Defense Threat Reduction Agency

Fiscal Year (FY) 2009 Budget Estimates

February 2008

Research, Development, Test and Evaluation, Defense-Wide

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

Appropriation: RDT&E

R-1 Line Item No	Program Element Number	Item	Budget Activity	FY 2007 Cost	FY 2008 Cost	FY 2009 Cost	FY 2010 Cost
1	0601000BR	DTRA Basic Research Initiative	1	13.270	10.831	18.000	18.544
18	0602716BR	WMD Defeat Technology	2	214.702	0.000	0.000	0.000
20	0602717BR	WMD Defense Technologies	2	109.513	0.000	0.000	0.000
21	0602718BR	WMD Defeat Technologies	2	0.000	211.325	211.078	214.469
28	0603160BR	Proliferation, Prevention and Defeat	3	111.911	215.609	211.325	215.254
108	0605000BR	WMD Defeat Capabilities	5	0.000	15.296	15.946	15.767
134	0605502BR	Small Business Innovation Research	6	6.744	2.436	0.000	0.000
		Total RDT&E		456.140	455.497	456.349	464.034

NOTE - FY 2007 Rounding adjustment at the Department level - $457.134M

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

Date: February 2008

R-1 Line Item No	Program Element Number	Item	Budget Activity	FY 2007 Cost	FY 2008 Cost	FY 2009 Cost	FY 2010 Cost	FY 2011 Cost	FY 2012 Cost	FY 2013 Cost
1	0601000BR	DTRA Basic Research Initiative	1							
		FY 2008 President's Budget		9.962	5.000	5.000	5.000	5.000	5.000	5.000
		FY 2009 President's Budget Submission		13.270	10.831	18.000	18.544	18.888	19.279	19.684
		Total Adjustment		3.308	5.831	13.000	13.544	13.888	14.279	14.684
18	0602716BR	WMD Defeat Technology	2							
		FY 2008 President's Budget		218.946	0.000	0.000	0.000	0.000	0.000	0.000
		FY 2009 President's Budget Submission		214.702	0.000	0.000	0.000	0.000	0.000	0.000
		Total Adjustment		-4.244	0.000	0.000	0.000	0.000	0.000	0.000
20	0602717BR	WMD Defense Technologies	2							
		FY 2008 President's Budget		110.602	0.000	0.000	0.000	0.000	0.000	0.000
		FY 2009 President's Budget Submission		109.513	0.000	0.000	0.000	0.000	0.000	0.000
		Total Adjustment		-1.089	0.000	0.000	0.000	0.000	0.000	0.000
21	0602718BR	WMD Defeat Technologies	2							
		FY 2008 President's Budget		0.000	182.416	204.501	208.908	212.035	212.414	210.547
		FY 2009 President's Budget Submission		0.000	211.325	211.078	214.469	219.535	209.906	207.962
		Total Adjustment		0.000	28.909	6.577	5.561	7.500	-2.508	-2.585
28	0603160BR	Proliferation, Prevention and Defeat	3							
		FY 2008 President's Budget		116.630	213.240	211.555	216.641	211.934	217.807	225.275
		FY 2009 President's Budget Submission		111.911	215.609	211.325	215.254	210.421	216.344	223.855
		Total Adjustment		-4.719	2.369	-0.230	-1.387	-1.513	-1.463	-1.420
108	0605000BR	WMD Defeat Capabilities	5							
		FY 2008 President's Budget		0.000	15.394	15.946	15.767	13.859	12.828	11.204
		FY 2009 President's Budget Submission		0.000	15.296	15.946	15.767	13.859	12.828	11.204
		Total Adjustment		0.000	-0.098	0.000	0.000	0.000	0.000	0.000
134	0605002BR	Small Business Innovation Research	6							
		FY 2008 President's Budget		0.000	0.000	0.000	0.000	0.000	0.000	0.000
		FY 2009 President's Budget Submission		6.744	2.436	0.000	0.000	0.000	0.000	0.000
		Total Adjustment		6.744	2.436	0.000	0.000	0.000	0.000	0.000
		Total FY 2008 President's Budget		456.140	416.050	437.002	446.316	442.828	448.049	452.026
		Total FY 2009 President's Budget Submission		456.140	455.497	456.349	464.034	462.703	458.357	462.705
		Total Adjustment		0.000	39.447	19.347	17.718	19.875	10.308	10.679

NOTE - FY 2007 Rounding adjustment at the Department level - $457.134M

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**R-1 ITEM NOMENCLATURE:** DTRA Basic Research Initiative; 0601000BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0601000BR Cost	**13.270**	**10.831**	**18.000**	**18.544**	**18.888**	**19.279**	**19.684**
BT - Basic Research for WMD Knowledge Gaps	13.270	0.000	0.000	0.000	0.000	0.000	0.000
RU - Basic Research for WMD Knowledge Gaps	0.000	10.831	18.000	18.544	18.888	19.279	19.684

A. Mission Description and Budget Item Justification:

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 DoD $1 billion annual investment in basic research by ensuring a motivation within the scientific community to conduct research benefiting WMD-related defense missions and by improving Agency knowledge of other research efforts of potential benefit to DTRA non-proliferation, counterproliferation and consequence management efforts.

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

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**R-1 ITEM NOMENCLATURE:** DTRA Basic Research Initiative; 0601000BR

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**9.962**	**5.000**	**5.000**
Current President's Budget	**13.270**	**10.831**	**18.000**
Total Adjustments	**3.308**	**5.831**	**13.000**
Congressional program reductions		**-0.069**	
Congressional rescissions			
Congressional increases		**5.900**	
Reprogrammings	**3.308**		**13.000**
SBIR/STTR Transfer			

Change Summary Explanation:

A robust science and technology basic research program in DTRA enhances core technologies that support DTRA's applied research and advanced development programs in the areas of hard target defeat, WMD defeat, WMD reconnaissance, and persistent Intelligence, Surveillance, and Reconnaissance. It initiates efforts with the national labs and energize and sustain university researchers, and the Nation's research infrastructure with fundamental knowledge, innovation, and ideas critical to long-range fundamental research in support of the DTRA core mission areas: (1) threat control; (2) threat reduction; (3) combat support and (4) technology development. The program is based on a 3-year cycle with a new start every year.

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

D. Acquisition Strategy: Not Applicable.

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**PROJECT NAME AND NUMBER:** 0601000BR Project BT – Basic Research for WMD Knowledge Gaps

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
BT - Basic Research for WMD Knowledge Gaps	13.270	0.000	0.000	0.000	0.000	0.000	0.000

***** Funding and activities realigned to Project RU of Program Element (PE) 0601000BR in FY 2008.

A. Mission Description and Budget Item Justification:

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 the DoD $1 billion annual investment in basic research by ensuring a motivation within the scientific community to conduct research benefiting WMD-related defense missions and by improving Agency knowledge of other research efforts of potential benefit to DTRA non-proliferation, counterproliferation and consequence management efforts.

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
BT - Basic Research for WMD Knowledge Gaps	13.270	0.000	0.000

***** Funding and activities realigned to Project RU of PE 0601000BR in FY 2008.

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.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**PROJECT NAME AND NUMBER:** 0601000BR Project BT – Basic Research for WMD Knowledge Gaps

FY 2007 Accomplishments:

- Initiated basic research efforts, as funding permits, in the interest areas of: Radiological and Nuclear Detection Material Science; Novel High Energy Materials and Processes for Counter WMD Applications; Particulate And Agent Dynamics In Multiphase Turbulent Reacting Flows; Understanding Network Response to Attack; Adversarial Social Network Theory; Biodosimetry Biomarkers for Mixed Radiation Exposure; Thermal Bionanosensor Material Science; and Novel Methods for WMD Explosives Detection. Awarded 35 grants to 28 Universities in these topics.

FY 2008 Plans:

- Not Applicable. See Project RU of Program Element (PE) 0601000BR.

FY 2009 Plans:

- Not Applicable. See Project RU of PE 0601000BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Procurement methods include in-scope award through DTRA University Strategic Partnership, collaborative funding through other organizations, and competitive award through Broad Agency Announcement.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**PROJECT NAME AND NUMBER:** 0601000BR Project RU – Basic Research for WMD Knowledge Gaps

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
RU - Basic Research for WMD Knowledge Gaps	0.000	10.831	18.000	18.544	18.888	19.279	19.684

***** Funding and activities realigned from Project BT of Program Element (PE) 0601000BR in FY 2008.

A. Mission Description and Budget Item Justification:

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 the DoD $1 billion annual investment in basic research by ensuring a motivation within the scientific community to conduct research benefiting WMD-related defense missions and by improving Agency knowledge of other research efforts of potential benefit to DTRA non-proliferation, counterproliferation and consequence management efforts.

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
RU - Basic Research for WMD Knowledge Gaps	0.000	10.831	18.000

***** Funding and activities realigned from Project BT of PE 0601000BR in FY 2008.

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.

FY 2007 Accomplishments:

- Not Applicable. See Project BT of PE 0601000BR.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Basic Research – BA1	**PROJECT NAME AND NUMBER:** 0601000BR Project RU – Basic Research for WMD Knowledge Gaps

FY 2008 Plans:

- Expand the FY 2007 basic research portfolio to 90 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 will expand the portfolio to include research by Service and National Laboratories, as well as non-profit entities with university partners.

FY 2009 Plans:

- Expand the FY 2008 basic research portfolio by adding an additional 90 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 overall research goal is to have a 6.1 portfolio that represents approximately 10% of the DTRA research and development investment in the FY 2010 timeframe.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Procurement methods include in-scope award through DTRA University Strategic Partnership, collaborative funding through other organizations, and competitive award through Broad Agency Announcement.

E. Major Performers: Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technology; 0602716BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0602716BR Cost	**214.702**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Project BC - Force Protection & Technology App.	0.592	0.000	0.000	0.000	0.000	0.000	0.000
Project BD - Weapons Effects Technologies	71.774	0.000	0.000	0.000	0.000	0.000	0.000
Project BE - Testing Technologies & Integration	15.819	0.000	0.000	0.000	0.000	0.000	0.000
Project BF - CP Operational Warfighter Support	111.405	0.000	0.000	0.000	0.000	0.000	0.000
Project BG - Nuclear Operations	15.112	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification:

The mission of the DTRA is to safeguard America and its allies from WMD by reducing the present threat and preparing for the future threat. The approach to this challenge is contained within the three pillars of the DTRA mission**: non-proliferation, counterproliferation and consequence management. This program element specifically funds technologies necessary to defeat the threat from WMD.

Project BC provides assessment and mitigation technologies through mission vulnerability assessments of strategic systems while ensuring that recommendations for improvement are implemented through training, design, and construction to enhance force protection, vulnerability mitigation, and collective protection.

Project BD provides the research and development underpinning for the next generation of agent defeat, deny and disrupt counterforce weapons to meet WMD threat. This project seeks answers to these challenges by using state-of-the-art science and engineering capabilities, novel payload development and evaluation capability, and precision laboratory and field testing capabilities.

Project BE provides a unique national test bed capability for simulated WMD facility characterization, weapon-target interaction, and WMD facility defeat testing 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 weapons use against military or civilian systems/targets.

Project BF provides the bridge between the WMD Defeat Technology base and operational and intelligence community needs. The overall project goal is to support the Joint Chiefs of Staff, the warfighting Combatant Commanders and Services/agencies engaged in countering WMD threats and to protect the

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technology; 0602716BR

U.S. and its allies against military or terrorist use of WMD.

Project BG provides initiatives to locate, detect, defeat, and investigate the use of WMD against the U.S. and its allies, thereby protecting our citizens and critical infrastructures. The objective is to dissuade potential adversaries, whether they are nation states, terrorist groups, or criminal organizations, from using asymmetric means of war as a counter to U.S. conventional weapon superiority.

** Tasking for this mission is contained in the National Security Strategy, Unified Command Plan, National Strategy to Combat WMD, Counterproliferation Interdiction, National Strategy for Combating Terrorism, National Military Strategy, Strategic Planning Guidance, Contingency Planning Guidance, National Military Strategy for Combating WMD, National Military Strategic Plan for the War on Terrorism, Joint Strategic Capabilities Plan (including the Nuclear Annex), Security Cooperation Guidance, Quadrennial Defense Review, Nuclear Posture Review, and Defense Transformation Planning Guidance.

