fundamental Research for Combating WMD	1.185	0.000	0.000						Continuing	Continuing

Note

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

A. Mission Description and Budget Item Justification

To foster and enable farsighted, high payoff research focused on the unique challenges related to reducing, eliminating, countering and mitigating the effects of weapons of mass destruction (WMD) by advancing the fundamental knowledge and understanding in the sciences, facilitating the transition of basic research to the applied research stakeholders, and complimenting agency applied research efforts with university research capabilities. These 6.3 funds represent an artifact of internal reprogramming actions within Defense Threat Reduction Agency (DTRA) to support the new basic research (6.1) program that DTRA initiated in FY 2007. Creation of the DTRA 6.1 program required internal programming from multiple sources in FY 2007 and FY 2008.

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RU: Fundamental Research for Combating WMD	1.185	0.000	0.000	
FY 2008 Accomplishments: - Expanded the FY 2007 basic research portfolio to 80 basic research initiatives dedicated to advancing knowledge across a broad spectrum of science and multi-disciplined research areas. The initial 30 FY 2007 grantees were composed of universities and the FY 2008 portfolio expanded the portfolio to include research by Service and National Laboratories, as well as non-profit entities with university partners. - Conducted a technical review of each grant to assess the scientific advancements and progress in meeting the award's technical objectives and to foster collaborations and build relationships within the scientific community. - Conducted an external panel review of the basic research program, open to Department of Defense (DoD) research stakeholders, to assess the focus and scope of the program with respect to the counter WMD challenges, and to assess the coordination of counter WMD basic research across DoD mission				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 3 - Advanced Technology Development (ATD)	R-1 ITEM NOMENCLATURE PE 0603160BR Counterproliferation Initiatives - Proliferation, Prevention and Defeat	PROJECT NUMBER RU

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
space and across broader basic research community to avoid unintended duplication and ensure successful partnerships. - Identified and hired three university Post-Docs in the areas of Nuclear Detection, Biosciences, and Social Sciences to provide technical expertise and to facilitate transition of university-based research to advanced applied research programs. - Award of three grants supporting DTRA combating WMD basic research needs.				

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
1/0601000 /DTRA Basic Research Initiative	14.708	22.329	48.544						Continuing	Continuing

D. Acquisition Strategy

N/A

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 Department of Defense 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, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 5 - Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0605000BR WMD Defeat Capabilities					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	15.291	15.896	8.735						Continuing	Continuing
RL: Nuclear & Radiological Effects	15.291	15.896	8.735						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

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

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	15.296	15.946	15.767	
Current BES/President's Budget	15.291	15.896	8.735	
Total Adjustments	-0.005	-0.050	-7.032	
Congressional Program Reductions	0.000	-0.050		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	0.000		
Total Reprogrammings	0.000	0.000		
SBIR/STTR Transfer	-0.005	0.000		
Realignment	0.000	0.000	-7.032	

Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 5 - Development & Demonstration (SDD)	**R-1 ITEM NOMENCLATURE** PE 0605000BR WMD Defeat Capabilities

Change Summary Explanation

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

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 5 - Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0605000BR WMD Defeat Capabilities					PROJECT NUMBER RL	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RL: Nuclear & Radiological Effects	15.291	15.896	8.735						Continuing	Continuing

A. Mission Description and Budget Item Justification

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

Funds are realigned from this project due to re-balancing of efforts within the Nuclear Technologies program. The impacts are in the areas of advanced modeling systems and delay full 3-D modeling and simulation efforts for electromagnetic pulse response and consequence management predictions, to include second and third order affects.

B. Accomplishments/Planned Program ($ in Millions)	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**
RL: Nuclear & Radiological Effects	15.291	15.896	8.735	
FY 2008 Accomplishments: - In coordination with Chemical, Biological, Radiological, and Nuclear program, continued to manage the development and transfer of basic science initiatives to Programs of Records through the use of a robust disciplined process within the IWMDT to provide transferable technology, processes, and documentation. - Continued to provide a one-point entry portal providing common Chemical, Biological, Radiological, and Nuclear (CBRN) capabilities distributed to the edge. At the edge, the user is provided a rapidly adaptable operational assessment based on validated codes, subject-matter-expert support and cutting-edge technology capable of real-time assessments.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 5 - Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0605000BR WMD Defeat Capabilities	PROJECT NUMBER RL

