CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY
RDT&E DEFENSE-WIDE/
BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE
0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
	Total Program Element (PE) Cost	227204	235760	232302	388487	313810	203549	193416	184822	Continuing	Continuing
CB3	CHEMICAL BIOLOGICAL DEFENSE (ATD)	105134	113081	20662	21028	21935	14241	14310	13823	Continuing	Continuing
TB3	MEDICAL BIOLOGICAL DEFENSE (ATD)	87910	89678	146539	299581	229306	129419	122230	113827	Continuing	Continuing
TC3	MEDICAL CHEMICAL DEFENSE (ATD)	20499	18225	28976	28526	29218	30777	31833	32133	Continuing	Continuing
TE3	TEST & EVALUATION (ATD)	0	0	26269	26377	22401	19788	15613	15506	Continuing	Continuing
TR3	MEDICAL RADIOLOGICAL DEFENSE (ATD)	0	2153	2189	4825	2487	995	0	0	0	12649
TT3	TECHBASE TECHNOLOGY TRANSITION	13661	12623	7667	8150	8463	8329	9430	9533	Continuing	Continuing

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RDT&E DEFENSE-WIDE/
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PE NUMBER AND TITLE
0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

A. Mission Description and Budget Item Justification: This program element (PE) demonstrates technologies that enhance the ability of U.S. forces to defend against, and survive chemical and biological (CB) warfare. This program element (PE) funds advanced technology development for Joint Service and Service-specific requirements in both medical and physical sciences CB defense areas. The medical program aims to produce drugs, vaccines, and medical devices as countermeasures for CB threat agents. Specific areas of medical investigation include: prophylaxis, pretreatment, antidotes and therapeutics, personnel and patient decontamination, and medical management of casualties. In the physical sciences area, the focus is on demonstrations of CB defense technologies, including biological detection, chemical detection, and decontamination. These demonstrations, conducted in an operational environment with active user and developer participation, integrate diverse technologies to improve DoD Chemical/Biological Warfare (CBW) defense and deterrence. These demonstrations are leveraged by the Counterproliferation Support Program and include remote Biological Detection. Also research efforts are planned to evaluate technologies for Weapons of Mass Destruction Civil Support Teams (WMD-CSTs). Work conducted under this PE transitions to and provides risk reduction for System Integration/Demonstration (PE 0603884BP/PE 0604384BP) activities. The work in this PE is consistent with the Joint Service CB Defense Research, Development, and Acquisition (RDA) Plan. This PE also provides for the conduct of advanced technology development in the areas of real-time sensing, accelerated BW operational awareness, and the restoration of operations following a BW/CW attack. This program is dedicated to conducting proof-of-principle field demonstrations, and tests of system-specific technologies to meet specific military needs.

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B. Program Change Summary:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget (FY 2007 PB)	234039	207114	259667	320350
FY08 President's Budget	227204	235760	232302	388487
Total Adjustments	-6835	28646	-27365	68137
a. Congressional General Reductions	0	-20894	0	0
b. Congressional Increases	0	49540	0	0
c. Reprogrammings	-4159	0	0	0
d. SBIR/STTR Transfer	-2278	0	0	0
e. Other Adjustments	-398	0	-27365	68137

Change Summary Explanation:

Funding: FY08 - Establish separate project to develop new test and evaluation methodologies and testing capabilities (+$26,269K TE3). Other fund adjustments and realignments (-$51,834K CB3; +$3,500K TB3; -$2,836K TC3; -$2,252K TR3; -$212K TT3).

FY09 - Realignment in support of the Transformational Medical Technology Initiative which focuses on broad-spectrum defenses against intracellular bacterial pathogens and hemorrhagic fevers (+$97,136K TB3). Establish separate project to develop new test and evaluation methodologies and testing capabilities (+$26,377K TE3). Other fund adjustments and realignments (-$54,401K CB3; +$1,723K TB3; -$3,130K TC3; +$622K TR3; -$190K TT3).

Schedule: N/A

Technical: N/A

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **CB3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
CB3	CHEMICAL BIOLOGICAL DEFENSE (ATD)	105134	113081	20662	21028	21935	14241	14310	13823	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project CB3 CHEMICAL BIOLOGICAL DEFENSE (ATD): This project demonstrates technology advancements for joint service application in the areas of chemical and biological agent detection and identification, decontamination, modeling and simulation, and individual/collective protection which will speed maturing of advanced technologies to reduce risk in system-oriented integration/demonstration efforts. This project funds science and technology to advance technology development. Beginning in 2007, the group heading for Modeling and Simulation/Battle Space Management was changed to Information Systems Technologies to be compatible with JPEO-CBD Joint Program Manager - Information Systems. Projects under CB3 Test and Evaluation will be reported under TE3 for fiscal years 2008 and beyond.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Congressional Interest Items	45329	34837	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **CB3**

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Novel Sample Concentration Technologies for Contaminant Detection in Drinking Water - Conducted research to determine water purification units performance in the removal of high threat CBRN agents and Toxic Industrial Chemicals (TICs).	991	0	0	0
FY 06 - Notre Dame Center for Environmental Networked Embedded Sensor Technology (ND-CENEST) - Developed and demonstrated an embedded network for detecting, tracking, and remediating toxic chemical and biological agents released into ground, water, and/or air.	1981	0	0	0
FY 06 - Personnel Decontamination Using Liquid Technology - Developed and evaluated design concepts for a skin decontamination product that exhibits increased efficacy against chemical agents.	1783	0	0	0
FY 06 - Reactive Air Purification for Individual and Collective Protection - Developed a universal enhanced filtration medium to be included in different IP and CP end-use applications.	5545	0	0	0
FY 06 - Hand-Held Biological Agent Detection (HBAD) System - Developed an optically based sensors for the use as handheld systems for the detection of biological materials.	2971	0	0	0
FY 06 - Industry-Based Research to Miniaturize Chemical and Biological Detectors - Continued development of new production methods for solid state components used in the sensor systems.	2105	0	0	0
FY 06 - Advanced Engineering Enzyme Decontamination Systems - Developed enzyme decontamination systems for a broad range of chemical biological warfare agents. Screened and evaluated existing enzymes and bio-engineering enzyme to provide improved decontaminants.	1981	0	0	0
FY 06 - LISA-JCSD Solid-State Laser Technology - Developed a solid-state replacement for the Excimer gas laser currently in the Joint Contaminated Surface Detector (JCSD).	991	0	0	0
FY 06 - Cooperative Unmanned Ground and Aerial Vehicle Incubator - Administered Phase 2 for the National Testbed for Safety, Security and Rescue Technologies (NT-SSRT). Project executed in TT3.	20	0	0	0

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
FY 06 - Hackensack University Medical Center Chemical Biological Defense Program Initiative Fund - Administered the development of a mobile, forward deployable, medical capacity that would respond to bio-terrorist incidents and other mass casualty incidents resulting from WMD, natural and technological disasters. Project executed in TT3.	24	0	0	0
Self-Detoxifying Materials in CB Clothing - FY 06 - Demonstrated the concept of producing multi-functional materials comprised of specially-formulated combinations of reactive nanoparticulates and activated carbon that provide CB protection thru a synergistic effect of an adsorptive/reactive technology. FY 07 - Refine concepts of producing multi-functional materials comprised of specially-formulated combinations of reactive nanoparticulates and activated carbon that provide CB protection thru a synergistic effect of an adsorptive/reactive technology.	2080	1288	0	0
Portable Rapid Bacterial Warfare Detection Unit - FY 06 - Conducted collaborative research and development to optimize a standardized process for real-time detection and identification of Bacterial Warfare Agents (BWA) and developed a field deployable system. FY 07 - Enhance the process for real-time detection and identification of BWA and developed a field deployable system.	991	1486	0	0
Hand-Held Biosensor and Continuous Monitor for Biodetection - FY 06 -Developed optically based sensors for the use as handheld systems for the detection of biological materials. FY 07 - Increase efforts to advanced optically based sensors for use as handheld technology.	3367	1436	0	0

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Chemical Biological Defense Program Initiative Fund - FY 06 - Solicited and awarded contracts for proposals from degree-granting universities, nonprofit organizations, or commercial concerns to include small businesses, in support of the Chemical and Biological Defense Program (CBDP) to fund chemical and biological defense science and technology projects across a wide-range of military operations. FY 07 - Initiate solicitation for proposals from degree-granting universities, nonprofit organizations, or commercial concerns to include small businesses, in support of the CBDP to fund chemical and biological defense science and technology projects across a wide-range of military operations.	6931	9902	0	0
Immunological Biological/Chemical Agent Detector - FY 06 - Developed a multiplex, micro-array system based on both antibodies and nucleic acid type. FY 07 - Improve development of the multiplex, micro-array system.	2377	991	0	0
Removal of NBC Agents in Drinking Water - FY 06 - Continued to analyze, test and develop prototype CBRN removal technologies for use in-line with existing water purification units, and conducted research to determine water purification units performance in the removal of high threat CBRN agents. FY 07 - Improve development of the water purification units.	2773	1288	0	0
Small Accelerators and Detection Systems - FY 06 - Continued development of technology for the detection and neutralization of chemical and biological threats with small accelerator/detection systems. FY 07 - Improve the detection and neutralization of chemical and biological threats with small accelerator/detection systems.	1486	1981	0	0

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
NIDS Hand-Held Biological Detectors - FY 06 - Developed and demonstrated components of the concept system that included a multiplexed lateral flow immunoassays, a handheld reader and a pathogen concentration system. FY 07 - Advance the handheld reader and a pathogen concentration system.	5941	2872	0	0
Rapid Response Database Systems - FY 06 - Continued development of a Research Demonstration Center and a Portable Training and Demonstration Center that will present first responders and their managers with real-time status reports of data collected from hospitals, schools, doctors, pharmacies and veterinary offices that could support a response to a bio-terrorist attack or other hazard. FY 07 - Advance development of a Research Demonstration Center and a Portable Training and Demonstration Center that will present first responders and their managers with real-time status reports of data collected from hospitals, schools, doctors, pharmacies and veterinary offices that could support a response to a bio-terrorist attack or other hazard.	991	1090	0	0
FY 07 - Reactive Coatings Enhanced to Resist Chemical and Biological Contamination.	0	991	0	0
FY 07 - Carbon Nanotube Bio-Chem Detector.	0	1090	0	0
FY 07 - Chem-Bio Preparedness Center.	0	1981	0	0
FY 07 - Chemical/Biological Defense Program Advanced Development.	0	1832	0	0
FY 07 - Liquid Crystal Sensor Technology Research and Development for Force Protection.	0	991	0	0
FY 07 - Modular Chemical and Biological Detection System.	0	991	0	0
FY 07 - Next Generation Threat Detection.	0	1159	0	0
FY 07 - Protective Self-Decontaminating Surfaces.	0	1486	0	0
FY 07 - Rapid Response Sensor Networking for Multiple DoD Applications Phase 3.	0	991	0	0
FY 07 - Engineered Biological Detectors for Biological Warfare.	0	991	0	0
Total	**45329**	**34837**	**0**	**0**