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**218.946**	**0.000**	**0.000**
Current President's Budget	**214.702**	**0.000**	**0.000**
Total Adjustments	**-4.244**	**0.000**	**0.000**
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings	**-0.994**		
SBIR/STTR Transfer	**-3.250**		

Change Summary Explanation: Not Applicable.

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

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technology; 0602716BR

D. Acquisition Strategy: Not Applicable.

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

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BC – Force Protection & Technology Apps.

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BC - Force Protection & Technology App.	0.592	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned into Program Element (PE) 0302199BR in FY 2008.

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

This project develops assessment and mitigation technologies to conduct mission vulnerability assessments of strategic U.S./Allied systems leading to the development of investment strategies for improved survivability. This project ensures that assessment training programs, engineering designs, and new construction embody sound force protection, vulnerability mitigation, and collective protection principles. Project's products and services include: Balanced Survivability Assessments; Vulnerability out-briefs and written reports; overall force protection vulnerability trend data; the National and North Atlantic Treaty Organization conferences for Underground Facility Managers; and Multi-disciplined technical engineering expertise support.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BC - Force Protection & Technology App.	0.592	0.000	0.000

*Funding and activities realigned into PE 0302199BR in FY 2008.

Performance Metrics:

- Fidelity of real-time information provided during on-site out-briefs, with a goal of 95%.
- Number of assessments completed, with a target of six per year.
- Timeliness and accuracy of follow-on written reports, with a goal of 90 days or less following completion of assessment.

FY 2007 Accomplishments:

- Conduct 12 balanced survivability and integrated, multi-discipline assessments of critical national/theater mission systems and defense and critical national infrastructure facilities as tasked by Office of the Secretary of Defense, Combatant Commands, and the Joint Staff. Conducted architectural analyses of the Army's Force XXI Battle Command, Brigade and Below (Blue Force Tracking) and the Defense Information System Agency's Request for Proposal of their new Headquarters facility, to determine systemic vulnerabilities.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BC – Force Protection & Technology Apps.

FY 2008 Plans:

- Not Applicable. See Program Element (PE) 0302199BR in FY 2008.

FY 2009 Plans:

- Not Applicable. See PE 0302199BR in FY 2008.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BD – Weapons Effects Technologies

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BD - Weapons Effects Technologies	71.774	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned into Projects RA, RG, RI, RL, RM and RU of Program Element (PE) 0602718BR and PE 0605000BR in FY 2008.

B. **Mission Description and Budget Item Justification:**

This project provides an over-arching framework for all Chemical, Biological, Radiological, Nuclear and High Explosive related modeling and simulation tools.

- Provides the warfighter and military engineers with state-of-the-art targeting support weapons effects models, structural dynamic models and computational tools for use in weaponeering, post strike assessment and force/mission protection. Develops, validates, and verifies lethality/vulnerability models and integrates those models into computational tools for expedient or deliberate pre-strike planning, post-strike assessment, intelligence analysis, and other related missions. Provide targeting support technology, tools and expertise in the areas of forensic analysis, vulnerability assessments and weapon/structure interactions in support of anti-terrorism and force protection missions.
- Provides nuclear weapon effects modeling and simulation, common DoD nuclear weapon stockpile and foreign nuclear weapon standard data handbooks for use in developing modeling and/or predictions of effects and subject matter expertise in nuclear weapon effects for joint DoD and Department of Energy nuclear studies and operational exercises.
- Develops an automated software system to provide the means to accurately predict the effects of hazardous material released into the atmosphere and its impact on civilian and military populations. The system uses integrated source terms, high-resolution weather forecasts and atmospheric transport & dispersion analyses to model hazard areas produced by military or terrorist incidents and industrial accidents.
- Capitalized on expertise developed through DoD, other U.S. government, and non-government supported research in various technologies to support, maintain and sustain the WMD technology base. Additionally, identified gaps in these capabilities and initiatied programs to fill them.
- Provides validated modeling and simulation tools to enable rapid access for planning, emergency response and assessment capabilities across a broad spectrum of conventional, unconventional and nuclear scenarios. Significant initiatives focus on extending legacy and future capabilities through web-services and web-browser based delivery methods.
- Develops and validates Chemical and Biological Weapon defeat and disrupt weapon effectiveness and collateral release diagnostics for the warfighter to mitigate the impact of the effects of WMD on all aspects of warfighting, to include communications, radar and optical sensor systems.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BD – Weapons Effects Technologies

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BD - Weapons Effects Technologies	71.774	0.000	0.000

*Funding and activities realigned into Projects RA, RG, RI, RL, RM and RU of Program Element (PE) 0602718BR and PE 0605000BR in FY 2008.

Performance Metrics:

- Number of software versions delivered to customer.
- Number of tests completed.
- Number of payloads developed.

FY 2007 Accomplishments:

- Initiated development of a directed energy centric Agent Deny/Disrupt payload supporting counterforce agent defeat, deny, disrupt.
- Began development of soft target agent defeat technologies supporting counterforce agent defeat, deny, disrupt.
- Delivered Integrated Munitions Effects Assessment this will incorporate architectural improvements and enhanced modeling techniques.
- Delivered Improved Ground Shock Vulnerability Number models used to assess vulnerability of deeply buried facilities.
- Integration of Hazard Prediction and Assessment Capability 5.0 into the Integrated Weapons of Mass Destruction Tool Kit (IWMDT) framework for development, and operational use of DTRA Science & Technology software.
- Completion and transition to operational capability of R&D framework IWMDT to the U.S. Strategic Command, Center for Combating WMD/Operations Center for real-time operational support.
- Initiated Phase III of Project Ancile to improve protection of critical infrastructure against WMD attacks.
- Conducted user orientation/training of Arms Control Enterprise System (ACES) Conventional Weapon module capability.
- Successfully completed the system Requirements Specification, System Architecture and Requirements allocation Description and Software Requirements Specification for development of the ACES strategic arms control capabilities.

FY 2008 Plans:

- Not Applicable. See Projects RA, RG, RI, RL, RM and RU of PE 0602718BR and PE 0605000BR in FY 2008.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BD – Weapons Effects Technologies

FY 2009 Plans:

- Not Applicable. See Projects RA, RG, RI, RL, RM and RU of PE 0602718BR and PE 0605000BR in FY 2008.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BE – Testing Technologies and Integration

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BE - Testing Technologies & Integration	15.819	0.000	0.000	0.000	0.000	0.000	0.000

***** Funding and activities realigned into Projects RA and RR of Program Element (PE) 0602718BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides a unique national test bed capability for simulated WMD facilities characterization, weapon-target interaction, and WMD facilities 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. Fifty years of testing expertise is leveraged 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). This project maintains testing infrastructure to support the requirements of warfighters, other government agencies, and friendly foreign countries. It develops 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; and supports 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.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BE - Testing Technologies & Integration	15.819	0.000	0.000

*Funding and activities realigned into Projects RA and RR of PE 0602718BR in FY 2008.

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 test activities that will undergo environmental assessment consistent with existing Environmental Impact Statements.

FY 2007 Accomplishments:

- Constructed a building for Test Operations Technology and Test Support, fabrication facility and Rotary Percussion Sounding System.

- Thermal Radiation Simulator Site Closure.
- N-Tunnel Closure, T-Tunnel Closure and initiation of T-Tunnel Rad/Non-Rad clean-up (Nevada Test Site).
- Advanced Research Electromagnetic Simulator remediation was initiated and completed (Kirtland Air Force Base, NM).
- Magnetic flyer was environmentally remediated, restored, and returned to Kirtland Air Force Base, NM.
- Designed and acquired a mobile instrumentation capability that supports the large, medium, and phenomenology test beds at the Permanent High Explosive Test Site, located at the White Sands Missile Range, NM.
- Conducted an R&D experiment to facilitate enhanced parsing of high-speed camera video documentation to better discern plume phenomenology.
- Initiated acquisition of 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.
- Completed closure reports for seven sites and completed the first Historical Cultural Assessment Report (Nevada Test Site).

FY 2008 Plans:

- Not Applicable. See Projects RA and RR of Program Element (PE) 0602718BR in FY 2008.

FY 2009 Plans:

- Not Applicable. See Projects RA and RR of PE 0602718BR in FY 2008.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BF - CP Operational Warfighter Support

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BF - CP Operational Warfighter Support	111.405	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned into Projects RA, RG, and RM of Program Element (PE) 0602718BR, Project RT of PE 0603160BR, and PE 0303150BR and PE 0302199BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project integrates technologies developed in other WMD defeat projects, to conduct a full spectrum of tests to verify capability enhancement, to expose customers to these capabilities in exercises, wargames and demonstrations, to integrate WMD defeat technologies into customer operations, and to support use of these capabilities during contingency operations.

Provides the warfighter with the capabilities and understanding for countering the use and effect of WMD and weapons of mass effects through the advancement of simulation technology, assessment of operational impact, development of collaborative capabilities and access to mature computer models. Provide an interface between DTRA model developers and the weapons effects simulation community to ensure relevance of DTRA models in interactive simulations through compliance with standards and protocols. Use advanced simulations to assist the warfighter in quantifiably assessing operational theater plans and post-attack warfighting effectiveness and to develop alternatives to mitigate the effects of WMD.

It develops advanced energetics and weapon concepts and technologies for tunnel defeat as recommended in the Hard & Deeply Buried Targets (HDBT) Science and Technology Master Plan; develops, demonstrates and transitions to the warfighter end-to-end capabilities to defeat HDBT. These capabilities embody synergistic effects of optimizing attack planning, the weapon and kill mechanism, and the tactics, techniques and procedures necessary to defeat a spectrum of HDBT. This supports warfighting requirements derived from the HDBT Initial Capabilities Document and RDT&E priorities set by the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics.

Provides support to the Intelligence Community and the Combatant Commands by providing technologies and processes to find and characterize HDBT assess the results of attacks then against those targets.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BF - CP Operational Warfighter Support

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BF - CP Operational Warfighter Support	111.405	0.000	0.000

*Funding and activities realigned into Projects RA, RG and RM of Program Element (PE) 0602718BR, Project RT of PE 0603160BR, and PE 0303150BR and PE 0302199BR in FY 2008.

Performance Metrics:

- Number of large-scale tests completed.
- Number of target characterizations, 3-D target models and weaponeering solutions delivered to the Combatant Commanders and Intelligence Community in response to prioritized requirements.
- Percent increase of Counter WMD weapon performance compared to fielded weapons (e.g. Bomb, Live Unit (BLU)-109 and BLU-113).
- Number of targeting tools tested and delivered.

FY 2007 Accomplishments:

- Completed major repair and renovation of a large hardened bunker target to support weapon testing and weapon penetration model development and validation.
- Finalized design of the multi-story bunker test bed to support weapon testing and weapon penetration model development and validation.
- Conducted a full-scale lethality test of a statically emplaced Massive Ordnance Penetrator inside DTRA's Capitol Peak Tunnel Facility, White Sands Missile Range, NM.
- Conducted a full-scale in-tunnel lethality test of a statically emplaced incendiary weapon at the DTRA's Dugway Proving Ground, UT tunnel test bed.
- Began integration of sensor systems data into our software tools to facilitate target status assessment for warfighters.
- Initiated adding WMD threat research and analysis characterization and assessment capabilities to the Target Assessment Technologies project with initial capability in FY 2008.
- Continued Integrated Sensor System ground sensor requirements definition and began system design to provide near-real-time data feed for enhanced target characterization and prompt bomb damage assessment.
- Provided target weaponeering recommendations and models to Targeting / Weaponeering Assistance Cell.

- Conducted full-size in-tunnel ordnance lethality tests at the DTRA Dugway Proving Ground tunnel test bed.
- Provided WMD expertise and modeling and simulation support during Noble Resolve 07, the first joint experiment co-sponsored by U.S. Northern Command, Homeland Security, and Joint Forces Command.
- Conducted a series of tabletop experiments examining the concerns surrounding "Loose Nukes".
- Generated the Senior Leader Report on Combating WMD; identifying future requirements for Combating WMD experimentation in partnership with partnership with Combatant Commanders, and other members of the community of interest.
- Demonstrated enhanced WMD situational awareness, command and control, and continued innovation at the Coalition Warrior Interoperability Demonstration 2007 establishing requirements for future decision support tools.
- Developed and successfully tested an Improvised Explosive Device Electronic Signature Detection capability able to identify electronic emission as opposed to identifying the operational frequency of devices.