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
- Completed Nuclear Capability Services (NuCS) Integration Spiral 2 by demonstrating and providing over 80% of the customer-required nuclear weapon effects modeling and simulation capabilities in a net-centric environment. This includes transforming at least 25% of the mission required legacy (pre-2005) Defense Threat Reduction Agency codes to meet Verification, Validation, and Accreditation standards. - Delivered updated Radiological Nuclear-improved fallout nuclear weapon and radiological hazard transport models for integration into Hazard Prediction and Assessment Capability version 5.0. - Delivered Batchmaker for enhanced batch processing meeting U.S. Strategic Command requirements. *FY 2009 Plans:* - Complete Nuclear Weapon Effects Users Group accreditation of modeling and simulation in the NuCS. - Provide fully distributed, transportable and mobile CBRN capability solution meeting the CBRN requirements of forward deployed warfighters, first responders, analysts, and future planning users. Through this capability, users customize the CBRN portal to meet their decision support, analysis, and collaborative mission planning through a dynamically fused view. - Deliver NuCS Spiral 2 capabilities through the Integrated Weapons of Mass Destruction Toolset framework meeting 80% of customer-required nuclear weapon effects Modeling & Simulation (M&S), enabling technology transfer to Program of Record and external systems as required. - Initiate NuCS Spiral 3 development addressing the remaining 20% of customer-required nuclear weapon effect M&S capabilities. - Deliver nuclear weapon improved water/urban burst prototype. *FY 2010 Plans:* - Establish an operational baseline Continuity of Operations capability for geographically separated real-time backup of all CBRN and Explosive Events capabilities. - Initial implementation of Net Centric Enterprise Services messaging and collaboration for use across exercise and operational deployments. - Migrate nuclear effects framework and Consequence of Execution – Nuclear Integration efforts to program of records for community use and broader integration. - Data replication synchronization implemented for disparate deployment methods. - Complete updated data verification from Nevada Test Site digs conducted in FY 2008.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 5 - Development & Demonstration (SDD)	R-1 ITEM NOMENCLATURE PE 0605000BR WMD Defeat Capabilities	PROJECT NUMBER RL

C. Other Program Funding Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
20/0602718BR/WMD Defeat Technologies	18.784	36.338	19.704						Continuing	Continuing

D. Acquisition Strategy

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

E. Performance Metrics

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

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

Exhibit R-3, RDT&E Project Cost Analysis								Date: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, Defense Wide / BA-5**			PROGRAM ELEMENT **0605000BR**					PROJECT NAME AND NUMBER **WMD Defeat Capabilities**				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost ($000)	FY 2008 Cost ($000)	FY 2008 Award Date	FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
System Development--IWMDT	C/CPAF	SAIC -- San Diego, CA	0	5450	Nov-07	5350	Nov-08	3303	Nov-09	28000	42103	42000
System Development--NuCS	C/CPFF	Applied Research Associates -- Albuquerque, NM	0	1600	Nov-07	1500	Nov-08	1600	Nov-08	2390	7090	5658
System Development--COE	C/CPFF	Titan -- Kingstowne, VA	0	2125	Nov-07	2024	Nov-08	890	Nov-08	2390	7429	4490
System Development--Component Contracts	Various	Various	0	1966	Various	1806	Dec-08	957	Dec-09	4780	9509	8452
Subtotal Product Development			0	11141		10680		6750		37561	66131	60600
Remarks: The "Various" reported reflects multiple contracts, mainly CPFF.												
Configuration Management	C/CPAF/CPFF	SAIC, ARA, Titan	0	61	Nov-07	61	Nov-08			180	302	302
Software Integration	C/CPAF/CPFF	SAIC, ARA, Titan	0	1300	Nov-07	1300	Nov-08			6079	8679	8679
Technical Data	C/CPAF/CPFF	SAIC, ARA, Titan	0	21	Nov-07	21	Nov-08			70	112	112
Engineering Services	C/CPAF/CPFF	SAIC, ARA, Titan	0	607	Nov-07	657	Nov-08			1540	2804	2804
Accreditation & Certification	C/CPAF/CPFF	SAIC, ARA, Titan	0	61	Nov-07	61	Nov-08			180	302	302
Subtotal Support			0	2050		2050		0		8049	12199	12199
Remarks												

Exhibit R-3, RDT&E Project Cost Analysis (page 2)								Date: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, Defense Wide / BA-5**			PROGRAM ELEMENT **0605000BR**					PROJECT NAME AND NUMBER **WMD Defeat Capabilities**				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost ($000)	FY 2008 Cost ($000)	FY 2008 Award Date	FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
Developmental Test & Evaluation	C/CPAF/CPFF	SAIC, ARA, Titan	0	525		525	Nov-07	513	Nov-08	2012	3575	3050
Operational Test & Evaluation	C/CPAF/CPFF	SAIC, ARA, Titan	0	525		525	Nov-07	513	Nov-08	2012	3575	3050
Subtotal T&E			0	1050		1050		1025		4024	7149	6099
Remarks												
Program Management	C/CPAF/CPFF	SAIC, ARA, Titan	0	525		525	Nov-07	513	Nov-08	2012	3575	3050
Travel	C/CPAF/CPFF	SAIC, ARA, Titan	0	263		263	Nov-07	256	Nov-08	1006	1788	1525
Overhead	C/CPAF/CPFF	SAIC, ARA, Titan	0	263		263	Nov-07	256	Nov-08	1006	1788	1525
Subtotal Management			0	1050		1050		1025		4024	7150	6099
Remarks												
Total Cost			0	15291		14830		8800		53658	92630	77289