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

	FY 2006	FY 2007	FY 2008	FY 2009
Information Systems Technology	5582	10003	3816	3837

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Information Systems Technology, CBDP Decision Capability - FY 06 - Designed and developed a common graphic user interface (GUI) for the CB Simulation Suite. Developed data and documents for independent verification and initiated verification activities. FY 07 - Complete the independent verification of the CB Simulation Suite. Conduct demonstrations and exercises in targeted user communities. Prepare to transition capability to the Joint Operational Effects Federation (JOEF) program. Initiate medical modeling area of research. Transition NATO's Allied Medical Publication 8 (AMedP-8) chemical and biological models from Nuclear Biological Chemical Casualty and Resource Estimation Support Tool (NBC CREST) to JOEF. Verify NBC CREST 5.0 for utilization by JPM-IS. FY 08 - Transition TIC/TIM and AMedP-8 nuclear models from NBC CREST to JOEF. Transition long-term radiological effects models to JOEF; provide Verification Validation (V&V) documentation for all transitioned CBRN human response models. Develop a biological and a chemical agent human response model accounting for particle size distribution (PSD) effects; develop, implement and test additional agent response models accounting for PSD effects; deliver V&V software. Validate models for predicting effects due to infectious/contagious diseases for JEM with real-world and simulation data. FY 09 - Verify and incorporate models for casualty estimates for infectious/contagious diseases into JEM.	900	1467	880	821
Information Systems Technology, Chemical and Biological Warfare Effects on Operations -	837	2660	881	821

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PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 06 - Conducted a current capability demonstration of sensor siting around a selected DoD facility. Conducted a data model study and initiated the web-services component of the IMPACT model framework. Demonstrated automated CBRN data import/export tool for use with the JOEF prototype. FY 07 - Test and verify the Simulated Training and Analysis for Fixed Facilities/Sites (STAFFS) and contamination model linkages. Conduct a simulation and analysis of the Chemical-Improvised Explosive Device (C-IED) model. Enhance the rapid mission impact assessment tool software and test on additional missions. Execute final implementation of the web-services interface and data model of the IMPACT framework. Conduct Verification Validation and Accreditation (VV&A) and develop documentation for CB System Military Worth Assessment Toolkit. FY 08 - Transition internal modeling capability for STAFFS to JOEF. Provide technical documentation, interface specifications, tech transition of the Chemical-Improvised Explosive Device (C-IED) model. Execute final implementation of the web-services interface and data model of the IMPACT framework. Demonstrate and beta test the next generation model of CB effects on military operations. Optimize execution speed, perform additional testing, and add mobile forces readiness assessment to Rapid Mission Impact Assessment Tool. FY 09 - Transition next generation model of CB Effects on military operations to JOEF. Transition Rapid Mission Impact Assessment Tool to JOEF. Deliver final CBRN in tactical and theatre level simulation capability. Deliver final methodology for Improving CBRN situation awareness to JOEF. Validate and refine decision support for logistics response to CBR Attacks.	837	2660	881	821
Information Systems Technology, Chemical and Biological Hazard Environment Prediction (DTO CB55) - FY 06 - Completed DTO CB55. Transitioned Chemical Biological Weapons - Computational Fluid Dynamics (CBW-CFX) capabilities to the Joint Effects Model (JEM) program.	600	0	0	0
Information Systems Technology, Chemical and Biological Hazard Environment Prediction -	2400	2316	881	1097

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PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 06 - Restructured the Realistic Urban Spread and Transport of Intrusive Contaminants (RUSTIC) model for installation of the Second-order Closure (SOC) model. Conducted a capability demonstration of sensor sites around a selected DoD facility. Improved ruggedization and testing and evaluation in the Geographic Environmental Database Information System (GEDIS) 2.0 release. Performed sensitivity and uncertainty analysis for the atmospheric chemistry of the Toxic Industrial Chemicals (TICs) database. FY 07 - Transition improved meteorological modeling capabilities including boundary layer modeling of surface heat fluxes over land and water into operational models. Include additional data types, tailor application support and canopy parameterizations in the GEDIS 2.1 release. Conduct lab-scale validation of TICs chemistry model. Develop methodology for TIC source emission improvements. Initiate development of improved climatological, terrain, land use, and population data sets. Develop advanced numerical weather prediction capabilities. Initiate test and validation of initial waterborne transport capability. FY 08 - Complete initial interior building transport modeling algorithm and software development. Complete initial validation of FAST3D-CT and provide documentation. Initiate improved TIC/Toxic Industrial Materials (TIM) prototype integration into JEM. Provide updated mass consistency wind models and improved Transport and Dispersion models to JEM. Continue enhancement and testing in the GEDIS 2.2 release. Demonstrate prototype waterborne transport model including sedimentation effects. Integrate advanced numerical weather prediction techniques for coastal, complex terrain and urban environments.	2400	2316	881	1097

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PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 09 - Continue development of variable resolution database containing highly refined estimates of "typical" atmospheric conditions for any given location and time. Transition multi-scale four-dimensional data assimilation model to operational centers. Test and evaluate the use of Weather Research and Forecast (WRF)/Urban Canopy Model (UCM) forecasts to drive JEM transport and dispersion prediction. Perform error analysis on waterborne transport model. Transition GEDIS 2.3 to JEM. Transition fully extended Stationary Wind Fit with Turbulence (SWIFT) mass consistency wind model to JEM. Validate and verify building interior dispersion model.	2400	2316	881	1097
Information Systems Technology, Battle Space Management - FY 06 - Enhanced enterprise level definition, developed, released and transitioned fully developed Rapid Planning Mode (RPM) capability. Provided integrated demonstration and assessed user feedback on the Common Operating Picture (COP) for HLS and HLD. Demonstrated the Inter-LAN socket connection manager in a simulated environment. Conducted live real-time demonstration of Joint Warning and Reporting Network (JWARN) Component Interface Device (JCID) compliance on examples of fielded JWARN sensors. Produced final report, user manual and prepared to transition JCID compliant thin server technology. Field-tested the intelligent agent decision design for next generation CB battle management. Initiate the transition of the Integrated Information Management System (IIMS) to JOEF. FY 07 - Demonstrate increased maturity and readiness of the Inter-LAN socket connection manager for transition to the JWARN program. Incorporate warfighter feedback and transition the next generation CB battle management capability. Complete development, implement, test and transition the sensor alert verification for incident operational response capability. Develop an initial prototype of a software-based, user configurable, CBRNE sensor supporting the ability to dynamically configure/load the protocols/messages sets required for a particular configuration and support a subset of the features/functionality of the JCID specification (JCID on a Chip). Complete the transition of IIMS to JOEF by converting selected components to web services. Transition Automated Rules-Base Placement Tool to JOEF.	845	2860	881	549

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PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 08 - Transition Inter-LAN socket connection manager to the JWARN program. Transition JCID on a Chip, a software-defined sensor that is hardware independent and can support the ability to load to key supported hardware sensor system technologies. FY 09 - Transition the exchange and multi-level fusion of actionable information with real world C2 systems in DOD, Coalition and Homeland Security and Homeland Defense (HLS/HLD) domains to JWARN.	845	2860	881	549
Information Systems Technology, Sensor Data Fusion - FY 07 - Demonstrate a rapidly relocatable stand-alone sensor placement tool in realistic biological background. Initiate prototype sensor placement tool for optimal hazard prediction. Initiate software development for building interior sensor data fusion applications. Provide technical documentation of delivered software applications. FY 08 - Deliver networked sensor placement tool. Continue prototype sensor placement tool development for optimal hazard prediction. Deliver software for prototype building interior sensor data fusion applications. Provide technical documentation of delivered software applications. Develop and demonstrate a second generation sensor siting tool and demonstrate. FY 09 - Transition second generation siting tool and building interior sensor data fusion software to JEM.	0	700	293	549
Total	**5582**	**10003**	**3816**	**3837**

	FY 2006	FY 2007	FY 2008	FY 2009
Technology Transition	6193	4981	4866	4886

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PROJECT: CB3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Technology Transition - FY 06 - Initiated transition of Defense Advanced Research Projects Agency (DARPA) Semiconductor UV Optical Sources (SUVOS) technology to produce a low-cost biological aerosol detection system in collaboration between DHS and the CBDP. The technology will provide an early warning capability to be demonstrated in an Advanced Technology Demonstration in FY 2008 to meet the requirements of the Joint Biological Tactical Detection System (JBTDS) and the DHS Low-cost Biological Aerosol Detection System (LBADS). Initiated a competitive assessment of all mature technology from outside of the CBDP for rapid technology insertion into the capability areas. FY 07 - Continue transition of DHS LBADS and DARPA SUVOS into core CBD program thru laboratory testing to meet DoD need. Expand efforts to leverage technologies from to other government agencies and non-government agencies into the CBDP. Continue competitive assessment of mature technologies. Candidate projects include: DARPA Solid-state Eye-safe Aerosol LIDAR (SEAL), Immune Building (multiple protection technologies), and Nanofiber aerosol filtration. FY 08 - Complete transition DHS LBADS to JBTDS. Continue competitive assessment of all mature technology from outside of the CBDP for rapid technology insertion into the capability areas. FY 09 - Continue competitive assessment of all mature technology from outside of the CBDP for rapid technology insertion into the capability areas.	6193	4981	4866	4886
Total	**6193**	**4981**	**4866**	**4886**