FY 2008 Plans:

- Not Applicable. See Projects RA, RG, and RM of Program Element (PE) 0602718BR, Project RT of PE 0603160BR, and PE 0303150BR and PE 0302199BR in FY 2008.

FY 2009 Plans:

- Not Applicable. See Projects RA, RG, and RM of PE 0602718BR, Project RT of PE 0603160BR, and PE 0303150BR and PE 0302199BR in FY 2008.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602716BR Project BG – Nuclear Operations

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BG - Nuclear Operations	15.112	0.000	0.000	0.000	0.000	0.000	0.000

***** Funding and activities realigned into Projects RF of Program Element (PE) 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project conducts the research, development, test, and evaluation required to carry out the Agency's specified and implied missions articulated in the National Military Strategy, the Nuclear Posture Review, the Quadrennial Defense Review, and those directed by the Joint Chiefs of Staff (JCS) in the Joint Strategic Capabilities Plan Nuclear Annex. It concurrently lays a foundation for potential transformation activities within the nuclear arena as identified in DoD's Transformation Planning Guidance.

It enhances deterrence and proactively supports the agency's mission of WMD threat reduction. The research and development is focused on adapting engineering and integrating current or new technologies into user -friendly instruments to meet the WMD threat. Initiatives supported by this project include, but are not limited to: integrating and applying new technological advances to improving capabilities for locating and detecting, and defeating and attributing, old and emerging WMD threats in both civilian and military areas (when possible or feasible, other government agencies' expertise or technologies are leveraged, most notably the Department of Energy and the Domestic Nuclear Detection Office; conducting critical nuclear research, development, test and evaluation in support of the Combatant Commanders, Military Services, JCS and Office of the Secretary of Defense through the oversight and response to the direction of the Nuclear Weapons Council; assesses the continuously evolving Chemical, Biological, Radiological, Nuclear and High Explosives threat posed by old and new actors in the 21st Century.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BG - Nuclear Operations	15.112	0.000	0.000

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

Performance Metrics:

- Number of successful flight tests completed.
- Number of products provided to Special Operations Forces customers.

- Number of databases updated/enhanced.

FY 2007 Accomplishments:

- Maintained the Domestic Nuclear Event Attribution (DNEA) legacy thru monthly notification drills, quality assurance/quality control testing and successfully conducted three table top exercises and five field training exercises, the last being an external evaluation. The last field training exercise demonstrated a limited ground collection capability.
- Improved the ANDROS robot via several modifications to improve range and ability to perform improved sampling.
- Successful transitioned DNEA legacy lab support to Department of Energy.
- Enhanced/maintained the Sentry/Sniper databases. Expanded three-dimensional features to include real-time fly thru models. 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 Operations Forces.
- Began development at a library suite consisting of Chemical Warfare Agents, precursor, and Homemade Explosives.
- 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.

FY 2008 Plans:

- Not Applicable. See Projects RF of Program Element (PE) 0603160BR.

FY 2009 Plans:

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

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defense Technologies; 0602717BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0602717BR Cost	**109.513**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Project BC - Force Protection & Technology App.	3.488	0.000	0.000	0.000	0.000	0.000	0.000
Project BG - Nuclear Operations	21.499	0.000	0.000	0.000	0.000	0.000	0.000
Project BH - System Survivability	84.526	0.000	0.000	0.000	0.000	0.000	0.000

A. Mission Description and Budget Item Justification:

The mission of the DTRA is to safeguard America and its allies from WMD by reducing the present threat and preparing for the future threat. This mission directly reflects several national and DoD-level documents to include the National Security Strategy, Unified Command Plan, National Strategy to Combat WMD, Counterproliferation Interdiction, National Strategy for Combating Terrorism, National Military Strategy, Strategic Planning Guidance, Contingency Planning Guidance, National Military Strategy for Combating WMD, National Military Strategic Plan for the War on Terrorism, Joint Strategic Capabilities Plan (including the Nuclear Annex), Security Cooperation Guidance, Quadrennial Defense Review, Nuclear Posture Review, and Defense Transformation Planning Guidance (TPG). 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 as delineated in the TPG.

Project BC provides assessment and mitigation technologies through mission vulnerability assessments of strategic systems while ensuring that recommendations for improvement are implemented through training, design, and construction to enhance force protection, vulnerability mitigation, and collective protection.

Project BG provides analyses and experimental data to identify risks to the nation’s nuclear weapon systems in peacetime operations; evaluations to identify security weapons systems vulnerabilities in various environments; and support to ensure continued nuclear stockpile sustainability and viability.

Project BH develops and demonstrates affordable strategies and hardening technologies for U.S. systems and forces; conducts component, subsystem,

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defense Technologies; 0602717BR

system and end-to-end performance tests and assessments; and provides support on technical and policy matters that relate to the acquisition of survivable systems and strategic system sustainment.

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**110.602**	**0.000**	**0.000**
Current President's Budget	**109.513**	**0.000**	**0.000**
Total Adjustments	**-1.089**	**0.000**	**0.000**
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings	**0.994**		
SBIR/STTR Transfer	**-2.083**		

Change Summary Explanation: Not Applicable.

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

D. Acquisition Strategy: Not Applicable.

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

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BC – Force Protection & Technology Applications

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BC - Force Protection & Technology App.	3.488	0.000	0.000	0.000	0.000	0.000	0.000

*Funding and activities realigned into Program Element (PE) 0302199BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project develops assessment and mitigation technologies to conduct mission vulnerability assessments of strategic U.S./Allied systems leading to the development of investment strategies for improved survivability. This project also ensures that assessment training programs, engineering designs, and new construction embody sound force protection, vulnerability mitigation, and collective protection principles. Some of the project's products and services include: Balanced Survivability Assessments; Vulnerability out-briefs and written reports; overall force protection vulnerability trend data; the National and North Atlantic Treaty Organization conferences for Underground Facility Managers; and Multi-disciplined technical engineering expertise support.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BC - Force Protection & Technology App.	3.488	0.000	0.000

*Funding and activities realigned into PE 0302199BR in FY 2008.

Performance Metrics:

- Fidelity of real-time information provided during on-site out-briefs, with a goal of 95%.
- Number of assessments completed, with a target of six per year.
- Timeliness and accuracy of follow-on written reports, with a goal of 90 days or less following completion of assessment.

FY 2007 Accomplishments:

- Conduct 12 balanced survivability and integrated, multi-discipline assessments of critical national/theater mission systems and defense and critical national infrastructure facilities as tasked by Office of the Secretary of Defense, Combatant Commands, and the Joint Staff.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BC – Force Protection & Technology Applications

Conducted architectural analyses of the Army's Force XXI Battle Command, Brigade and Below (Blue Force Tracking) and the Defense Information Systems Agency's Request for Proposal of their new Headquarters facility, to determine systemic vulnerabilities.

FY 2008 Plans:

- Not Applicable. See Program Element (PE) 0302199BR.

FY 2009 Plans:

- Not Applicable. See PE 0302199BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BG – Nuclear Operations

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BG - Nuclear Operations	21.499	0.000	0.000	0.000	0.000	0.000	0.000

***** Funding and activities realigned into Projects RA, RF and RI of Program Element (PE) 0602718BR and PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project directly supports the National Military Strategy, including the dictates of the Nuclear Posture Review, and is directed by the Joint Chiefs of Staff (JCS) in the Joint Strategic Capabilities Plan Nuclear Annex. These programs are responsive to the oversight of the Nuclear Weapons Council and provide critical support to Combatant Commands, Services, JCS and Office of the Secretary of Defense.

As tasked by the DoD Nuclear Weapon System Safety Program, the surety programs provide Combatant Commands, Services and JCS 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.

MIGHTY GUARDIAN Force-on-Force tests aid in satisfying requirements for the U.S. Air Force and U.S. Navy to provide absolute denial of access to nuclear weapons in all environments, from storage to transit. The results of the evaluations identify security vulnerabilities to weapons systems in various environments. The U.S. Air Force and U.S. Navy identify projects that require research and development to demonstrate, test, and evaluate systems prior to Service procurement to successfully plan and conduct force-on-force tests and associated engineering studies that accurately evaluate the adequacy of DoD, Service and Combatant Commands nuclear security policies. Through physical security projects in support of Combatant Commands and Services, new and innovative technologies are developed for the protection of nuclear resources. Following proof-of-concept, these projects are transitioned to the Services for advanced development, procurement, and fielding.

As tasked, continue to operate as the Director of Defense Research and Engineering Executive Agent for Annual Certification support related stewardship and sustainment activities. Provide support to senior program managers and decision makers concerning issues associated with maintaining and improving the aging stockpile; senior level committees that identify and develop programs to improve the reliability and sustainability of the nuclear stockpile; and an outreach program to educate DoD planners and managers about issues associated with sustaining the nuclear stockpile. In support of national requirements necessary to maintain a viable nuclear deterrent, the Defense Integration and Management of Nuclear Data Services and the Nuclear Management Information System provides automated tools that enable users to maintain, report, track and highlight trends affecting the nuclear

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

weapon stockpile activities ensuring continued sustainability and viability of the nuclear stockpile.

Provide comprehensive combating WMD support to the DoD, as tasked by the Strategic Planning Guidance, the Contingency Planning Guidance, the Joint Strategic Capabilities Plan and other directing documents. Combating WMD encompasses all three pillars of the National Strategy – Nonproliferation, Counterproliferation, and Consequence Management and the eight mission areas – treaties and agreements, threat control and reduction, WMD interdiction, WMD elimination, offensive operations, active defense, passive defense, and consequence management.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BG - Nuclear Operations	21.499	0.000	0.000

*Funding and activities realigned into Projects RA, RF and RI of Program Element (PE) 0602718BR and PE 0603160BR in FY 2008.

Performance Metrics:

- Successful completion of Mighty Guardian test, measured by completing all necessary planning and logistics steps, troops arriving when required, training completed, execution of the test, redeployment of forces, and publishing a final report within 90 days of completion.
- Development of a DoD annex to the National Response plan for a pandemic flu and subsequent national-level exercises to test plan.
- Development of DTRA Security Cooperation Plans for all regional Combatant Commands.
- Successful completion of Nuclear Management Information System integration: measured by officially establishing Defense Integration and Management of Nuclear Data Services (DIAMONDS) as the stockpile database system of record.
- Successful completion of advanced DIAMONDS capabilities: measured by the deployment of an interactive Joint Nuclear Weapons Publication System module, Decision Support Module, in-transit nuclear weapons tracking module, the Nuclear Inventory Management and Cataloging System, and Computer-Based Training module to all U.S. Air Force and U.S. Navy nuclear strategic and custodial units.

FY 2007 Accomplishments:

- Conducted Mighty Guardian X Force-On-Force Kirtland Air Force Base, NM.
- Continued preparation for Mighty Guardian XI Force-One-Force at White Sands Missile Range, NM.
- Continued preparation for Mighty Guardian XII Force-One-Force at Minot Air Force Base, ND.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BG – Nuclear Operations

- Continued hazard analysis research and development of nuclear weapon fire involvement modeling simulations for the U.S. Air Force for use in the Integrated WMD Tool Kit and Nuclear Capabilities Services.
- Conducted fire prevention and suppression hardware development, and fact finding for the production of a Uniform Facility Criteria for DoD nuclear weapon capable storage and maintenance buildings.
- Continued to provide enhanced technical and operational support and analysis to 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.
- Continued to provide operational and technical support to DoD and National Nuclear Security Administration through the DTRA Stockpile Associate Program and U.S. Air Force Institute of Technology sponsorship.
- Completed Nuclear Management Information System integration, parallel test and establish Defense Integration and Management of Nuclear Data Services (DIAMONDS) as system of record.
- Completed fielding of DIAMONDS at U.S. Navy sites by end of 1st quarter, FY 2007.
- Developed and deployed enhanced reporting system in DIAMONDS.
- Initiated planning advanced/interactive Joint Nuclear Weapons Publications in DIAMONDS.
- Initiated Decision Support Module development for DIAMONDS.