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 o PE 0602716BR. IWMDT was funded in 2004 by a competed, CPAF contract for $12,425,028 over a 3-year period. At end of FY 2006, its follow-on contract was awarded with an initial $300,000 increment. IWMDT program efforts have continued into FY 2009 with $25,926,730.49 now applied. Likewise, the NuCS program was funded under a competed, CPFF contract over a 3-year period with funding of $5,913,235 applied through FY 2008; a follow-on contract has now been awarded with initial funding to date of $2,239,880 to continue program efforts. COE was funded under a competed, CPFF contract with increments to date of $6,422,679 total. Beginning in FY 2008, these activities began funding under PE 0605000BR.

Exhibit R-4, RDT&E Program Schedule Profile		Date: May 2009
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

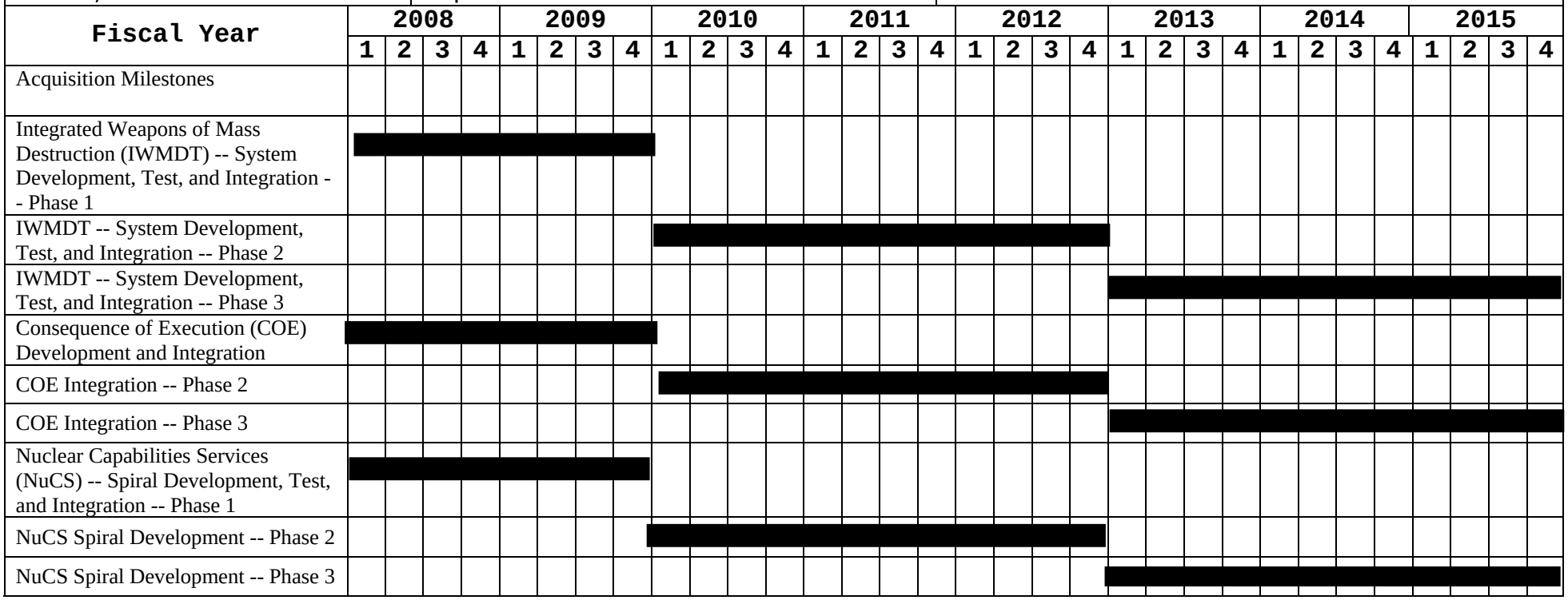

Exhibit R-4a, Program Schedule Detail							Date: May 2009	
Appropriation/Budget Activity RDT&E, Defense Wide BA 5	Program Element Number and Name: PE 0605000BR WMD Capabilities				Project Name and Number: Nuclear and Radiological Effects -- RL			
Schedule Profile	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**
Integrated Weapons of Mass Destruction Toolset (IWMDT) -- System Development, Test, and Integration – Phase 1	1-4Q	1-4Q						
IWMDT -- System Development, Test, and Integration -- Phase 2			1-4Q	1-4Q	1-4Q			
IWMDT -- System Development, Test, and Integration – Phase 3						1-4Q	1-4Q	1-4Q
Consequence of Execution (COE) Development and Integration	1-4Q	1-4Q						
COE Integration – Phase 2			1-4Q	1-4Q	1-4Q			
COE Integration—Phase 3						1-4Q	1-4Q	1-4Q
Nuclear Capabilities Services (NuCS) – Spiral Development, Test, and Integration – Phase 1	1-4Q	1-4Q						
NuCS -- Spiral 2 Development			1-4Q	1-4Q	1-4Q			
NuCS -- Spiral 3 Development						1-4Q	1-4Q	1-4Q

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Exhibit R-2, PB 2010 Defense Threat Reduction Agency RDT&E Budget Item Justification									DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 6 - RDT&E Management Support					R-1 ITEM NOMENCLATURE PE 0605502BR Small Business Innovation Research					
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	7.124	0.000	0.000						Continuing	Continuing
RA: Systems Engineering and Innovation	7.124	0.000	0.000						Continuing	Continuing

Note

* Funding is not allocated until the year of execution. In year of execution, funding is executed under Program Element 0605502BR “Small Business Innovative Research (SBIR)”.

A. Mission Description and Budget Item Justification

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

B. Program Change Summary ($ in Millions)

	FY 2008	FY 2009	FY 2010	FY 2011
Previous President's Budget	2.436	0.000	0.000	
Current BES/President's Budget	7.124	0.000	0.000	
Total Adjustments	4.688	0.000	0.000	
Congressional Program Reductions	0.000	0.000		
Congressional Rescissions	0.000	0.000		