	FY 2006	FY 2007	FY 2008	FY 2009
Decontamination	1880	4132	2162	1963

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PROJECT: **CB3**

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Decontamination, Solutions Chemistry - FY 06 - Developed and selected peracetate solvent peroxide-based decontaminants with proper transport, storage, and efficacy and recommended transition to the developmental program to support Joint Portable Decontamination System (JPDS) and Joint Service Transportable Decontamination System - Small Scale (JSTDS-SS); and initiated new research on transportation, storage, and use of hydrogen peroxide for decontamination to support JPDS and Joint Platform Interior Decontamination (JPID). FY 07 - Complete development of reactive impregnated solvent-based wiping system and transition to Joint Material Decontamination System (JMDS) complete research on transportation, storage, and use of hydrogen peroxide for decontamination and transition to JPID and Joint Service Sensitive Equipment Decontamination (JSSED). Complete research on technologies to develop hydrogen peroxide at their point of use.	1155	1150	0	0
Decontamination, Solid Phase - FY 06 - Completed laboratory scale (large panel) testing of solid sorbent based on nanocrystalline metal oxides to support the JSTDS-SS. FY 07 - Complete testing to provide chamber scale studies to assess the impact of applicator process and procedures on solid sorbents based on nanocrystalline metal oxides to support the JSTDS-LS. FY 08 - Complete research efforts to develop reactive sorbent nano-active suspensions and sprayable powders and transition to JSTDS-LS.	725	1680	1071	0

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PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Decontamination, Alternative Processes - FY 07 - Continue research initiated in FY 06 BA2 to develop a gaseous chemical and biological decontamination system combining hot air and modified vaporous hydrogen peroxide, determine efficacy effects on decontamination of chemical and biological agents, and determine candidate formulation and application combinations to support JPID. FY 08 - Complete research to develop a gaseous chemical and biological decontamination system combining hot air and modified vaporous hydrogen peroxide, determine efficacy effects on decontamination of chemical and biological agents, and determine candidate formulation and application combinations and transition to JPID. Initiate efforts to investigate reactive materials and Nanotechnology for decontamination processes and transfer efforts under Protection capability area. FY 09 - Continue efforts to investigate reactive materials and nanotechnology for decontamination processes and transfer efforts under Protection capability area.	0	830	1091	1963
Decontamination, Process Fundamentals - FY 07 - Develop a process to comply with regulatory requirements for Environmental Protection Agency (EPA) registration of all DoD decontaminants by identifying a method that satisfies DoD requirements for bio-efficacy testing as well as satisfying EPA registration data requirements to streamline the approval process and save test dollars.	0	472	0	0
Total	**1880**	**4132**	**2162**	**1963**

	FY 2006	FY 2007	FY 2008	FY 2009
Detection	21161	20758	6898	7411

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PROJECT: CB3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Detection Capabilities for Non-Traditional Agents - FY 06 - Initiated the studies necessary to fill the identified gaps from the analytical studies on the impact of threat environments on the properties of neat agent focusing on biological materials followed by chemical materials. Completed and demonstrated the Hot-LCD prototype for NTAs with reduced power consumption. FY 07 - Continue the studies necessary to fill the identified gaps from the analytical studies on the impact of threat environments on the properties of neat agents focusing on biological materials followed by chemical materials. Initiate trade-studies on impact of Hot-LCD modifications on detection enhancements to detect NTAs to the manufacturing process of the standard LCD. FY 08 - Complete impact studies to incorporate Hot-LCD modifications to standard LCD design and transition recommendations to the Joint Chemical Agent Detector (JCAD) program. Complete the studies necessary to fill the identified gaps from the analytical studies on the impact of threat environments on the properties of neat agents. Complete the development of agent to simulant correlations in support of T&E needs.	3520	3870	898	0
Detection, Chemical Stand-off Technology - FY 06 - Initiated the development of test methodology to evaluate and assess the value of new signatures to reduce the false alarm rate and to increase the detection range. Initiated novel algorithm development to better match the capabilities of existing hardware to optimize performance of systems from the Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD). Complete the development of test methodology and continue the evaluation and assessment the value of new signatures to reduce the false alarm rate and to increase the detection range. Complete the algorithm development for enhanced sensitivity and selectivity for JSLSCAD. FY 07 - Efforts for algorithm and new signature development were reprogrammed to BA2 because FY 2006 efforts proved technology to be immature.	1160	0	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Detection, Lightweight Integrated CB Detection (DTO CB50) - FY 06 - Assessed the ability of technology to meet Joint Biological Tactical Detection System (JBTDS) requirements and as a technology insertion to the Joint Biological Point Detection System (JBPDS) and Reconnaissance Systems as spiral enhancements/replacement for the biological trigger systems. The technology will also meet the need to detect/identify chemical aerosols. Initiated fabrication of brassboards. Developed a UV fluorescence detector that exploits Semiconductor Ultra Violet Optical Sources (SUVOS) developed by DARPA as a competing technology for JBTDS. FY 07 - Demonstrate the technology and transition for technology insertion into JBPDS and Reconnaissance Systems as enhancements/replacement for the biological trigger systems to detect/identify chemical aerosols. Complete fabrication, and test and evaluation of brassboards. Complete DTO and transition to JBPDS and JBTDS.	7263	5231	0	0
Point Detection, Biological Identification - FY 06 - Completed and transitioned into a micro-array system for high throughput laboratory biological detection/identification. Demonstrated the prototype for an antibody multiplex assays system for JBPDS technology insertion and Joint Chemical Biological Radiological Agent Water Monitor (JCBRAWM) Increment 1. FY 09 - Initiate prototype design and fabrication for portable whole genome sequencing of pathogens for JCBRAWM Increment 2 based on applied research in BA2 FY 2007 and FY 2008.	3058	0	0	1411

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Detection, Biological Stand-off Technology - FY 06 - Initiated the development of test methodology to evaluate and assess the value of new signatures in broad regions of the electromagnetic spectrum. FY 07 - Continue the development of test methodology to evaluate and assess the value of new signatures in broad regions of the electromagnetic spectrum. Assess and evaluate the IR data from DTO CB35 and initiate prototype designs based upon this new information to enhance selectivity for interference rejection. FY 08 - Complete the development of test methodology to evaluate and assess the value of new signatures in broad regions of the electromagnetic spectrum. Complete prototype designs and initiate fabrication based upon this new information to enhance selectivity for interference rejection. FY 09 - Complete the fabrication, conduct a demonstration and transition technology to meet Joint Biological Standoff Detection System (JBSDS) Increment 2 technology based upon the new information in the IR electromagnetic spectrum from DTO CB35 to enhance selectivity for interference rejection.	1310	7521	6000	6000
Detection, Chemical/Biological Agent Water Monitor (DTO CB37) - FY 06 - Demonstrated and conducted a Milestone A at the end of FY06 on the system requirements. Completed and transitioned the toxin portion to meet Increment 1 requirements. Completed feasibility studies and transitioned data on the detection needs of all pathogens to meet Increment 1 requirements. Completed DTO and transitioned results to the JCBRAWM.	3600	0	0	0
Detection, System Performance Modeling -	1250	0	0	0

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 06 - Completed the database development of infrared spectral backgrounds. Conducted and finalized an analytical feasibility study to determine the minimal performance parameters needed for a standoff biological detection system for on-the-move capability for a mobile platform like the Stryker vehicle program. Completed the system model for Information Management Systems detection system to project overall performance in various environments.	1250	0	0	0
Detection, Chemical/Biological Agent Water Monitor - FY 07 - Develop a preconcentration system for chemical and biological materials to meet detection sensitivity requirements and transition JCBRAWM Increment 2.	0	4136	0	0
Total	**21161**	**20758**	**6898**	**7411**

	FY 2006	FY 2007	FY 2008	FY 2009
Protection	6723	8673	2920	2931

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Protection, Advanced Air Purification Systems Model (DTO CB61) - FY 06 - Initiated assessment of advanced Commercial off-the-shelf (COTS) and developmental air purification systems. Measured laboratory scale design and platform application integration data to evaluate these configurations. Designed advanced air purification system configuration for one platform application. FY 07 - Fabricate system demonstrators. Test and validate the advanced air purification system model, then optimize for design concepts. Complete test and validation of Advanced Air Purification System Model. Complete and transition advanced air purification system model to Collective Protection (COLPRO) overarching model.	2278	2859	0	0
Protection, Shelter Systems -	991	0	0	0

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 06 - Analyzed COLPRO Technology Readiness Evaluation (TRE) results and identified and documented critical sub-system components and interface/integration issues requiring S&T. Acquired sub-system demo components, addressed interface/integration issues, assembled and tested sub-system. Down-selected and fabricated prototypes from sub-systems. Conducted physical performance testing on prototypes integrated as full COLPRO systems. Results of these test identified technology gaps will be addressed under BA2 COLPRO System Integration in FY 2008.	991	0	0	0
Protection, Self-Detoxifying Materials for CB Protective Clothing (DTO CB45) - FY 06 - Manufactured prototype garments containing reactive nanoparticles. Measured chemical/aerosol breakthrough of garments. Conducted field-testing. Collected user assessments. Conducted chemical warfare agent (CWA) simulant and live CWA testing on worn garments to assess durability. FY 07 - Optimize garment designs. Manufacture optimized prototype garments containing optimized reactive nanoparticle-loaded fabrics. Measure chemical/aerosol breakthrough of optimized garments. Conduct field-testing and assessments. Down-select candidates. Identify technology gaps that will be addressed under BA2 Individual Protection, Integrated Protective Fabrics in FY 2008. Complete DTO and transition technologies to support future protective ensembles.	1600	2100	0	0
Protection, Shelter Systems and CCA/Airlock/Toxic Free Area (CCA/A/TFA) - FY 07 - Fabricate shelters using novel materials, enhanced closures, and novel ingress/egress systems and initiate assessment. Fabricate a prototype general-purpose shelter using improved textiles such as PVC/Tevlar/Polyester fabric and conduct a systems simulant test. Fabricate CCA/A/TFA prototypes and test (simulant). Conduct shelter system tech demo/testing. Results of these test identified technology gaps will be addressed under BA2 COLPRO System Integration in FY 2008.	0	2014	0	0
Protection, Shelter Materials, Coatings and Materials Treatments, Reactive or Self-Decontaminating - FY 06 - Demonstrated Expedient COLPRO Coatings proof-of-concept for tentage applications.	857	550	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **CB3**