FY 2008 Plans:

- Not Applicable. See Projects RA, RF and RI of Program Element (PE) 0602718BR and PE 0603160BR.

FY 2009 Plans:

- Not Applicable. See Projects RA, RF and RI of PE 0602718BR and PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BH – System Survivability

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BH - System Survivability	84.526	0.000	0.000	0.000	0.000	0.000	0.000

* Funding and activities realigned into Projects RA, RF, RI of Program Element (PE) 0602718BR and PE 0603160BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project constitutes the DoD resident science and technology expertise in nuclear and related survivability matters. It develops and demonstrates affordable strategies and hardening technologies for U.S. systems and forces; transfers the technical products to acquisition program offices; conducts component, subsystem, system and end-to-end performance tests and assessments for the Services and Combatant Commands; and provides support to Office of the Secretary of Defense on technical and policy matters that relate to the acquisition of survivable systems and strategic system sustainment. This project encompasses activities in four technology areas: Radiation Hardened Microelectronics, Simulation Technology, Assessment Technology and Radiation Detection Technologies.

The Radiation Hardened Microelectronics area responds to DoD space and missile system requirements for radiation-hardened microelectronics and photonics technology to support mission needs.

The Simulation Technology area provides the test capability to produce a radiation environment similar to that of a nuclear detonation. These nuclear weapon effects simulators are used to validate nuclear survivability requirements for DoD missile and space systems, conduct research in radiation effects, and validate computational models.

The Assessments Technology area focuses on ensuring that critical national systems (infrastructures, facilities, and command and control systems) can survive and operate in the event of a nuclear weapon detonation, and it provides nuclear and radiological modeling and simulation predictions for use by decision makers. It provides products and assistance to system program offices, agencies, the Services, Combatant Commands and the National Command Authority. It develops tools that assess the vulnerabilities of mission essential infrastructure, nuclear missile interceptors, strategic radar systems, strategic command and control networks, computers, sensors, satellites, and other critical warfighting systems. This activity provides nuclear electromagnetic pulse technical expertise to assist DoD in ensuring the Nation’s Nuclear Command and Control System and other mission essential systems can operate in a nuclear electromagnetic pulse environment.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BH – System Survivability

Detection Technologies develops or exploits radiation sensor, dosimetry and biological technologies and integrates them into real-time, forward-deployed tools for characterizing radiologically hazardous environments. Its products protect the health and welfare of U.S. service personnel and allied forces by monitoring human survivability during operations on the radiological/WMD battlefield or in areas of suspected WMD development or release.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BH - System Survivability	84.526	0.000	0.000

*Funding and activities realigned into Projects RA, RF, RI of Program Element (PE) 0602718BR and PE 0603160BR in FY 2008.

Performance Metrics:

- Achieve Radiation Hardened (RH) 150 nanometer (nm) structured- Application Specific Integrated Circuit, RH 150nm 16M Static Random Access Memory and Radiation Hardened by Design 90nm reconfigurable Field Programmable Gate Array.
- Provide DoD 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.
- Number of radiation detector prototypes completed.

FY 2007 Accomplishments:

- Performed numerous technical assessments in support of the Nation's Nuclear Command and Control System to ensure survivable performance in a nuclear electromagnetic pulse environment.
- Continued to develop the first-ever DoD Military-Standard for High-altitude Electromagnetic Pulse Protection and Testing Standard for aircraft.
- Developed and provided new products and tools to assist System Program Offices, Agencies, and the National Command Authority such as an Electromagnetic Pulse (EMP)-hardened laser power cord and a Built-in Automated Hardness Maintenance and Surveillance Detection System for EMP-hardened cabinet-based networks.
- Demonstrated radiation hardened 150nm bulk silicon and silicon-on insulator technologies in the following integrated circuits: 16M Static Random Access Memory, structured Application-Specific Integrated Circuit, and 250Kgate Field Programmable Gate Array. These devices will support systems that include Transformational Satellite Communications, Space-Based Radar and other National Command, Control,

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602717BR Project BH – System Survivability

Communications, Computer, Intelligence, Surveillance and Reconnaissance space assets.

- Demonstrated innovative radiation hardening methods for 90nm technology, RH Electronic Design Automation 150nm design capability for combined digital and analog/mixed-signal technologies.
- Planned for disposition of DTRA Nuclear Weapons Effects simulators to a fully-reimbursable business model in order to sustain a test capability for DoD and Department of Energy system developers.
- Performed demonstrations of a high-resolution imaging gamma spectrometer using Cadmium-Zinc-Tellurium crystals and neutron detectors for handheld and distributed sensor applications.
- Demonstrated detection of unshielded Uranium at 100m using a Gamma-Ray Active Interrogation System.
- Continued the development of a capability to obtain a comprehensive situational awareness assessment provided by an integrated sensor network incorporating near real-time triggers and detection capabilities.
- Developed methodologies and conducted studies that have resulted in the first ever approaches to understanding agent-based interactions at such detail for continental United States military populations
- Partnered with the Center for Blast Mitigation & Protection to develop a prototype of personal computer-based Computational Fluid Dynamics code and interfaced it with Vulnerability Assessment and Protection Option (VAPO) software. Detailed airblast calculations normally done at high performance computing centers can now be done within the VAPO vulnerability assessment tool.

FY 2008 Plans:

- Not Applicable. See Projects RA, RF and RI of Program Element (PE) 0602718BR and PE 0603160BR.

FY 2009 Plans:

- Not Applicable. See Projects RA, RF and RI of PE 0602718BR and PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

NOTE - FY 2007 Rounding adjustment at the Department level - $.994M

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technologies; 0602718BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0602718BR Cost	**0.000**	**211.325**	**211.078**	**214.469**	**219.535**	**209.906**	**207.962**
Project RA - Systems Engineering and Innovation	0.000	27.600	26.342	24.870	23.770	23.772	23.727
Project RF - Detection Technology	0.000	48.499	39.498	43.707	48.387	41.392	37.607
Project RG - Advanced Energetics & Counter WMD Weapons	0.000	27.899	30.748	28.500	27.445	22.447	20.879
Project RI - Nuclear Survivability	0.000	8.925	10.421	10.413	5.588	5.588	5.588
Project RL - Nuclear & Radiological Effects	0.000	34.580	36.650	39.795	44.428	44.342	46.069
Project RM - WMD Battle Management	0.000	27.158	29.137	25.750	26.320	25.769	27.495
Project RR - Test Infrastructure	0.000	19.903	19.986	20.196	20.367	20.367	20.367
Project RU - Basic Research for WMD Knowledge Gaps	0.000	16.761	18.296	21.238	23.230	26.229	26.230

A. Mission Description and Budget Item Justification:

The mission of the DTRA is to safeguard America and its allies from WMD by reducing the present threat and preparing for the future threat. This mission directly reflects several national and DoD-level documents to include the National Security Strategy, Unified Command Plan, National Strategy to Combat WMD, Counterproliferation Interdiction, National Strategy for Combating Terrorism, National Military Strategy, Strategic Planning Guidance, Contingency Planning Guidance, National Military Strategy for Combating WMD, National Military Strategic Plan for the War on Terrorism, Joint Strategic Capabilities Plan (including the Nuclear Annex), Security Cooperation Guidance, Quadrennial Defense Review, Nuclear Posture Review, and Defense Transformation Planning Guidance (TPG). 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 as delineated in the TPG.

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

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technologies; 0602718BR

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 DoD requirements for combating terrorism, counter- and non-proliferation, homeland defense, and international initiatives and agreements.

Project RG develops advanced technologies and weapon concepts to validate their applicability as counter WMD weapon systems.

Project RI provides the capability for DoD nuclear forces and their associated control and support systems and facilities in wartime to avoid, repel, or withstand attack or other hostile action, to the extent that essential functions can continue or be resumed after the onset of hostile action.

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

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

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

Project RU provides strategic studies to support DoD and national strategies to combat WMD. These strategic studies address challenges in reducing the threat from WMD based on an assessment of the future national security environment.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**R-1 ITEM NOMENCLATURE:** WMD Defeat Technologies; 0602718BR

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**0.000**	**182.416**	**204.501**
Current President's Budget	**0.000**	**211.325**	**211.078**
Total Adjustments	**0.000**	**28.909**	**6.577**
Congressional program reductions		**-1.491**	
Congressional rescissions			
Congressional increases		**30.400**	
Reprogrammings			**6.577**
SBIR/STTR Transfer			

Change Summary Explanation: Additional funds of $7 million in FY 2009 related to the U.S. Strategic Command's Budget Change Proposal (Standoff Nuclear Detection) to "research, determine feasibility of, and develop standoff nuclear detection capabilities using high energy muon beams".

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

D. Acquisition Strategy: Not Applicable.

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

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RA – Systems Engineering and Innovation

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RA - Systems Engineering and Innovation	0.000	27.600	26.342	24.870	23.770	23.772	23.727

***** Funding and activities realigned from Projects BB, BD, BE, BF, BG, and BH of Program Element (PE) 0602716BR and PE 0602717BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides systems engineering and analysis support across all other Projects and innovative counterproliferation research. Provide Systems Engineering reachback WMD technical expertise interface to Warfighters and First Responders with DTRA's Combating WMD Research and Development subject matter experts. Provides research and development analysis necessary for the management of the Research and Development Enterprise, to include strategic planning, new initiatives in information management and business technology, cooperation, and ventures with new customers, and accomplishment of high-level, short notice special projects. Conduct counterproliferation research and development to investigate, identify, develop and transition innovative technologies from DTRA, other government agencies, industry, academia and international Science and Technology partners into the respective DTRA research and development programs. Provide technical support to the DTRA London Office.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RA - Systems Engineering and Innovation	0.000	27.600	26.342

***** Funding and activities realigned from Projects BB, BD, BE, BF, BG, and BH of Program Element (PE) 0602716BR and PE 0602717BR in FY 2008.

Performance Metrics:

- Number of Requests for Information and run equivalents per year.
- Number of exercise and operations supported.
- Student days of training per year and decision support tools covered.
- New capabilities delivered and transitioned to Operation and Maintenance.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RA – Systems Engineering and Innovation

FY 2007 Accomplishments:

- Not Applicable. See Projects BB, BD, BE, BF, BG, and BH of Program Element (PE) 0602716BR and PE 0602717BR in FY 2008.

FY 2008 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.
- Complete development of the Arms Control Enterprises System Strategic Module to incorporate nuclear reporting requirements of international treaties, and transition completed module.
- 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.

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.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0603160BR: Project RA - Systems Engineering and Innovation		0.000	8.917	3.652

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RF –Detection Technology

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RF - Detection Technology	0.000	48.499	39.498	43.707	48.387	41.392	37.607

***** Funding and activities realigned from Projects BG and BH of Program Element (PE) 0602716BR and PE 0602717BR in FY 2008.

A. Mission Description and Budget Item Justification:

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RF - Detection Technology	0.000	48.499	39.498

***** Funding and activities realigned from Projects BG and BH of PE 0602716BR and PE 0602717BR.

Performance Metrics:

- Completion and successful laboratory testing of the helium dimer Compton imager.
- Successful completion of the individual digital dosimeter project.
- Increased standoff detection distance for nuclear material detection.
- Improved attribution tool capabilities.

FY 2007 Accomplishments:

- Not Applicable. See Projects BG and BH of PE 0602716BR and PE 0602717BR.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RF –Detection Technology

FY 2008 Plans:

- Perform laboratory 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. Validate performance of new detector materials, imaging and spectroscopy systems, and signals analysis methods.
- Investigate approaches to achieve detection of nuclear material at over 100 meters, through stimulating detectable emissions from shielded nuclear materials. Approach will focus on generating highly-directional, high-energy beams of photons or particles. Potential technologies include, but are not limited to, particle accelerators, Bremsstrahlung gamma-ray generators, neutron generators, and muon generators.
- Improve capability to collect radionuclide materials in post-detonation field environments, conduct rapid analysis, and contribute actionable information to the attribution process.