Total Congressional Increases	0.000	0.000		
Total Reprogrammings	0.000	0.000		
SBIR/STTR Transfer	4.688	0.000		

Change Summary Explanation

Funding for FY 2008 for the SBIR Program has been consolidated in this program element for execution.

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification								DATE: May 2009		
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 6 - RDT&E Management Support				R-1 ITEM NOMENCLATURE PE 0605502BR Small Business Innovation Research					PROJECT NUMBER RA	
COST ($ in Millions)	**FY 2008 Actual**	**FY 2009 Estimate**	**FY 2010 Estimate**	**FY 2011 Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
RA: Systems Engineering and Innovation	7.124	0.000	0.000						Continuing	Continuing

Note

* In year of execution, funding is executed under Program Element 0605502BR “Small Business Innovative Research (SBIR)”.

A. Mission Description and Budget Item Justification

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

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
RA: Systems Engineering and Innovation	7.124	0.000	0.000	
FY 2008 Accomplishments: - Completed execution of 12 FY 2006 Phase II contracts. - Continued execution of 8 FY 2007 Phase II contracts. - Awarded 13 Phase I contracts to perform feasibility studies on FY 2008 solicitation topics. - Awarded 8 Phase II contracts on successful FY 2006 and FY 2007 Phase I efforts. - Transitioned FY 2005 and prior Phase II efforts to Phase III, Commercialization, as results and funding permit.				
FY 2009 Plans: - Complete execution of 8 FY 2007 Phase II contracts. - Continue execution of 8 FY 2008 Phase II contracts. - Award up to 13 Phase I contracts to perform feasibility studies on FY 2009 topics. - Award up to 7 Phase II contracts on successful FY 2008 Phase I efforts. - Transition FY 2006 and prior Phase II efforts to Phase III, Commercialization, as results and funding permit.				

Exhibit R-2a, PB 2010 Defense Threat Reduction Agency RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY 0400 - Research, Development, Test & Evaluation, Defense-Wide/BA 6 - RDT&E Management Support	R-1 ITEM NOMENCLATURE PE 0605502BR Small Business Innovation Research	PROJECT NUMBER RA

B. Accomplishments/Planned Program ($ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011
FY 2010 Plans: - Complete execution of 8 FY 2008 Phase II contracts. - Continue execution of up to 7 FY 2009 Phase II contracts. - Award up to 14 Phase I contracts to perform feasibility studies on FY 2010 topics. Award up to 7 Phase II contracts on successful FY 2009 Phase I efforts. Transition FY 2007 and prior Phase II efforts to Phase III, Commercialization, as results and funding permit.				

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Number of Phase I awards supporting innovative technology development.

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

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