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Apply expedient and reactive coatings to current general-purpose tent fabric as after-treatment and test. Transition test results to advance development.	857	550	0	0
Protection, Regenerative and Reactive Air Purification - FY 06 - Demonstrated catalytic-based air purification applications by incorporation of commercial or newly developed catalysts for chemical, biological and TICs destruction. Developed a breadboard system with optimized catalyst, post treatment filter, and thermal management. Transitioned technology specifications to advance development.	598	0	0	0
Protection, Improved Single-Pass Filters - FY 06 - Optimized polishing sorbent material and measured design data for CWA/TIC. Integrated ammonia filtration material into current filters. Demonstrated polishing sorbent for collective protection (CP) filters (M98) and transitioned to Joint Program Manager (JPM), COLPRO. Integrated Residual Life Indicator system with COLPRO filter/blower system and performed validation testing. Demonstrated candidate residual life indicators in operational filtration systems. FY 07 - Develop a Residual Life Indicator (RLI) prototype capable of determining the integrity, physical adsorption capacity and reaction capacity of in-service CBRN filters. Complete tracer evaluation for filter assessment of chemical reactivity capacity with chemical pulse testing and correlation development. Demonstrate subsystem hardware in current CBRN filter providing capability for determining the residual life of filter. Transition technology specifications to advance development.	399	1150	0	0
Protection, Regenerative and Reactive Air Purification - FY 08 - Complete evaluation of the electro thermal swing adsorption (ESA) prototype. Transition ESA technology to the Joint Expeditionary Collective Protection (JECP) system.	0	0	950	0

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Individual Protection, Respiratory/Ocular Protection - FY 08 - Continue integration of the protective mask designs from BA2 efforts with developmental helmet systems to provide seamless compatibility of CB protection with ballistic protection, and integration of communication and optical systems. Initiate development of initial high fidelity prototypes for early assessment of human and operational compatibility. FY 09 - Continue integration of the protective mask designs with developmental helmet systems to provide seamless compatibility of CB protection with ballistic protection, and integration of communication and optical systems. Continue to develop initial high fidelity prototypes for early assessment of human and operational compatibility.	0	0	1050	1450
Protection, Integrated Ensemble Development - FY 08 - Initiate systems integration of a complete CB ensemble. Incorporate emerging designs and prototype concepts from Integrated Protective Fabric, Respiratory/Ocular Protection, and Air Purification projects. Incorporate emerging comfort and performance models in determining trade space. Conduct market surveys. Develop initial concepts for an integrated ensemble that will transition to the Joint Chemical Ensemble (JCE). FY 09 - Continue systems integration of a complete CB ensemble. Incorporate emerging designs and prototype concepts from Integrated Protective Fabric, Respiratory/Ocular Protection, and Air Purification projects. Incorporate emerging comfort and performance models in determining trade space. Refine concepts for an integrated ensemble that will transition to the Joint Chemical Ensemble (JCE). Initiate field trails in a relevant environment.	0	0	920	1481
Total	**6723**	**8673**	**2920**	**2931**

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

	FY 2006	FY 2007	FY 2008	FY 2009
Test and Evaluation (T&E)	18266	28580	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Test & Evaluation, Detection - FY 06 - Continued the development of agent to simulant correlations in support of T&E needs. Initiated the following methodology and capability projects; Measurement of Natural Interferent Transients (MONITR), critical reagent program antigen variability research, range test validation system, chemical detector testing with Non-Traditional Agents (NTAs) in the McNamera Glove Box Facility. Initiated optical acceptance measurements for T&E antigens. FY 07 - Continue the development of agent to simulant correlations in support of T&E needs. Continue Measurement of Natural Interferent Transients (MONITR), critical reagent program antigen variability research, range test validation system, chemical detector testing with NTAs in the McNamera Glove Box Facility. Initiated optical acceptance measurements for T&E antigens. Efforts transition to TE3 in FY 2008.	5029	8011	0	0
Test & Evaluation, Threat Area Science - FY 06 - Initiated and completed the following methodology and capability projects; Aerosol Cloud Production and Droplet Delivery technology Protocol, Engineered Aerosol Production for Laboratory-Scale Chemical and Biological Test and Evaluation. FY 07 - Develop simulant tests and evaluation methods and procedures for non-vapor threats, e.g., aerosols, rains, and other emerging threats. Efforts transition to Project TE3 in FY 08.	1406	938	0	0

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Test & Evaluation, Modeling and Simulation Battle Space Management - FY 06 - Initiated the following methodology and capability projects; Overarching Collective Protection (COLPRO Model), CREATIVE decontamination efficacy prediction model, and overarching contamination avoidance model. FY 07 - Construct prototype model, leverage legacy models, commence validation, verify model via test data, prepare validation reports, and acquired accreditation for the Overarching Collective Protection (COLPRO Model). Continue developing methodology and capability of the CREATIVE decontamination efficacy prediction model and the overarching contamination avoidance model. Initiate overarching model individual protective equipment. Efforts transition to Project TE3 in FY 08.	2315	5319	0	0
Test & Evaluation, Protection - FY 06 - Developed pressure suit concepts and conducted initial test and evaluation for use in assessing field operations effects on garments for IPE field operations effects standard. Developed standardized collective protection (COLPRO) shelter systems protective test and evaluation standards - Developed conceptual biological test operating procedures. Drafted initial procedures and protocol for chemical, biological, and aerosol testing of collective protection systems. Initiated test methodology IP systems/MIST aerosol, COLPRO component and whole systems for the TIC/battlefield contaminant set standard for IPE and COLPRO. Initiated model to predict airflow within the ensemble, and developed test apparatus to validate the IPE Airflow Mapping model. Developed concepts for filtration and air purification system test method development. Initiated development of test apparatus for the conduct of evolving test methods. Initiated development of real-time sampling/detector system swatch for use in Chemical and Biological Agent Resistance Test System (CBART) and system for use in Man-in-Simulant Test System. Initiated protocol development for Protective Ensemble Test System.	6950	8312	0	0

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: CB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Continue development of standardize collective protection shelter systems test and evaluation standards, TIC/battlefield contaminant set standards for IPE and COLPRO, real-time sampling/detector system swatch for use in Chemical and Biological Agent Resistance Test System (CBARTS), Standardize Procedure for IPE Assessment, test methodology standards and guidance for air purification technologies, IPE field operations effect standard, and IPE air flow mapping. Efforts transition to Project TE3 in FY 2008.	6950	8312	0	0
Test & Evaluation, Decontamination - FY 06 - Initiated the following methodology and capability projects; decontamination hazard byproduct and residual agent test standards and achieving low-level detection of residual agent and reaction products. FY 07 - Continue decontamination hazard byproduct and residual agent test standards and achieving low-level detection of residual agent and reaction products. Initiated test and evaluation methodology and method development for decontamination facility equipment for Dugway Proving Ground (DPG). Efforts transition to Project TE3 in FY 2008.	2566	6000	0	0
Total	**18266**	**28580**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
SBIR/STTR	0	1117	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
SBIR - FY 07 - Small Business Innovative Research.	0	1117	0	0
Total	**0**	**1117**	**0**	**0**

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BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **CB3**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
CA4 CONTAMINATION AVOIDANCE (ACD&P)	14650	4996	3125	3165	23047	19905	16559	20881	Cont	Cont
CP4 COUNTERPROLIFERATION SUPPORT (ACD&P)	21960	0	0	0	0	0	0	0	0	21960
DE4 DECONTAMINATION SYSTEMS (ACD&P)	989	1000	3093	7662	0	0	0	0	0	12744

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DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TB3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
TB3	MEDICAL BIOLOGICAL DEFENSE (ATD)	87910	89678	146539	299581	229306	129419	122230	113827	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TB3 MEDICAL BIOLOGICAL DEFENSE (ATD): This project area funds preclinical development of safe and effective prophylaxes and therapies (vaccines and drugs) for pre- and post-exposures to biological threat agents. This project also supports the advanced technology development of diagnostic devices to rapidly diagnose exposure to biological agents in clinical samples. A broad range of technologies involved in the targeting and delivery of prophylactic and therapeutic medical countermeasures and diagnostic systems are evaluated in order to identify the most effective medical countermeasures against biothreats. Entry of candidate vaccines, therapeutics, and diagnostic technologies into development is facilitated by the development of technical data packages that support the Food and Drug Administration (FDA) Investigational New Drug (IND) licensure processes and DoD acquisition regulations and (as applicable) the oversight of Phase 1 clinical trials in accordance with FDA guidelines. Categories for this project area include core science and technology program areas in medical biological defense capability areas (Pretreatments, Diagnostics, Therapeutics) and directed research areas such the Defense Technology Objectives (DTO), efforts to transition promising medical biological defense technologies from the Defense Advanced Research Projects Agency (DARPA) and the Transformational Medical Technologies Initiative (TMTI). The TMTI was launched in FY06 as a key Quadrennial Defense Review initiative to respond to the threat of emerging or intentionally bioengineered biological threats. It augments the core science and technology area by expanding the novel programs currently funded under the core Therapeutics program and introducing new technologies for developmental focus. The TMTI is a novel experiment to develop drugs that are broad spectrum in nature by using non-traditional and high risk approaches to accelerate the development and licensure of new medicines. The TMTI supports advanced technology development efforts for maturing medical countermeasures effective against intracellular pathogens and hemorrhagic fever viruses. Teaming the core program and TMTI provides a complementary strategy (single agent versus broad spectrum, conventional versus emerging threats and established model systems versus expanded integration of novel technology, respectively) towards the development of effective medical countermeasures against biothreat agents.