FY 2009 Plans:

- 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.
- Design systems capable of generating highly-directional, high-energy beams of photons or particles. Potential technologies include, but are not limited to, particle accelerators, Bremsstrahlung gamma-ray generators, neutron generators, and muon generators.
- Demonstrate capability to collect radionuclide materials in post-detonation field environments, conduct rapid analysis, and contribute actionable information to the attribution process.
- Investigate the use of muon beams to stimulate increased sighnatures in nuclear material at standoff ranges (more than 1 kilometer).

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0603160BR: Project RF – Detection Technology		0.000	43.640	40.018

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RG – Advanced Energetics and Counter WMD Weapons

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RG - Advanced Energetics & Counter WMD Weapons	0.000	27.899	30.748	28.500	27.445	22.447	20.879

* Funding and activities realigned from Projects BD and BF of Program Element (PE) 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides applied research supporting defeat of 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 bunker buster capability that produces a threshold of five-fold 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:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RG - Advanced Energetics & Counter WMD Weapons	0.000	27.899	30.748

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

Performance Metrics:

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

FY 2007 Accomplishments:

- Not Applicable. See Projects BD and BF of PE 0602716BR.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RG – Advanced Energetics and Counter WMD Weapons

FY 2008 Plans:

- Continue development of technologies for counterforce agent defeat, advanced payloads, counter WMD payload delivery systems, and advanced counter WMD weapons.
- Conduct flight demonstration tests of the Massive Ordnance Penetrator to demonstrate it's capability against Hard and Deeply Buried Targets (HDBTs).
- Demonstrate prototype of full-scale live simulant integrated diagnostic architecture supporting test of agent defeat weapons.
- Continue Precision Large Payload Delivery (PMOD) Concept Development and Preliminary Design supporting ten-fold increase of counter-WMD weapon effectiveness over fielded weapons.
- Begin non-kinetic payload development for functional defeat of WMD targets.

FY 2009 Plans:

- Continue development of technologies for counterforce agent defeat, advanced payloads, counter WMD payload delivery systems, and advanced counter WMD weapons.
- Complete integration/testing of Insensitive Munitions Agent Defeat Bomb, Live Unit-109 Payload.
- Complete Counter WMD Deny Payload component test.
- Continue full-scale tunnel lethality tests on promising high-energy fills.
- Conduct the Advanced Penetrator for Stealth Platforms lethality assessment for HDBT Defeat.
- Continue PMOD design, refinement of concepts, and technology assessments.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0603160BR: Project RG - Advanced Energetics & Counter WMD Weapons		0.000	19.549	20.550

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RI - Nuclear Survivability

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RI - Nuclear Survivability	0.000	8.925	10.421	10.413	5.588	5.588	5.588

***** Funding and activities realigned from Projects BD of Program Element (PE) 0602716BR and Projects BG and BH of PE 0602717BR in FY 2008.

A. Mission Description and Budget Item Justification:

The Nuclear Survivability Technology Project (NSTP) 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. Emphasis is on ionizing radiation effects and Electromagnetic Pulse (EMP). The NSTP provides Radiation Hardened Microelectronics, Nuclear Weapons Effects test capability, and EMP hardening techniques and protocols.

The Simulation Technology area is being discontinued starting in FY 2007 with disposition of the West Coast Facility, San Leandro, CA. Historically it has provided the test capability to produce a radiation environment similar to that of a nuclear detonation. These nuclear weapon effects simulators are used to validate nuclear survivability requirements for DoD missile and space systems, conduct research in radiation effects, and validate computational models.

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RI - Nuclear Survivability	0.000	8.925	10.421

***** Funding and activities realigned from Projects BD of PE 0602716BR and Projects BG and BH of PE 0602717BR in FY 2008.

Performance Metrics:

- Complete disposition of simulator hardware by September 30, 2010.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RI - Nuclear Survivability

- Nuclear Weapons Effects Users' Group (NWEUG): Coordinate and integrate nuclear weapon effects needs, capabilities and programs across the defense community and provide accreditation authority for all nuclear-related modeling and simulation.

FY 2007 Accomplishments:
- Not Applicable. See Projects BG and BH of Program Element (PE) 0602717BR.

FY 2008 Plans:
- Complete disposition of DECADE and continue West Coast Facility (WCF) simulator hardware removal. The WCF cleanup is expected to continue through FY 2010.
- Support NWEUG conference at a U.S. location or in the United Kingdom.

FY 2009 Plans:
- Continue disposition of WCF equipment.
- Support NWEUG conference at a U.S. location or in the United Kingdom.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0603160BR: Project RI - Nuclear Survivability		0.000	18.848	18.867

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RL - Nuclear & Radiological Effects

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RL - Nuclear & Radiological Effects	0.000	34.580	36.650	39.795	44.428	44.342	46.069

***** Funding and activities realigned from Project BD of Program Element (PE) 0602716BR in FY 2008.

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 DTRA 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 DoD.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RL - Nuclear & Radiological Effects	0.000	34.580	36.650

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

Performance Metrics:

- Complete transition of all hazard source terms to the Chem-Bio Defense Program’s Joint Effects Model (JEM) Block II enhancing our ability to predict hazards associated with WMD.
- Develop and integrate baseline database of 80% of current foreign nuclear reactors and enrichment facilities.
- Provide DoD the ability to predict the survival and mission impact of military critical systems exposed to nuclear weapon environments within acceptability criteria defined during the model accreditation process.
- Transition required capabilities to the Chem-bio Defense Program’s JEM and Joint Operational Effects Federation, the Missile Defense Agency, U.S. Space Command, and U.S. Strategic Command's planning suite.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RL - Nuclear & Radiological Effects

FY 2007 Accomplishments:

- Not Applicable. See Project BD of Program Element (PE) 0602716BR.

FY 2008 Plans:

- Enhance and develop models allowing the predictions and analysis of nuclear survivability for military communication satellites, the power grid as supporting the Global Information Grid (GIG), and the Army' Future Combat System.
- 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 GIG.
- Complete the high altitude nuclear weapon detonation data review in support of High Altitude Electromagnetic Pulse (EMP) modeling.
- Conduct tests of liquid and powder Radiological Dispersal Devices (RDD) materials and complete RDD reference book.
- Develop and integrate baseline database of 80% of current foreign nuclear infrastructure facilities into targeting and hazard prediction codes.

FY 2009 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.
- Complete development and integration of the EMP prediction model and low equivalent dose radiation cancer algorithms.
- Assess EMP effects on power grid components to determine impacts to the DoD's GIG.
- Initiate component fragility testing and develop fuel history code for Russian and Canadian designed nuclear power plants.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0605000BR: RL - Nuclear & Radiological Effects		0.000	15.296	15.946

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RM - WMD Battle Management

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RM - WMD Battle Management	0.000	27.158	29.137	25.750	26.320	25.769	27.495

***** Funding and activities realigned from Projects BD and BF of Program Element (PE) 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides applied research supporting (1) full scale testing of counter WMD weapon effects, sensor performance, and weapon delivery optimization, (2) weapon effects modeling, and (3) the DTRA Experimentation Lab**.**

This project is maturing these capabilities to provide combatant commanders a variety of options to attack 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 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, and creates/modifies software to more accurately model cratering effects, fragmentation (both primary & secondary), equipment/container fragility, structural response, quasi-static dispersion & damage, and penetration.

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.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RM - WMD Battle Management	0.000	27.158	29.137

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

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RM - WMD Battle Management

Performance Metrics:
- Number of tests completed.
- Percent increase of model confidence.

FY 2007 Accomplishments:
- Not Applicable. See Projects BD and BF of Program Element 0602716BR.

FY 2008 Plans:
- Conduct demonstration of tunnel defeat using the tunnel collapse/breach methodology using a statically emplaced weapon.
- Enhance modeling of Chem/Bio effects on human entities and integrate DTRA models with next-generation U.S. Army Chemical, Biological, Radiological and Nuclear (CBRN) simulation federates in experimentation.
- Provide 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.
- Integrate Combined Enterprise Regional Information Exchange System Coalition Capabilities to increase effectiveness of the DTRA Experimentation Lab.
- Continue research and development supporting counter WMD weapons effect modeling & testing and the DTRA Experimentation Lab.
- Deliver Improved Groundshock Vulnerability Number capability to Defense Intelligence Agency and U.S. Strategic Command to replace existing one dimensional vulnerability assessment models with fast-running two dimensional models for strategic targeting.

FY 2009 Plans:
- Complete Quasi Static Pressure Dispersion Damage tests to improve understanding of weapon effects phenomenology and enhance WMD planning tools.
- Continue research and development supporting counter WMD weapons effect modeling & testing and the 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.
- Formulate Combined Simulation Federation to increase effectiveness of the DTRA Experimentation Lab.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RM - WMD Battle Management

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0603160BR: Project RM - WMD Battle Management		0.000	55.475	55.621

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RR - Test Infrastructure

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RR - Test Infrastructure	0.000	19.903	19.986	20.196	20.367	20.367	20.367

***** Funding and activities realigned from Project BE of Program Element (PE) 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project 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. 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 counterproliferation pillar of the National Strategy to Combat WMD.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RR - Test Infrastructure	0.000	19.903	19.986

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

Performance Metrics:

- Number of tests executed safely, i.e., no loss of life or limb, no unintentional significant damage of property.
- Number of tests that go through the milestone review process.
- Number of tests that undergo environmental assessment consistent with existing Environmental Impact Statements.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RR - Test Infrastructure

FY 2007 Accomplishments:

- Not Applicable. See Project BE of Program Element 0602716BR.

FY 2008 Plans:

- Continue to upgrade and integrate facilities and support personnel from the Technical Evaluation Assessment Monitoring Site.
- 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 Cultural Resource Assessment and seven of seven site studies (Nevada Test Site).
- Large Test Structure-1&2 Demolition and Joint Air Surface Standoff Missile Test structure demolition.
- Improve 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.
- Continue with environmental remediation of the Nevada Test Site.
- Continue 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.

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 construction of an engineering building at Dugway Proving Ground.
- 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.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Applied Research - BA2	**PROJECT NAME AND NUMBER:** 0602718BR Project RU – Basic Research for WMD Knowledge Gaps

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RU - Basic Research for WMD Knowledge Gaps	0.000	16.761	18.296	21.238	23.230	26.229	26.230

***** Funding and activities realigned from Project BD of Program Element (PE) 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

This project conducts strategic studies to support the DoD and national strategies to combat WMD. 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 U.S. and allied forces and citizens from nuclear, biological, and chemical attack and identify gaps in these capabilities and initiate programs to fill them.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RU - Basic Research for WMD Knowledge Gaps	0.000	16.761	18.296

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

Performance Metrics:

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

FY 2007 Accomplishments:

- Not Applicable. See Project BD of PE 0602716BR.

FY 2008 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.
- Continue and expand the investigation of promising candidate advanced applied scientific and technical research and development projects.
- Continue the sponsorship and education of the “Next Generation” of mission-critical scientific, technical and engineering expertise.
- Continue 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.
- Continue and expand the investigation of promising candidate advanced applied scientific and technical research and development projects.
- Continue the sponsorship and education of the "Next Generation" of mission-critical scientific, technical and engineering expertise.
- Continue examination of emerging technologies and underlying sciences applicable to combating WMD, with increased emphasis on avoiding technical surprise.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0601000BR: RU - Basic Research for WMD Knowledge Gaps		0.000	10.831	18.000

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**R-1 ITEM NOMENCLATURE:** Proliferation Prevention and Defeat; 0603160BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0603160BR Cost	**111.911**	**215.609**	**211.325**	**215.254**	**210.421**	**216.344**	**223.855**
Project BI - Detection Technology	23.462	0.000	0.000	0.000	0.000	0.000	0.000
Project BJ - SOF Counterproliferation Support	16.446	0.000	0.000	0.000	0.000	0.000	0.000
Project BK - Counterforce	72.003	0.000	0.000	0.000	0.000	0.000	0.000
Project RA - Systems Engineering and Innovation	0.000	8.917	3.652	3.894	3.924	3.918	3.913
Project RE - Counter-Terrorism Technologies	0.000	45.709	45.424	45.399	44.367	44.367	44.367
Project RF - Detection Technology	0.000	43.640	41.018	42.608	46.306	47.959	45.788
Project RG - Adanced Energetics & Counter WMD Weapons	0.000	19.549	20.550	19.670	24.706	29.321	37.997
Project RI - Nuclear Survivability	0.000	18.848	18.867	18.867	18.867	18.868	18.869
Project RM - WMD Battle Management	0.000	55.475	55.621	56.668	42.200	41.500	42.500
Project RT - Target Assessment Technologies	0.000	23.471	26.193	28.148	30.051	30.411	30.421

A. Mission Description and Budget Item Justification:

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

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

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**116.630**	**213.240**	**211.555**
Current President's Budget	**111.911**	**215.609**	**211.325**
Total Adjustments	**-4.719**	**2.369**	**-0.230**
Congressional program reductions		**-1.395**	
Congressional rescissions			
Congressional increases		**6.200**	
Reprogrammings	**-3.308**		**-0.230**
SBIR/STTR Transfer	**-1.411**	**-2.436**	

Change Summary Explanation: Not Applicable.

