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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,

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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.

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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.

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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.

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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

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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.

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- 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.

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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.

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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,

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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.

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