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Congressional Interest Items	24810	10322	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - UCLA High Speed, High Volume Laboratory Network for Infectious Diseases - Developed of a new high speed, high volume (high-throughput) laboratory capability that will be linked in a network and operated by several premier institutions.	5942	0	0	0
FY 06 - Ebola Countermeasures - Determined if it is feasible to use Phosphorodiamidate Morpholino Oligomers (PMO) to treat Ebola virus infections. The PMOs will be used to interfere with the expression of host genes involved in adaptive immunity.	2971	0	0	0
FY 06 - Polyclonal Human Antibody Productions System - Produced polyclonal antibodies in transgenic cows by evaluating new methods and technologies for downstream purification and viral clearance.	2080	0	0	0
FY 06 - Heteropolymer Anthrax Monoclonal Antibody - Developed the cell line and production activity to support the commercial manufacturing of Anthim, a high-affinity monoclonal antibody that targets the protective antigen (PA) component of anthrax, blocking the bacteria's ability to form deadly toxins.	991	0	0	0
FY 06 - Dengue Countermeasures - Determined if Phosphorodiamidate Morpholino Oligomers (PMO) that have been proven to be effective against Dengue virus in vitro and in a mouse model, can be used as a therapeutic against Dengue virus in the nonhuman primate.	2971	0	0	0
FY 06 - Clinical Treatment for Sulfur Mustard Agent Burns - Investigated the effectiveness of ilomastat in animal models of skin and eye exposure to Sulfur Mustard.	991	0	0	0
FY 06 - Outbreak Detection Information Network (ODIN).	1981	0	0	0

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PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
FY 06 - Oral Adjuvants - Developed adjuvants that enhance natural resistance and adaptive immune responses against mucosal pathogens.	1387	0	0	0
Anthrax Monoclonal Antibody Therapeutic and Prophylaxis Program - FY 06 - Used a monoclonal antibody to attempt to improve survival for anthrax exposure. FY 07 - Refine the use of a monoclonal antibody to attempt to improve survival for anthrax exposure.	2030	991	0	0
Plant Vaccine Development - FY 06 - Developed safe and efficacious oral multi-agent vaccines from plant-based anthrax and plaque platforms and developed an immediate therapeutic treatment against Biological Warfare (BW) agent epidemics. FY 07 - Refine the development of safe and efficacious oral multi-agent vaccines from plant-based anthrax and plaque platforms and developed an immediate therapeutic treatment against BW agent epidemics.	3466	3120	0	0
FY 07 - Anthrax and A. Baumanii Research.	0	991	0	0
FY 07 - Bioterrorism Preparedness.	0	1159	0	0
FY 07 - Novel Viral Biowarfare Agent ID and Treatment (NOVBAIT) - Conduct development of a novel approach to anti-viral therapeutics based on high-throughput screening of compounds against intermediates of the virus capsid assembly pathway.	0	2971	0	0
FY 07 - Rapid Response Therapeutic Platform for Biodefense.	0	1090	0	0
Total	**24810**	**10322**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Transitional Medical Technology Initiative	29096	41443	111739	264946

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PROJECT: TB3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Multiagent (Broad Spectrum) Medical Countermeasures -	29096	41443	111739	264946
FY 06 - Initiated efforts to evaluate therapeutic compounds and small molecule archives for potential drug interactions against common pathogenesis pathways identified from basic research efforts. Initiated design of platforms for discovery, development and manufacturing technologies that allow the rapid incorporation of medical countermeasure technologies into robust and very rapid process development and manufacturing scale-up systems.				
FY 07 - Expand drug discovery efforts such as antisense RNA technology that target common bacterial virulence or house-keeping genes (pathogenicity islands, quorum-sensing molecules, siderophores, etc.). Evaluate additional therapeutic compounds and small molecule archives for potential drug interactions against common pathogenesis pathways identified from basic research efforts. Develop transgenic animal models or alternate animal model systems to better replicate the human-pathodeme, common virulence, and response pathways. Test platforms for discovery, development and manufacturing technologies that allow the rapid incorporation of medical countermeasure technologies into robust and very rapid process development and manufacturing scale-up systems. Develop platform manufacturing technologies that enable rapid regulatory approval and rapid clinical development. Identify potential Investigational New Drug (IND) candidate drugs for development. Initiate candidate drug development phase.				

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PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 08 - Apply drug discovery efforts such as antisense RNA technology that target common bacterial virulence or house-keeping genes (pathogenicity islands, quorum-sensing molecules, siderophores, etc.). Pursue additional therapeutic compounds and small molecule archives for potential drug interactions against common pathogenesis pathways identified from basic research efforts. Validate transgenic animal models or alternate animal model systems to better replicate the human-pathodeme, common virulence, and response pathways. Continue to test platforms for discovery, development and manufacturing technologies that allow the rapid incorporation of medical countermeasure technologies into robust and very rapid process development and manufacturing scale-up systems. Accelerate platform manufacturing technologies that enable rapid regulatory approval and rapid clinical development. Continue to identify potential IND candidate drugs for development. File two applications for an IND with the Food and Drug Administration (FDA). Initiate pre-clinical phase. Initiate studies necessary to support an IND application and a Milestone A decision. FY 09 - Accelerate drug discovery efforts, incorporating new technology breakthroughs. Advance therapeutic compounds and small molecule archives for potential drug interactions against common pathogenesis pathways. Utilize transgenic animal models or alternate animal model systems to replicate the human-pathodeme, common virulence, and response pathways. Pursue test platforms for discovery, development and manufacturing technologies that allow the rapid incorporation of medical countermeasure technologies into robust and very rapid process development and manufacturing scale-up systems. Continue to accelerate platform manufacturing technologies that enable rapid regulatory approval and rapid clinical development. File two to four applications for an IND with the FDA. Initiate clinical phase. Initiate a Phase 1 clinical trial and studies necessary to support a Milestone B decision.	29096	41443	111739	264946
Total	**29096**	**41443**	**111739**	**264946**

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

	FY 2006	FY 2007	FY 2008	FY 2009
Diagnostics	5751	6014	7322	9051

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Diagnostic Technologies - FY 06 - Developed additional multiplexed nucleic acid assays, focusing on the orthopox viruses. Improved the sensitivity and specificity of existing assays, developing assays for new targets and new threats, as genomic data and techniques become available. Provided test and evaluation support for the Joint Biological Agent Identification and Diagnostic System (JBAIDS) Block I assays upcoming for Food and Drug Administration (FDA) approval. Continued to augment field studies of assays, reagents and platforms for the diagnosis of potential Biological Warfare Agents (BWAs) with animal studies prior to transition to the Advanced Developer. Developed a more coordinated and relevant application for animal and field studies, with emphasis on better characterizing JBAIDS Block I assays. Further applied new technological approaches for processing clinical samples to complex matrices and different organisms. Initiated evaluation of a broad range pathogen detection system capable of potentially identifying genetically engineered bacterial strains. Continued to apply proteomics to the development of immunologic assays for pathogen detection. Pursued assessment of next generation diagnostic technologies and their components and explored adaptation for military use.	4051	4214	7322	9051

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Analyze data and deliver recommendations to JBAIDS Program Office on an automated DNA extraction option for Block I. Test optimal matrices/tissues for diagnostic testing identified using Service assays with JBAIDS Block I assays. Use this data, along with the results of expanded inclusivity and exclusivity testing, to augment the Advanced Developer's FDA assay submission packages. Investigate new recombinant DNA techniques for developing immunodiagnostic agents. Validate confirmatory tests for ricin and botulinum toxins. Complete study assessing the use of whole genome amplification and a microelectronic array. Validate multiplexed assays identifying RNA viruses on existing platforms. Apply a Defense Advanced Research Projects Agency (DARPA) transitioned broad range pathogen detection system capable of potentially identifying genetically engineered bacterial strains. Utilize proteomics data to develop and test immunologic assays for bioagent detection. Perform advanced testing on components and platforms for next generation diagnostic devices with an emphasis on integration of sample processing and nucleic acid and immunodiagnostic testing.	4051	4214	7322	9051
FY 08 - Continue to test optimal matrices/tissues for diagnostic testing identified using Service assays with JBAIDS Block I assays. Use this data, along with the results of expanded inclusivity and exclusivity testing, to augment the Advanced Developer's FDA assay submission packages. Apply new recombinant DNA techniques for developing immunodiagnostic agents. Adapt real time Polymerase Chain Reaction (PCR) assays identifying genes responsible for antibiotic resistance in biothreat agents to applicable instrumentation. Assess enhanced sensitivity of surface amplification methods for microarray platforms. Critically analyze/apply the results of the decision matrix to developmental testing of next generation diagnostic devices with emphasis on technologies capable of integrating sample processing, nucleic acid and immunodiagnostic testing. Accelerate development and testing of next generation diagnostic devices with the goal of transitioning two candidates to the advanced developer in FY09.				

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 09 - Transition two candidates for a next generation diagnostic device to the advanced developer. Continue to utilize the decision matrix to identify and evaluate new technologies more effectively diagnosing exposure to biothreat agents. Validate real time PCR assays identifying genes responsible for antibiotic resistance in biothreat agents. Perform advanced assessment on the use of recombinant DNA reagents on existing systems and improved test assays utilizing new technologies and approaches that enhance diagnosis of early exposure to biothreat agents.	4051	4214	7322	9051
Diagnostics, Methodology to Facilitate Development of Biological Warfare Threat Agent Detection and Medical Diagnostic Systems (DTO CB56) - FY 06 - Delivered four new nucleic acid detection/diagnostic assays and/or supporting reagents to the advanced developer with priority for JBAIDS assays. Delivered four new antigen detection assays and/or supporting reagents to the advanced developer. FY 07 - Deliver four new additional nucleic acid detection/diagnostic assays and/or supporting reagents to the advanced developer with priority for JBAIDS assays. Deliver four new additional antigen detection assays and/or supporting reagents to the advanced developer. Completed DTO CB56.	1700	1800	0	0
Total	**5751**	**6014**	**7322**	**9051**

	FY 2006	FY 2007	FY 2008	FY 2009
Emerging Threats	1643	0	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Emerging Threats, Genetically Engineered Threats -	1643	0	0	0

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DATE: February 2007

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 06 - Conducted determination of spore germination inhibitors and their effectiveness. Transitions to Therapeutics in FY07.	1643	0	0	0
Total	**1643**	**0**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Pretreatments	10236	11844	12915	10097

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Pretreatments, Vaccine Research Support - Recombinant Ricin Vaccine (DTO CB46) - FY 06 - Completed expression and purification of ricin toxin components in a soluble, immunogenic form. Continued down-selection of vaccine candidates and non-human primates efficacy studies (surrogate marker of clinical efficacy). Pursued formulation and stability studies. Prepared technical data from completed vaccine research studies to the advanced developer for incorporation into an Investigational New Drug (IND) application. Initiated studies of the involvement of novel and current ricin vaccine candidates in vascular leak syndrome. DTO CB46 completed in FY06.	1324	0	0	0

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PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Pretreatments, Vaccine Research Support -	2621	8490	8007	7775

FY 06 - Evaluated animal studies in support of clinical trials of selected vaccine candidates against bacterial threat agents. Continued technology base studies in support of the development and eventual Food and Drug Administration (FDA) licensure of the ricin candidate vaccine. Expanded challenge studies against selected intracellular pathogen candidate vaccines and evaluated the contribution of cell-mediated immunity toward protection. Increased the evaluation of the human immune response to selected target antigens.