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

D. Acquisition Strategy: Not Applicable.

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BI – Detection Technology

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BI - Detection Technology	23.462	0.000	0.000	0.000	0.000	0.000	0.000

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

A. Mission Description and Budget Item Justification:

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

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

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

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

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BI - Detection Technology	23.462	0.000	0.000

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

Performance Metrics:

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

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

FY 2007 Accomplishments:

- Began executing the Smart Threads Integrated Radiological Sensors Joint Capabilities Demonstration to demonstrate a modular radiation detection system capable of being mounted on multiple platforms (man-portable, vehicles, boats and aerial. The system can be seamlessly integrated into a sensor network to provide battlespace awareness for the combatant commander.
- Successfully demonstrated a system to conduct laser-based standoff analysis of radiological material, and delivered an improved robotic vehicle to collect post-detonation radiological debris.
- Demonstrated improved performance of handheld nuclear detectors, and demonstrated capability to detect, identify, and locate several radiological sources simultaneously using a single prototype detector system.
- Demonstrated the capability to detect nuclear material at over 100 meters using a gamma-ray active interrogation system.
- Continued testing of radioisotope identifiers to improve performance and quality of isotope libraries/algorithms in shielded and masked environments.
- Continued improvements to government-owned radiation detection equipment to improve operational utility to DoD users.
- Developed a compact low-cost active sensor for aided target identification in Unmanned Aerial Vehicle (UAV) operations able to be used with a mapping system on a small UAV with estimated speeds between 70-140 mph.
- Delivered new Arms Control Enterprise System (ACES) Module: Inspection Planning Module.
- Conducted multi-agency/multi-service Tabletop Exercise of Campaign X to Support Gap Analysis for FY 2008 Science and Technology Investment Strategy.
- ACES achieved full operational capability to ensure compliance with these conventional arms control treaties and agreements: Conventional Armed Forces in Europe, Vienna Document 1999, Open Skies, Transparency in Armaments, Global Exchange of Military Information, and the Wassenaar Arrangement.
- Successfully completed preliminary and critical design reviews for development of the ACES Strategic Arms Reduction Treaty module.
- Initiated Connectory Expansion for Rapid Identification of Technology Sources project.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BI – Detection Technology

- Initiated studies to investigate the available quantities of critical metals and evaluate future needs of the the DoD.

FY 2008 Plans:
- Not Applicable. See Projects RA and RF of Program Element (PE) 0603160BR.

FY 2009 Plans:
- Not Applicable. See Projects RA and RF of PE 0603160BR.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BJ – SOF Counterproliferation Support

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BJ - SOF Counterproliferation Support	16.446	0.000	0.000	0.000	0.000	0.000	0.000

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

A. Mission Description and Budget Item Justification:

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

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

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BJ - SOF Counterproliferation Support	16.446	0.000	0.000

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

Performance Metrics:

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

FY 2007 Accomplishments:

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

FY 2008 Plans:

- Not Applicable. See Project RE of Program Element (PE) 0603160BR.

FY 2009 Plans:

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

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BK - Counterforce

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project BK - Counterforce	72.003	0.000	0.000	0.000	0.000	0.000	0.000

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

A. Mission Description and Budget Item Justification:

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

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project BK - Counterforce	72.003	0.000	0.000

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BK - Counterforce

Performance Metrics:

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

FY 2007 Accomplishments:

- Developed and integrated an infrared, video payload into the FINDER Unmanned Aerial Vehicle to address Air Forces Special Operations Command requirement for off-board, below the weather imagery for pre-strike target identification and post-strike battle damage assessment.
- Conducted mid and full scale testing of taggant technologies to enable integration of taggant into a counter-WMD strike weapon system.
- Analyzed and modeled with high fidelity computer codes a historical large scale underground test to increase confidence in ground shock and tunnel response codes.
- Completed Biological Combat Assessment System (BCAS) system design.
- Initiated fabrication of BCAS hardware to support Spiral 1 demonstration.
- Conducted full scale static testing of taggant technology in BLU-116 Advanced Unitary Penetrator.
- Began developing requirements for DoD Tier II and III unique equipment to enhance first responders' ability to safely detect, diagnose, and defeat Radiological Dispersal and Chemical/Biological Devices through table top and field exercises.
- Delivered Special Operation Forces (SOF)-unique technologies under the SOF Venture program. Projects completed: Standoff Chemical Detection, Prototype Phase I of Integrated Micro-Climatization System.
- Initiated development of a spray-on protective coating under SOF Venture biological/chemical defense.
- Conducted demonstration of alternate guidance kits with the thermobaric BLU-121/B warhead.
- Conducted site selection for Reusable Full-Scale Simulant Testbed.
- Demonstrated high speed munitions nose design that provides stable trajectory in soft material and good performance in hard material.
- Developed miniaturized, hardened, void-sensing fuze components for high-G applications.
- Developed defeat planning capability for multistory buildings with basement bunkers.
- Conducted penetration survivability test of improved BLU-121 warhead with new Fuze well and case design.
- Integrated improved geospatial information, such as that provided by National Geospatial-Intelligence Agency, National Reconnaissance Office and Project Angel Fire, into the WMD Common Operating Picture and other Command and Control capabilities for enhanced decision.
- Completed Adapted Response (Chemical) Advanced Technology Demonstrations that delivers Military Utility Assessments on Personal Protective Equipment, Agent Defeat, Equipment Decontamination, Unknown Substance Identifier, Integrated Chemical Database and proof of concept on other projects classified Alternative Compensative Control Measures.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project BK - Counterforce

FY 2008 Plans:

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

FY 2009 Plans:

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

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RA – Systems Engineering and Innovation

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RA - Systems Engineering and Innovation	0.000	8.917	3.652	3.894	3.924	3.918	3.913

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

A. Mission Description and Budget Item Justification:

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RA - Systems Engineering and Innovation	0.000	8.917	3.652

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

Performance Metrics:

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

FY 2007 Accomplishments:

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RA – Systems Engineering and Innovation

FY 2008 Plans:

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

FY 2009 Plans:

- Institutionalize development of Combating WMD lessons learned in that theater and with international staff across the other Combatant Commands.
- Continue to support development and update of DTRA annexes to EUCOM Theater Security Cooperation Plans to insure DTRA assets are used to further Combating WMD mission in that theater.
- Institutionalize linkage with NATO/SHAPE and EUCOM in international 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.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RA - Systems Engineering and Innovation		0.000	27.600	26.342

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RE - Counter-Terrorism Technologies	0.000	45.709	45.424	45.399	44.367	44.367	44.367

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

A. Mission Description and Budget Item Justification:

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

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

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

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RE - Counter-Terrorism Technologies	0.000	45.709	45.424

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

Performance Metrics:

- Number of technologies developed and delivered and/or proof of concept or successful Military Utility Assessments conducted that increase the potential mission success and reduces the number of current gaps in Special Operation Forces (SOF) capabilities to counter WMD when conducting Global War on Terrorism (GWOT) operations.

FY 2007 Accomplishments:

- Not Applicable. See Projects BJ and BK of Program Element 0603160BR.

FY 2008 Plans:

- Research and development technologies to enhance the capabilities of U.S. Forces in the GWOT 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. Projects planned for completion: Non-intrusive Detection, Gellants, Biological Detection and Identification, Phase II of Integrated Micro-Climatization System (IMCS).
- Provide management oversight and technical assistance for SOF-unique technologies, and develop enhanced SOF capabilities in coordination with U.S. Special Operations Command (USSOCOM).
- Develop WMD/Improvised Explosive Device defeat technologies that will increase Explosive Ordinance Disposal capabilities to identify, defeat and contain a chemical, biological and radiological dispersal devise.
- Initiate terrorist pathway counter proliferation Advanced Technology Demonstrations (ATD) (Specific technologies are classified Alternative Compensative Control Measures (ACCM)).
- Conduct Military Unit Assessment/Independent Validation and Verification of proven technologies.

FY 2009 Plans:

- Continue to support research and development of technologies to enhance the capabilities of U.S. Forces in the GWOT to counter WMD and improve their ability to detect, disable, interdict, neutralize, and destroy chemical, biological, and nuclear production, storage, and weaponization facilities.
- Deliver SOF-unique technologies under the SOF Venture program. Projects planned for completion: Global Positioning Systems-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 (Specific technologies are classified ACCM).

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RE – Counter-Terrorism Technologies

- Conduct Military Unit Assessment/Independent Validation and Verification of proven technologies. Provide management oversight and technical assistance for Special Operation Forces (SOF)-unique technologies, and develop enhanced SOF capabilities in coordination with U.S. Special Operations Command.
- Develop WMD/Improvised Explosive Device at technologies that will increase Explosive Ordinance Disposal capabilities to identify, defeat and contain a chemical, biological and radiological dispersal devise.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RF – Detection Technology

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RF - Detection Technology	0.000	43.640	41.018	42.608	46.306	47.959	45.788

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

A. Mission Description and Budget Item Justification:

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

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RF - Detection Technology	0.000	43.640	41.018

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

Performance Metrics:

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RF – Detection Technology

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

FY 2007 Accomplishments:

- Not Applicable. See Projects BG and BH of Program Element (PE) 0602717BR and Project BI of PE 0603160BR.

FY 2008 Plans:

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RF – Detection Technology

FY 2009 Plans:

- Continue program for developing integrated detection systems exploiting advances in solid state nuclear detectors, processing electronics, analysis software, identification technology, and integrated nuclear/biological/chemical sensor technology.
- Initiate a full scale test and evaluation campaign for Compton imagers and a second generation effort to develop more integrated and compact imagers with enhanced capability. These second generation imagers will be more optimized to operate with an active excitation source directed at the target item.
- Continue the extensive effort begun in the Joint Capability Technology Demonstration 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.
- Conduct Concept of Operations demonstrations of upgraded technical capabilities for sample collection, radiochemical analysis, Secret/Restricted Data-level field-laboratory communications, and integration of design modeling and forensic data for identification and attribution.
- Develop technical information to support programmatic decisions regarding next-generation ground sampling platform, marine sampling capability, and next-generation Unmanned Aerial Vehicle systems for air and for ground sampling.
- 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.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RF – Detection Technology		0.000	48.499	39.498

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RG – Advanced Energetics & Counter WMD Weapons

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RG - Adanced Energetics & Counter WMD Weapons	0.000	19.549	20.550	19.670	24.706	29.321	37.997

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

A. Mission Description and Budget Item Justification:

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

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RG - Adanced Energetics & Counter WMD Weapons	0.000	19.549	20.550

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

Performance Metrics:

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

FY 2007 Accomplishments:

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

FY 2008 Plans:

- Continue development of advanced counter-WMD weapons and counter-force agent defeat weapons.
- Conduct high speed munitions warhead component level tests supporting demonstration of improved penetration over fielded weapons.
- Characterize and develop defeat mechanisms for ultra-hard target materials.