FY 07 - Conduct animal studies of selected vaccine candidates against bacterial threat agents. Expand challenge studies against selected intracellular pathogen candidate vaccines. Initiate optimization of new generation intracellular pathogen vaccines, considering alternative adjuvant formulations, routes of administration, and dosage schedules. Evaluate ability and characteristics of next generation Staphylococcal Enterotoxin A/Staphylococcal Enterotoxin B (SEA/SEB) immunogens as vaccine candidates to protect against multiple SE serotypes in vivo. Develop surrogate endpoints of clinical efficacy for higher animal species in ricin vaccine adjuvant studies. Pursue recombinant ricin vaccine candidate stability testing and initiate toxicity studies. Study the vascular leak peptide in novel and current ricin vaccine candidates. Evaluate the Venezuelan Equine Encephalitis (VEE) replicon-based Marburg virus vaccine platform in non-human primate efficacy studies. Study adenovirus-based and rhabdovirus-based immunization approaches for vaccination against filoviruses. Start down-selection phase of the various filovirus vaccine candidate constructs (platforms) and evaluate alternative forms of delivery for comparative evaluation of vaccine efficacy.

FY 08 - Complete non-human primate efficacy studies for toxin vaccines, such as ricin, SEB and botulinum; initiate/continue stability and toxicity studies. Initiated process for production of cGMP lots for advanced evaluation in clinical studies. Down-select filovirus vaccine candidates; continue safety and efficacy studies in non-human primates; begin duration of immunity studies; initiate stability testing. Evaluate pan-filovirus vaccines for problems of vaccine interference between components.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 09 - Continue safety, toxicity and duration of immunity studies in non-human primates for filovirus vaccines; optimize dose, route and/or regimen for maximum efficacy. Assess multiagent alphavirus and filovirus vaccines for issues of vaccine interference. Conduct stability and toxicity studies for lead alphavirus vaccine candidates. Complete stability and toxicity studies for toxin vaccine, such as ricin, SEB and botulinum; prepare cGMP production lots; begin IND preparation for FDA evaluation.	2621	8490	8007	7775
Pretreatments, Multiagent Vaccines, Western and Eastern Equine Encephalitis (WEE/EEE) Vaccine Constructs for a Combined Encephalitis Vaccine (DTO CB58) - FY 06 - Continued evaluating combinations of EEE, WEE, and V3526 VEE or alternate VEE constructs (the DNA- or replicon-based vaccine platforms) in animal models. Completed evaluation of promising WEE/EEE vaccine candidates in higher animal species against EEE or WEE virus challenge. FY 07 - Finalize the evaluation of promising WEE/EEE vaccine candidates in higher animal species against EEE or WEE virus challenge. Conduct duration of immunity studies with lead candidates for each platform, comparing the individual constructs and trivalent formulations. Evaluate results of recent clinical trial study and modify V3526 vaccine candidate. Develop NHP models of aerosol exposure to all alphaviruses. FY 08 - Complete duration of immunity studies for each platform, comparing individual constructs and trivalent formulations. Initiate studies to address issue of vaccine interference. Conclude safety and efficacy studies in animal models. Initiate down-selection process of alphavirus vaccine candidates. DTO CB58 will be completed in FY08.	2943	2978	3100	0
Pretreatments, Multiagent Vaccines (Formerly Resuscitative Intervention) - FY 06 - Evaluated various vaccine platform technologies that are amenable to multiagent immunization. Designed study of multiagent anthrax/plague/ricin recombinant protein vaccine and initiated testing in a murine model.	36	376	1808	2322

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Evaluate multiagent candidate vaccines in non-human primates model for immunogenicity and immune interference, especially adjuvant formulations/systems that enhance the efficacy of molecular vaccines. Continue evaluation and eventual down-selection of various vaccine platform technologies that are amenable to multiagent immunization. Analyze duration of immunity and protective efficacy of multiagent vaccine formulations. Pursue studies of a protein-based trivalent (anthrax/plague/ricin) vaccine. FY 08 - Determine optimum dose mixture and route of entry for protein-based trivalent vaccine and evaluate any potential antigen interference phenomena. Extend studies to a second animal model. Down-select vaccine platform technologies that are amenable to multiagent immunization. Evaluate trivalent vaccine with novel adjuvant formulations to enhance the immune response. FY 09 - Evaluate safety and efficacy of protein-based trivalent vaccine in non-human primates; complete studies of antigen interference; conduct duration of immunity studies. Optimize down-selected multiagent vaccine platform; determine dosage and route of entry and efficacy.	36	376	1808	2322
Pretreatments, Multiagent Vaccines, Vaccine Technologies for Protection Against Filovirus (Marburg and Ebola Viruses) Exposure (DTO CB60) - FY 06 - Conducted testing with animal models of aerosol infection with filoviruses. Investigated whether putative surrogate markers of protection reliably predict mitigation or prevention of disease in animals for optimal vaccine development. Continued recombinant vaccine development for filoviruses. Evaluated vaccine performance requirements (vaccine dose, route, number of doses) in animal models. Initiated preparations for down-selection of filovirus candidate vaccine platform. DTO CB60 completed in FY06.	3312	0	0	0
Total	**10236**	**11844**	**12915**	**10097**

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BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

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PROJECT: TB3

	FY 2006	FY 2007	FY 2008	FY 2009
Therapeutics	16374	19188	14563	15487

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Therapeutics, Viral, Therapy for Smallpox and Other Pathogenic Orthopox Viruses (DTO CB54) - (Additional studies to support the transition of oral therapeutics for orthopox to advanced development will be supported by TB2 in FY07 and the Viral Therapeutics program in FY08) - FY 06 - Tested the intravenous formulation of cidofovir in non-human primates (NHPs) to support Food and Drug Administration (FDA) licensure of the drug as a therapeutic for smallpox under the FDA Animal Efficacy Rule. Developed and executed initial steps in plan for licensure and manufacturing of oral cidofovir therapeutic candidate, leading up to milestone approval and transition. DTO CB54 completed.	2411	0	0	0
Viral, Therapeutic Strategies for Treating Filovirus (Marburg and Ebola Viruses) Infection (DTO CB63) - (The follow-on DTO CB67 is designed to support filovirus therapeutic development building on the accomplishments of DTO CB63.) FY 06 - Determined the effect of treatment on viral pathogenesis in the mouse Ebola virus model and Marburg mice and guinea pigs models. Performed efficacy studies in NHP models that provide the best model for evaluation of the potential for treating filoviruses. Developed and executed initial steps in plan for licensure and manufacturing with lead compounds, leading up to milestone approval and transition. Initiated a comprehensive analysis of mechanisms of protection. Completed analysis of studies performed to characterize the pathogenesis of Marburg virus (strain Ci67) in non-human primates in support of the FDA two animal efficacy rule. Completed DTO CB63.	2625	0	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Therapy for Ebola and Marburg Virus Infections (DTO CB67) -	0	3264	5097	5420
FY 07 - Design studies to compare the utility of therapeutic technologies against Ebola and Marburg viruses in animal models, considering FDA requirements for licensure under the animal rule. Technologies include antisense oligonucleotides, recombinant human monoclonal antibodies, small interfering RNAs (siRNA), small molecules, and therapeutic vaccines.				
FY 08 - Initiate testing in relevant small and large animal models to support Investigational New Drug (IND) submission and FDA licensure under the animal rule. Down-select leading technologies based on results from animal studies, in coordination with the advanced developer.				
FY 09 - Continue pivotal testing to support IND submission and transition of a nucleic acid based filovirus therapeutic to the advanced developer. Initiate FDA required studies to support the development and characterization of other leading therapeutic technologies against the Ebola virus and Marburg virus, with a focus on monoclonal antibody based therapeutics.				

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Viral -	1258	4364	5825	5885
FY 06 - Performed dose ranging studies in primates for lead compounds effective against viral threat agents. Initiated development of a treatment algorithm for severe Ebola infection.				
FY 07 - Test leading antivirals in appropriate, existing animal models and worst-case scenarios such as viral challenge dose, route, and variation in viral challenge strain, considering FDA requirements for product licensure under the animal rule. Conduct studies to support FDA licensure and manufacturing with lead compounds, leading up to milestone approval and transition. Expand the effort to develop a treatment algorithm for severe Ebola infection.				
FY 08 - Initiate animal studies, as lead antiviral compounds effective against emerging and genetically engineered threats are identified, to support FDA submissions, milestone approval, and product transition to advanced development. Complete development of a treatment algorithm for severe Ebola infection. Complete studies transitioned from DTO CB54. Transition ST-246 as an oral therapeutic for orthopox virus infection to advanced development. Conduct FDA required non-human primate studies required to complete development of the oral prodrug of cidofovir as a therapeutic for orthopox viral infection.				
FY 09 - Conduct studies to support FDA submissions, milestone approval, and product transition to advanced development. Focus on evaluation of broad spectrum therapeutics effective against genetically engineered threats. Finalize requirements to transition oral cidofovir to the advanced developer.				