- Initiate development of Directed Energy payload for demonstration of a counter WMD deny/disrupt mission concept.
- Site and begin building Reusable Full-Scale Live Simulant test bed to support counterforce agent defeat testing.
- Complete Joint Direct Attack Munitions Guidance Kit Integration and Demonstration with Bomb, Live Unit (BLU)-121.
- Complete Alternate BLU-121 Manufacturing Process Qualification Testing.
- Develop deployable weapon-borne Battle Damage Information sensor for use on conventional weapons.

FY 2009 Plans:

- Continue development of advanced counter-WMD weapons and counter-force agent defeat weapons.
- Integrate/test Insensitive Munitions Agent Defeat BLU-109 payload supporting U.S. Air Force tactics, techniques and procedures for the Shredder program.
- Support the Acquisition Transition Program Support and Weapon Effects Targeting Analysis for BLU-121.
- Develop penetrating munitions concepts to defeat ultra-hard targets.
- Conduct full-scale sled tests of hardened smart fuze.

C. Other Program Funding Summary:

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

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

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

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

A. Mission Description and Budget Item Justification:

This project develops and demonstrates Radiation Hardened Microelectronics (RHM) for nuclear hardening and survivability of DoD systems on the Radiation Hardened Oversight Council 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, Services, and Joint Chiefs of Staff with technical analyses, studies, research, and experimental data necessary to identify and quantify risks of plutonium dispersal and Loss of Assured Safety due to accidents, fires or natural causes during peacetime operations of the nation's nuclear weapon systems. Additionally, this will provide studies necessary to quantify the probability of success against targeted terrorist attacks on DoD facilities, while leveraging these risk assessment advances. It also provides new and innovative technologies for the protection of nuclear resources in support of Combatant Commands and Services.

B. Accomplishments/Planned Program:

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

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

Performance Metrics:

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

FY 2007 Accomplishments:

- Not Applicable. See Projects BH of Program Element 0602717BR.

FY 2008 Plans:

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

FY 2009 Plans:

- Demonstrate final RHBD 90nm digital, analog and mixed signal SOC.
- Demonstrate radiation hardened 150nm combined digital and analog/mixed signal ASIC.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RI – Nuclear Survivability

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

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RI - Nuclear Survivability		0.000	8.925	10.421

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RM – WMD Battle Management

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project RM - WMD Battle Management	0.000	55.475	55.621	56.668	42.200	41.500	42.500

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

A. Mission Description and Budget Item Justification:

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

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

Develop, integrate, demonstrate and transition emerging/innovative technologies to provide the warfighter with an enhanced near real-time combat and battle damage assessment capability. Capability is achieved through the development of Unmanned Aerial Systems 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.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
Project RM - WMD Battle Management	0.000	55.475	55.621

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

Performance Metrics:

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RM – WMD Battle Management

FY 2007 Accomplishments:

- Not Applicable. See Project BH of Program Element (PE) 0602717BR and Project BK of PE 0603160BR.

FY 2008 Plans:

- Continue development of WMD reconnaissance technologies and WMD planning tools.
- Conduct demonstration to validate tunnel facility defeat using optimized inventory weapons attack on Capitol Peak Tunnel facilities, White Sands Missile Range.
- Demonstrate capability to launch and control FINDER Unmanned Aerial Vehicle from AC-130 and 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.
- Conduct Spiral 1 demonstration of the Biological Combat Assessment System.
- Conduct full scale static testing of taggant technology in Bomb, Live Unit-116 Advanced Unitary Penetrator.
- Complete design of networking, telemetry and communication components for combat assessment sensors.
- Deliver Integrated Munitions Effects Assessment (IMEA) with improved groundshock model.
- Deliver Vulnerability Assessment and Protection Option (VAPO) with improved models for global response of framed structures
- Integrate advanced command and control capabilities into 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.
- Integrate WMD data from the Intelligence Community, Combatant Commands, Services, and Agencies into the WMD Common Operating Picture and continue research and development to provide that information to existing command, control, communications, computers, and intelligence systems.

FY 2009 Plans:

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RM – WMD Battle Management

- 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 Combatant Commands and the inter-agency community.
- Integrate improved geospatial information, such as that provided by National Geospatial-Intelligence Agency, National Reconnaissance Office, and Project Angel Fire, into the WMD Common Operating Picture and other Command and Control capabilities for enhanced decision support.

C. Other Program Funding Summary:

Cost ($ in Millions)		FY 2007	FY 2008	FY 2009
PE 0602718BR: Project RM - WMD Battle Management		0.000	27.158	29.137

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

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

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

A. Mission Description and Budget Item Justification:

This project represents the maturation of previous target characterization efforts. While complete physical destruction may be desired, for some hard and deeply buried targets this effect isn't practicable with current weapons and employment techniques. It may be possible, however, to deny or disrupt the mission or function of a facility. Functional defeat is facilitated through better data collection and intelligence. The functional defeat process includes finding and identifying a facility, characterizing its function and physical layout, determining its vulnerabilities to available weapons, planning an attack, applying force, assessing damage, and if necessary, suppressing reconstitution efforts and re-striking the facility. Target Assessment Technologies provides the Intelligence Community and the Combatant Commands 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 to hardened WMD target characterization and analysis capability presents new technical challenges. Target Assessment Technologies consists of three subordinate and related activities, Targeting and Intelligence Community technologies, Find, Characterize, Assess technology development, and the WMD Threat Research and Analysis initiative.

B. Accomplishments/Planned Program:

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

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

Performance Metrics:

- Number of target characterizations and 3-D target models delivered to the Combatant Commands and Intelligence Community in response to prioritized requirements.
- Number of new geological properties models added to the geological characterization process each year.
- Assessment of Underground Targeting and Analysis System capabilities in a realistic exercise scenario.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

FY 2007 Accomplishments:

- Not Applicable. See Project BF of Program Element 0602716BR.

FY 2008 Plans:

- Continue research and development of Targeting and Intelligence Community technologies and Find/Characterize/Assess technologies.
- Initiate a WMD Threat Research and Analysis capability in conjunction with the Hard Target Research and Analysis Center.
- Enhance the Underground Targeting and Analysis System (UTAS) software capability to include the capability to model additional Underground Facility (UGF) structural details and WMD functional features.
- Continue to provide target characterization training to increase the size and expertise of the UGF and WMD target defeat communities.
- Conduct a UGF vulnerability assessment exercise with the operations and intelligence communities to gauge the effectiveness of target characterization tools and processes.
- Begin development of a prototype Integrated Sensor System for use in UGF characterization and assessment demonstrations.
- Continue development of UGF signatures database to facilitate functional characterization of UGF targets for the Combatant Commands and Intelligence Community.
- Develop additional geological models and enhanced site-specific geological characterization processes to increase the fidelity and accuracy of our UGF characterizations.

FY 2009 Plans:

- Continue research and development of Targeting and Intelligence Community technologies and Find, Characterize, Assess technologies.
- Mature the initial research and development capability of the WMD Target Research and Analysis Center.
- Deliver enhanced UTAS special operations mission planning capabilities to the special operations community.
- Continue to provide target characterization training for the UGF and WMD target defeat communities.
- Conduct an exercise with the operations and intelligence communities to evaluate the effectiveness of our tools and processes to support the characterization of UGF and WMD targets.
- Perform a developmental evaluation of the capabilities of a prototype Integrated Sensor System to support the UGF and WMD target characterization and assessment processes.
- Continue development of an UGF signatures database to facilitate functional characterization of UGF targets for the Combatant Commands and Intelligence Community.
- Continue development of enhanced site-specific geological characterization processes to increase the fidelity and accuracy of our UGF characterizations.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/Advanced Technology Development - BA 3	**PROJECT NAME AND NUMBER:** 0603160BR Project RT – Target Assessment Technologies

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performer: Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/System Development and Demonstration – BA5	**R-1 ITEM NOMENCLATURE:** WMD Defeat Capabilities; 0605000BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0605000BR Cost	**0.000**	**15.296**	**15.946**	**15.767**	**13.859**	**12.828**	**11.204**
RL - Nuclear & Radiological Effects	0.000	15.296	15.946	15.767	13.859	12.828	11.204

A. Mission Description and Budget Item Justification:

This project 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 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.

B. Program Change Summary:

($ in Millions)	FY 2007	FY 2008	FY 2009
Previous President's Budget	**0.000**	**15.394**	**15.946**
Current President's Budget	**0.000**	**15.296**	**15.946**
Total Adjustments	**0.000**	**-0.098**	**0.000**
Congressional program reductions		**-0.098**	
Congressional rescissions			
Congressional increases			
Reprogrammings			
SBIR/STTR Transfer			

Change Summary Explanation: Not Applicable.

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/System Development and Demonstration – BA5	**R-1 ITEM NOMENCLATURE:** WMD Defeat Capabilities; 0605000BR

C. Other Program Funding Summary: For FY 2007 and previous years, the projects within this Program Element were funded under Project BD - Weapons Effects Technologies, Program Element (PE) 0602716BR, budget activity 2 (Applied Research). There are no other projects with concurrent development or funding dependencies to report.

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. For FY 2006, FY 2007, and previous year efforts, these programs were managed under Activity 2 (Applied Research) under PE 0602716BR. Beginning in FY 2008, these activities continue with their transition into PE 0605000BR under Activity 5 (System Development and Demonstration).

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/System Development and Demonstration – BA5	**PROJECT NAME AND NUMBER:** 0605000BR Project RL- Nuclear and Radiological Effects

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
RL - Nuclear & Radiological Effects	0.000	15.296	15.946	15.767	13.859	12.828	11.204

*Funding and activities realigned from Project BD of Program Element 0602716BR in FY 2008.

A. Mission Description and Budget Item Justification:

Advanced Modeling Systems includes three functional areas 1) Nuclear Capability Services (NuCS), 2) Integrated Weapons of Mass Destruction Toolset (IWMDT), 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 DTRA tools enabling rapid access for planning, emergency response and assessment capabilities 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. IWMDT incorporates the capabilities developed across the DTRA Research and Development Enterprise, external research and development and required operational capabilities, and provides integrated functionality in the conventional, nuclear and unconventional areas. Consequence Assessment (CA) provides the integration of DTRA's hazard prediction and consequence assessment models. It provides CoE modeling capability to U.S. Strategic Command as well as CA integration and testing for transition to the Joint Effects Model, Chemical-Biological Defense Program for hazard prediction. It also provides the capability for theater-level land, sea, and air battle simulation, incorporating WMD, for Joint Staff, U.S. Pacific Command, and U.S. Northern Command. This sub-project extends research and development to system development and demonstration.

B. Accomplishments/Planned Program:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
RL - Nuclear & Radiological Effects	0.000	15.296	15.946

Performance Metrics:

- Demonstrate and provide over 80% of the customer-required Nuclear Weapons Effects (NWE) modeling and simulation capabilities over networks, e.g. DoD Global Information Grid.
- Transform 100% of the mission-required legacy DTRA NWE codes to meet Verification, Validation, and Accreditation standards.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/System Development and Demonstration – BA5	**PROJECT NAME AND NUMBER:** 0605000BR Project RL- Nuclear and Radiological Effects

FY 2007 Accomplishments:

- Not Applicable. See Project BD in Program Element (PE) 0602716BR.

FY 2008 Plans:

- Complete 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) DTRA codes to meet Verification, Validation, and Accreditation standards.
- In coordination with Chemical, Biological, Radiological, and Nuclear (CBRN) program, manage the development and transfer of basic science (6.1, 6.2 funded) initiatives to Program of Records through the use of a robust disciplined process Integrated Weapons of Mass Destruction Toolset (IWMDT) which provides transferable technology, process, and documentation.
- Provide a one-point entry portal providing common 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.
- Update the foreign nuclear weapon output reference, Redbook Volume 1, to include Strategic Systems.

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, analyst, and future planning users. Through this capability, users can fully customize the CBRN portal to meet their decision support, analysis, and collaborative mission planning through a single view.
- Update the foreign nuclear weapon output reference, Redbook Volume 3, to include proliferant systems.
- Deliver NuCS Spiral 2 capabilities through the IWMDT 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.

C. Other Program Funding Summary: For FY 2007 and previous years, the projects within this PE were funded under Project BD - Weapons Effects Technologies, PE 0602716BR, budget activity 2 (Applied Research). There are no other projects with concurrent development or funding dependencies to report.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/System Development and Demonstration – BA5	**PROJECT NAME AND NUMBER:** 0605000BR Project RL- Nuclear and Radiological Effects

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. For FY 2006, FY 2007, and previous year efforts, these programs were managed under Activity 2 (Applied Research) under Program Element (PE) 0602716BR. Beginning in FY 2008, these activities continue with their transition into PE 0605000BR under Activity 5 (System Development and Demonstration).

E. Major Performers: Not Applicable.

Exhibit R-3, RDT&E Project Cost Analysis								Date: February 2008				
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 2007 Cost ($000)	FY 2007 Award Date	FY 2008 Cost ($000)	FY 2008 Award Date	FY 2009 Cost ($000)	FY 2009 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
System Development--IWMDT	C/CPAF	SAIC -- San Diego, CA	0	0		7000	Nov-07	7000	Nov-08	28000	42000	42000
System Development--NuCS	C/CPFF	Applied Research Associates -- Albuquerque, NM	0	0		1750	Nov-07	1518	Nov-08	2390	5658	5658
System Development--COE	C/CPFF	Titan -- Kingstowne, VA	0	0		1050	Nov-07	1050	Nov-08	2390	4490	4490
System Development--Component Contracts	Various	Various	0	0		1394	Various	2278	Various	4780	8452	8452
Subtotal Product Development			0	0		11194		11846		37561	60600	60600
Remarks: The "Various" reported reflects multiple contracts, mainly CPFF.												
Configuration Management	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		61	Nov-07	61	Nov-08	180	302	302
Software Integration	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		1300	Nov-07	1300	Nov-08	6079	8679	8679
Technical Data	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		21	Nov-07	21	Nov-08	70	112	112
Engineering Services	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		657	Nov-07	607	Nov-08	1540	2804	2804
Accreditation & Certification	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		61	Nov-07	61	Nov-08	180	302	302
Subtotal Support			0	0		2100		2050		8049	12199	12199
Remarks												

Exhibit R-3, RDT&E Project Cost Analysis (page 2)								Date: February 2008				
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 2007 Cost ($000)	FY 2007 Award Date	FY 2008 Cost ($000)	FY 2008 Award Date	FY 2009 Cost ($000)	FY 2009 Award Date	Cost to Complete ($000)	Total Cost ($000)	Target Value of Contract
Developmental Test & Evaluation	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		525	Nov-07	513	Nov-08	2012	3050	3050
Operational Test & Evaluation	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		525	Nov-07	513	Nov-08	2012	3050	3050
Subtotal T&E			0	0		1050		1025		4024	6099	6099
Remarks												
Program Management	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		525	Nov-07	513	Nov-08	2012	3050	3050
Travel	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		263	Nov-07	256	Nov-08	1006	1525	1525
Overhead	C/CPAF/CPFF	SAIC, ARA, Titan	0	0		263	Nov-07	256	Nov-08	1006	1525	1525
Subtotal Management			0	0		1050		1025		4024	6099	6099
Remarks												
Total Cost			0	0		15394		15946		53658	84998	84998

Remarks

"All PY Costs" and FY 2007 costs and activities for IWMDT, NuCS, and COE are assigned under Project BD of PE 0602716BR. IWMDT was funded in 2004 by a competed, CPAF contract for $12,425,028 over a 3-year period. At end of FY 2006, its follow-on contract was awarded with an initial $300,000 increment. IWMDT program efforts continue in 2007 with $5,361,428 now applied. Likewise, the NuCS program was funded under a competed, CPFF contract over a 3-year period. Funding of $2,913,235 was applied over FY 2005 through FY 2006; $3,000,000 has been applied in FY 2007 to continue program efforts. COE will be funded under a competed, CPFF contract to be awarded FY 2007 with an initial increment of $1,500,000. Beginning in FY 2008, these activities continue with their transition into PE 0605000BR.

Exhibit R-4, RDT&E Program Schedule Profile		Date: February 2008
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

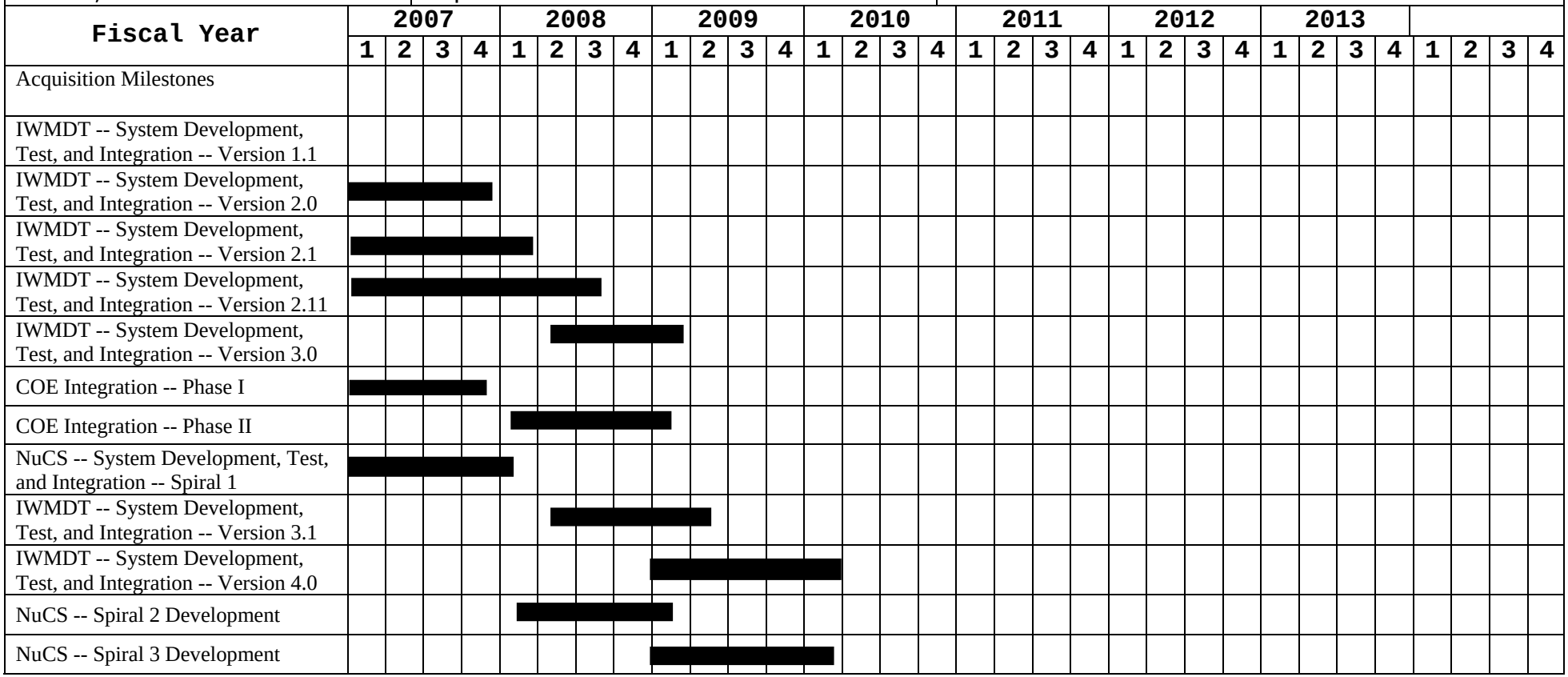

Exhibit R-4a, Program Schedule Detail								Date: February 2008
Appropriation/Budget Activity RDT&E, Defense Wide BA 5	Program Element Number and Name: PE 0605000BR WMD Capabilities				Project Name and Number: Nuclear and Radiological Effects -- RL			
Schedule Profile	**FY 2007**	**FY 2008**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	
IWMDT -- System Development, Test, and Integration -- Version 1.1								
IWMDT -- System Development, Test, and Integration -- Version 2.0	1-4Q							
IWMDT -- System Development, Test, and Integration -- Version 2.1	1-4Q	1Q						
IWMDT -- System Development, Test, and Integration -- Version 2.11	1-4Q	1-3Q						
IWMDT -- System Development, Test, and Integration -- Version 3.0		2-4Q	1Q					
COE Integration -- Phase I	1-4Q							
COE Integration -- Phase II		1-4Q	1Q					
NuCS -- System Development, Test, and Integration -- Spiral 1	1-4Q	1Q						
IWMDT -- System Development, Test, and Integration -- Version 3.1		2-4Q	1-2Q					
IWMDT -- System Development, Test, and Integration -- Version 4.0			1-4Q	1Q				
NuCS -- Spiral 2 Development		1-4Q	1Q					
NuCS -- Spiral 3 Development			1-4Q	1Q				

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**R-1 ITEM NOMENCLATURE:** Small Business Innovative Research; 0605502BR

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total 0605502BR Cost	**6.744**	**2.436**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
BB - Small Business Innovative Research	6.744	0.000	0.000	0.000	0.000	0.000	0.000
RA - Systems Engineering and Innovation	0.000	2.436	0.000	0.000	0.000	0.000	0.000

*In year of execution, funding is executed under PE 0605502BR "Small Business Innovative Research (SBIR)". In FY 2008, Project changes from BB to RA.

A. Mission Description and Budget Item Justification:

This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting DoD 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 2007	FY 2008	FY 2009
Previous President's Budget	**0.000**	**0.000**	**0.000**
Current President's Budget	**6.744**	**2.436**	**0.000**
Total Adjustments	**6.744**	**2.436**	**0.000**
Congressional program reductions			
Congressional rescissions			
Congressional increases			
Reprogrammings			
SBIR/STTR Transfer	**6.744**	**2.436**	

Change Summary Explanation:

- Funding for FY 2007 for the SBIR Program has been consolidated in this program element for execution**.**

Exhibit R-2, RDT&E Budget Item Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**R-1 ITEM NOMENCLATURE:** Small Business Innovative Research; 0605502BR

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

D. Acquisition Strategy: Not Applicable.

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

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**PROJECT NAME AND NUMBER:** 0605502BR Project BB – Small Business Innovative Research

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
BB - Small Business Innovative Research	6.744	0.000	0.000	0.000	0.000	0.000	0.000

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

A. Mission Description and Budget Item Justification:

This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting DoD 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:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
BB - Small Business Innovative Research	6.744	0.000	0.000

*In year of execution, funding is executed under PE 0605502BR "SBIR".

Performance Metrics:

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

FY 2007 Accomplishments:

- Awarded 13 Phase I SBIR contracts to perform feasibility studies on FY 2007 topics.
- Awarded on Phase II Fast Track proposal to develop a prototype improvised explosive device (IED) detection and neutralization system.
- Awarded seven Phase II SBIR contracts to demonstrate a prototype implementation of successful FY 2006 Phase I feasibility studies in IED neutralization, nuclear detection, advanced energetic materials and weather modeling.

FY 2008 Plans:

- Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**PROJECT NAME AND NUMBER:** 0605502BR Project BB – Small Business Innovative Research

FY 2009 Plans:

- Not Applicable.

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**PROJECT NAME AND NUMBER:** 0605502BR Project RA – Small Business Innovative Research

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
RA - Systems Engineering and Innovation	0.000	2.436	0.000	0.000	0.000	0.000	0.000

* In year of execution, funding is executed under PE 0605502BR "Small Business Innovative Research (SBIR)". Project RA begins in FY 2008.

A. Mission Description and Budget Item Justification:

This project provides the means for stimulating technological innovation in the private sector, strengthens the role of small business in meeting DoD 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:

Cost ($ in Millions)	FY 2007	FY 2008	FY 2009
RA - Systems Engineering and Innovation	0.000	2.436	0.000

*In year of execution, funding is executed under PE 0605502BR "SBIR".

Performance Metrics:

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

FY 2007 Accomplishments:

- Not Applicable. See Project BB.

FY 2008 Plans:

- Not Applicable.

FY 2009 Plans:

- Not Applicable.

Exhibit R-2a, RDT&E Project Justification	Date: February 2008
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-Wide/RDT&E Management Support – BA6	**PROJECT NAME AND NUMBER:** 0605502BR Project RA – Small Business Innovative Research

C. Other Program Funding Summary: Not Applicable.

D. Acquisition Strategy: Not Applicable.

E. Major Performers: Not Applicable.