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PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Bacterial - FY 06 - Assessed select compounds for safety and efficacy against multiple bacterial threat agents in NHPs. Utilized enhanced aerobiology capabilities and animal models to characterize pharmacokinetic and pharmacodynamic profiles of bacterial therapeutics. FY 07 - Evaluate newly discovered and newly approved compounds with antibacterial activity for safety and efficacy against multiple bacterial threat agents in non-human primate and other appropriate animal models. Therapeutics studies should include not only treatment in models of active infection but also post-exposure prophylaxis. FY 08 - Conduct advanced safety and efficacy studies in non-human primates, considering FDA requirements for licensure of new therapeutics and approved therapeutics with a new indication. Efforts should be coordinated with the advanced developer to ensure the appropriate studies are conducted. FY 09 - Initiate advanced safety and efficacy studies for a nanobody based immunotherapeutic against plague. Conduct advanced safety and efficacy studies for broad spectrum antibacterials considering FDA requirements for licensure under the animal rule.	1925	3485	2330	2478
Toxin, Therapeutic Strategies for Botulinum Neurotoxins (DTO CB59) - FY 06 - Developed a technology for nonclinical studies of optimum therapeutic candidates/treatment modalities. Evaluated potential delivery systems for the lead peptide inhibitors. Refined and demonstrated, to the extent possible, additional technologies that integrate established and emerging toxin therapeutic modalities into suitable candidate therapies in humans, specifically as a complement to future vaccination strategies. Completed DTO CB59.	4718	0	0	0

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TB3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Toxin - FY 06 - Conducted studies in animal models with lead compounds shown to have potential as inhibitors of target toxins (botulinum neurotoxin (BoNT), ricin, staphylococcal enterotoxin B (SEB)). FY 07 - Demonstrate in vivo suitable delivery systems for lead candidate compounds. Initiate evaluation of lead candidates in animal models acceptable for approval under the FDA animal rule. FY 08 - Evaluate lead compounds in support of FDA submissions, milestone approval, and future transition to advanced development. Develop therapeutic delivery systems in accordance with FDA requirements. FY 09 - Consider FDA requirements for developing BoNT therapeutics with the potential to restore synaptic activity following neuroparalysis due to intoxication, and plan initial studies to support these requirements.	1915	5855	1311	1704
Therapeutics, Resuscitative Intervention - FY 06/07 - Initiate and continue screening available technologies being developed for "golden hour" treatment of combat casualties against current medical countermeasures for nerve agent pre-treatment and therapy for drug interaction effects. Modeled patient physiological response to chemical (nerve) agent in silico to establish treatment response guidelines and to assist in evaluation of drug interaction effects.	1522	2220	0	0
Total	**16374**	**19188**	**14563**	**15487**

	FY 2006	FY 2007	FY 2008	FY 2009
SBIR/STTR	0	867	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TB3**

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
SBIR - FY 07 - Small Business Innovative Research.	0	867	0	0
Total	**0**	**867**	**0**	**0**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
MB4 MEDICAL BIOLOGICAL DEFENSE (ACD&P)	26346	2600	0	0	122592	139754	133939	134012	Cont	Cont
MB5 MEDICAL BIOLOGICAL DEFENSE (SDD)	49964	67358	69039	65396	57561	160884	143432	142500	Cont	Cont

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

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BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TC3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
TC3	MEDICAL CHEMICAL DEFENSE (ATD)	20499	18225	28976	28526	29218	30777	31833	32133	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TC3 MEDICAL CHEMICAL DEFENSE (ATD): This project supports the investigation of new medical countermeasures to include prophylaxes, pretreatments, antidotes, skin decontaminants and therapeutic drugs to protect U.S. forces against known and emerging chemical warfare threat agents. Capabilities are maintained for reformulation, formulation, and scale-up of candidate compounds using current good laboratory practices. Analytical stability studies, safety and efficacy screening, and preclinical toxicology studies are performed prior to full-scale development of promising pretreatment or treatment drug compounds. Entry of candidate pretreatment/prophylaxes, therapeutics, and diagnostic technologies into development is facilitated by the development of technical data packages that support the Food and Drug Administration (FDA) Investigational New Drug (IND) application and licensure processes and DoD acquisition regulations. Categories for this project include Defense Technology Objectives (DTOs), science and technology program areas in medical chemical defense capability areas (Pretreatments, Diagnostics, Therapeutics and Emerging Threats), and directed research efforts (Low Level Chemical Warfare (CW) agent exposure and Non-Traditional Agents (NTAs)).

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Congressional Interest Items	0	2328	0	0

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PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 07 - Antioxidant Micronutrient Therapeutic Countermeasures for Chemical Agents.	0	1337	0	0
FY 07 - Low Cost Chemical Agent (CA) Detection System for Mission Critical Facilities.	0	991	0	0
Total	**0**	**2328**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Diagnostics	554	592	684	702

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Diagnostic Technologies - FY 06 - Continued advanced research experiments aimed at transitioning detection methods in clinical samples for metabolites, adducts and/or other relevant biomarkers resulting from chemical warfare agent (CWA) exposure. Expanded studies adapting the DoD-developed whole blood cholinesterase assay for organophosphate exposure to automation and high throughput testing; analyzed marker studies and standardized/converted test data from various methods to Walter Reed Army Institute of Research (WRAIR) units. Demonstrated the utility of a sulfur mustard plasma/blood protein assay in an inhalational model for sulfur mustard exposure. Worked with Centers for Disease Control (CDC) to validate a method to assay urinary hydrolysis products for nerve agents. Proceeded with in vivo validation of the fluoride reactivation assay to detect VX nerve agent and investigated potential strategies for incorporation of internal standard to fluoride reactivation assay.	554	592	684	702

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PROJECT: TC3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Validate improved/novel assays against standard assays published in standard TB MED 296. Accelerate advanced research experiments aimed at transitioning detection methods in clinical samples for metabolites, adducts and/or other relevant biomarkers resulting from CWA exposure. Conduct further animal studies to validate assays for detecting biomarkers of CWA exposure in biological samples. Complete automation/high throughput instrument validation for the DoD-developed whole blood cholinesterase assay for organophosphate exposure; complete normal baseline and variability studies; collate marker studies; expand efforts to adapt method to a hand-held, field deployable device allowing immediate evaluation of exposure to nerve agents, pesticides and other organophosphates. Initiate studies to incorporate an internal standard to improve the fluoride reactivation assay. Perform in vitro studies to optimize the sulfur mustard blood protein assay. FY 08 - Perform method validation studies for the improved fluoride reactivation method and initiate in vivo animal model exposure tests to characterize the assay. Continue metabolic profile (metabonomic) studies in animal exposure models by examining blood from agent exposed guinea pigs and assess feasibility as a potential diagnostic technique. Initiate method validation for optimized sulfur mustard blood protein assay. FY 09 - Conclude validation of the optimized sulfur mustard blood protein assay. Initiate validation of the beta-lyase urinary metabolite assay. Conclude metabonomics study and conduct data analysis. Complete validation of procedure to assess the presence of chemical warfare analytes from hair samples.	554	592	684	702
Total	**554**	**592**	**684**	**702**

	FY 2006	FY 2007	FY 2008	FY 2009
Emerging Threats	9406	0	0	0

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Emerging Threats, Nerve Agent Defense, Non-Traditional Nerve Agent Medical Countermeasures (DTO CB57) - FY 06 - Completed studies on the efficacy of barrier skin creams on Non-Traditional Agents (NTAs) and determined the effectiveness of current skin decontamination kits in treating NTA skin contamination. Determined the efficacy of oximes and human butyl cholinesterase against NTAs. Completed DTO CB57.	4233	0	0	0
Emerging Threats, Chemical Warfare Agent Defense, Low Level CW Agent Exposure - FY 06 - Completed studies on the effects of chronic low dose chemical exposure and possible medical countermeasures. Transitions to Therapeutics in FY07.	1129	0	0	0
Emerging Threats, Chemical Warfare Agent Defense, Low Level CW Agent Exposure - FY 06 - Effects and Countermeasures (DTO CB51) - Completed integration studies to determine the long term effects of exposure to low levels of chemical agents and determine their relevance to operational risk management hazard assessment. Completed DTO CB51.	2633	0	0	0
Emerging Threats, Nerve Agent Defense, Non-Traditional Nerve Agent Medical Countermeasures - (DTO CB57) - FY 06 - Evaluated the pharmacokinetics of improved candidate medical countermeasures for comparison to the in vivo (inside the organism) persistence of NTAs. Conducted studies on human-derived butyrylcholinesterase (plasma and recombinant) as a bioscavenger protective molecule.	1411	0	0	0
Total	**9406**	**0**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Pretreatments	4302	5625	7979	8158

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Pretreatments, Nerve Agent, Bioscavengers -	4302	5625	7979	8158

FY 06 - Assessed plasma bioscavenger (Increment 1) in animal model studies for safety and efficacy. Supported studies for recombinant bioscavenger (Increment 2) transition to the advanced developer and toward Investigational New Drug (IND) status. Explored utility of peptide drugs as potential catalytic bioscavengers. Performed studies of the 3-D crystallographic structures of human carboxylesterase (CaE) and paraoxynase 1 (PON-1). Initiated the use of directed evolution or gene shuffling as an approach to identify Bioscavenger molecules. Determined physiological based pharmacokinetic (PBPK) models to predict bioscavenger efficacy in non-human primates (NHPs) models.

FY 07 - Expand recombinant and catalytic bioscavenger efficacy, immunogenicity, and stability studies. Provide supportive studies for IND submission for recombinant bioscavenger candidate (Increment 1). Evaluate in vivo expression systems for bioscavenger delivery. Continue and expand structural studies of potential catalytic bioscavengers, including human carboxylesterase (CaE) and paraoxynase 1 (PON-1). Extend animal model evaluation, significantly reduced immunogenicity, and efficacy studies of recombinant and catalytic bioscavengers. Utilize recombinant bioscavenger molecules in homologous animal model systems to evaluate stability and immunogenicity. Pursue development of PBPK models that predict efficacy of bioscavengers in non-human primates.

FY 08 - Complete all remaining supportive studies for recombinant bioscavenger candidate (Increment 2). Continue to evaluate in vivo expression systems for bioscavenger delivery. Pursue structural studies of potential catalytic bioscavengers, including human carboxylesterase (CaE) and paraoxonase 1 (PON-1). Optimize PBPK models that predict efficacy of bioscavengers in NHPs. Conduct efficacy studies of catalytic bioscavenger molecules.

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 09 - Optimize in vivo expression systems for bioscavenger delivery. Complete structural studies of potential catalytic bioscavengers, such as carboxylesterase (CaE) and paraoxynase 1 (PON-1). Utilize PBPK models that predict efficacy of bioscavengers in NHPs for novel catalytic bioscavenger molecules. Evaluate catalytic bioscavenger molecules for safety, efficacy, stability and immunogenicity.	4302	5625	7979	8158
Total	**4302**	**5625**	**7979**	**8158**

	FY 2006	FY 2007	FY 2008	FY 2009
Therapeutics	6237	9505	20313	19666

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PROJECT: TC3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Therapeutics, Cutaneous and Ocular -	2617	3728	4063	3933

FY 06 - Evaluated a wide array of commercially available wound healing products for their efficacy in promoting improved healing of superficial dermal sulfur mustard injuries using a validated weanling pig model. Determined the safety and efficacy of a variety of selected compounds, including protease inhibitors, using a rodent model. Performed pharmacokinetic evaluations of selected antivesicants. Conducted efficacy studies to evaluate various decontaminants non-traditional agents (NTA) compared to no decontamination.

FY 07 - Initiate pivotal animal efficacy studies for wound healing products, according to Food and Drug Administration (FDA) licensure requirements. Evaluate additional candidate decontamination systems for NTA exposure. Determine the efficacy of Skin Exposure Reduction Paste Against Chemical Warfare Agents (SERPACWA) against non-traditional agents compared to no protection. Evaluate additional candidate formulations to meet protection requirements.

FY 08 - Continue pivotal studies to support FDA licensure of wound healing products and antivesicants. Optimize dosing schemes, evaluate pharmacokinetics, and refine approaches for potential human use. Down-select new decontamination formulations and evaluate for efficacy in compliance with FDA regulations.

FY 09 - Initiate NHP studies to determine long term effects of down-selected wound healing products and vesicant agents, in coordination with the advanced developer.

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Neurologic - FY 06 - Maximized use of pharmacologic data obtained to develop improved single or multiple drug regimens to treat nerve agent induced seizures. Completed and compiled data for pharmacokinetic evaluations of most promising neuroprotectants. Investigated role of novel agents such as huperzineA in central nervous system (CNS) protection. Evaluated the neurobehavioral effects of nerve agents in non-human primates and rodents to investigate the role and efficacy of new therapeutic agents. Performed safety testing and dose range studies for new compounds in a non-human primate model. FY 07 - Establish pharmacokinetic and pharmacodynamic parameters of treatment to determine threshold therapeutic drug levels. Refine compound synthesis and selection. Perform neurobehavioral assessment of promising candidate products in the appropriate models. FY 08 - Test candidate neuroprotectants in one or more animal models, with a focus on requirements to support FDA submissions under the Animal Rule. Initiate safety/side effect/dosing and pharmacokinetic evaluation of new compounds. FY 09 - Conduct evaluation of novel and FDA approved anticonvulsants, neuroprotectants, anti-epileptics, and receptor agonists and antagonists for neuroprotective activity against nerve agents in animal models according to FDA requirements, as candidates become available.	3620	2620	12203	11783
Therapeutics, Medical Toxicology - Non-Traditional Agents (NTAs) and Other agents - FY 07 - Plan improved strategies for extrapolating NTA exposure hazards for human risk assessment utilizing existing and developing computational methods. FY 08 - Verify and validate new generation computational tools for predictive modeling. FY 09 - Develop and validate practical clinical strategies to aid in management of NTA casualties.	0	2000	3047	2950

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TC3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Therapeutics, Chemical Warfare Agent Operational Exposure Hazard Assessment Research (DTO CB69) - FY 07 - Extrapolate relevant experimental effects to determine post-exposure health problems that may impact subsequent operational readiness. Design and execute studies to generate scientifically valid data to serve as a basis for reducing the error in health risk assessment predictions for useful military Operational Risk Management (ORM) decisions. FY 08 - Conduct toxicokinetic modeling to support animal-to-human extrapolations of toxicity and to predict toxicity with various routes and durations of exposure. FY 09 - Complete data analysis and deliver dataset to define the operational effects from chemical agent contact and inhalation exposure. Complete DTRO CB69.	0	1157	1000	1000
Total	**6237**	**9505**	**20313**	**19666**

	FY 2006	FY 2007	FY 2008	FY 2009
SBIR/STTR	0	175	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
SBIR - FY 07 - Small Business Innovative Research.	0	175	0	0
Total	**0**	**175**	**0**	**0**

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TC3**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
MC4 MEDICAL CHEMICAL DEFENSE (ACD&P)	24809	37508	14529	4446	0	0	0	0	0	81292
MC5 MEDICAL CHEMICAL DEFENSE (SDD)	2406	6391	21348	26106	16306	18897	17740	12173	Cont	Cont

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TE3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
TE3	TEST & EVALUATION (ATD)	0	0	26269	26377	22401	19788	15613	15506	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TE3 TEST & EVALUATION (ATD): This funding supports the development of test and evaluation methodologies and protocols as new science and technology efforts are discovered that support developmental/operational testing. It includes the coordination of methodology development within a CBDP T&E Investment Strategy and the ongoing development of requirements for S&T infrastructure core capabilities. These new methodologies and testing capabilities include the development of simulants and stimulants. Projects under this item were previously reported in CB3 Test and Evaluation.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Test and Evaluation	0	0	26269	26377

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Test and Evaluation, Detection - FY 08 - Transition critical reagent program antigen variability research to Biosafety Level (BSL)-2 and BSL-3 production facilities. Complete and transition DoD standard for background interferent references and test procedures. Complete range test validation system. Continue optical acceptance measurement for test and evaluation antigens. FY 09 - Complete optical acceptance measurement for test and evaluation antigens.	0	0	9312	3500

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TE3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Test and Evaluation, Threat Agent Science - FY 08 - Incorporate non-traditional agent (NTA) data to define and develop improved NTA simulants to address test and evaluation needs. Identify requirements for and initiate development of simulants for CB warfare agents for use in test and evaluation efforts. Initiate development of simulants to reflect masking/encapsulation technology used with CB agents FY 09 - Complete development of NTA simulants for test and evaluation efforts. Continue development of simulants for other CB warfare agents for use in test and evaluation efforts. Continue development of masking/encapsulation simulants for CB agents.	0	0	1500	6040
Test and Evaluation, Modeling and Simulation Battle Space Management - FY 08 - Complete and deliver verified and validated overarching contamination avoidance model. Complete and deliver verified and validated overarching decontamination model. Complete and deliver verified and validated collective protection model. Develop support models for overarching individual protection model using requirements and existing models. FY 09 - Assemble support models into an overarching individual protection model architecture. Complete all development and transition of test and evaluation models.	0	0	5850	5275

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TE3

Accomplishments/Planned Program (Cont):	FY2006	FY2007	FY2008	FY2009
Test and Evaluation, Protection - FY 08 - Complete development to standardize collective protection shelter systems test and evaluation standards, Toxic Industrial Chemicals (TIC)/battlefield contaminant set standards for Individual Protection Equipment (IPE) and Collective Protection (COLPRO), and standardize procedures for IPE Assessment. Continue real-time sampling/detector system swatch for use in Chemical and Biological Agent Resistance Test System (CBARTS), test methodology standards and guidance for air purification technologies, IPE field operations effect standard, and IPE air flow mapping. FY 09 - Complete real-time sampling/detector system swatch for use in CBARTS, test methodology standards and guidance for air purification technologies, IPE field operations effect standard, and IPE air flow mapping.	0	0	5707	7712
Test and Evaluation, Decontamination - FY 08 - Complete decontamination hazard byproduct and residual agent test standards and low level detection of residual agents in reaction products and deliver standard test methods to Service laboratories and other supporting test laboratories. Complete test protocols for decontamintation hazard byproduct and residual test standards and write and publish test operations procedures. FY 09 - Initiate test and evaluation methodologies and protocols for assessing reactivity of alternative technologies and processes.	0	0	3900	3850
Total	**0**	**0**	**26269**	**26377**

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TE3**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
TE4 TEST & EVALUATION (ACD&P)	17776	1992	14049	6407	5646	5497	11944	30028	Cont	Cont
TE5 TEST & EVALUATION (SDD)	18892	22163	45604	42481	37603	15485	15008	4844	Cont	Cont
TE7 TEST & EVALUATION (OP SYS DEV)	0	0	7016	7201	6922	8094	8235	8235	Cont	Cont

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TR3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
TR3	MEDICAL RADIOLOGICAL DEFENSE (ATD)	0	2153	2189	4825	2487	995	0	0	0	12649

A. Mission Description and Budget Item Justification:

Project TR3 MEDICAL RADIOLOGICAL DEFENSE (ATD): This project funds preclinical development of safe and effective prophylaxes for pre-exposure treatment against radiological threats. A broad range of technologies involved in the targeting and delivery of prophylactic medical countermeasures is evaluated so that the most effective countermeasures are identified for development. Entry of candidate pretreatment technologies into development is facilitated by the development of technical data packages that support the Food and Drug Administration (FDA) Investigational New Drug (IND) and licensure processes and DoD acquisition regulations. Program objectives focus on mitigating the health consequences from exposures to ionizing radiation that represent a significant threat to US forces under current tactical, humanitarian, and counter terrorism mission environments. Findings from basic and developmental research are integrated into highly focused advanced technology development studies to produce the following: (1) protective therapeutic studies; (2) novel biological markers and delivery platforms for rapid, field-based individual dose assessment; and (3) experimental data needed to build accurate models for predicting casualties from complex injuries involving radiation and other battlefield insults.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Radioprotectants	0	2132	2189	4825

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TR3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
Radioprotectants - FY 07 - Explore new promising candidate drugs found to have a radiological treatment dose efficacy expressed as dose-reduction factor (DRF) of 1.20 or greater in rodents. Initiate preclinical efficacy studies in non-human primates (NHPs) to include non-clinical toxicological and pharmacokinetic analysis, assessment of drug mechanism, and initial determination of formulation. Explore products and regimens that mitigate and/or treat radiation injury post-exposure, with emphasis on broad activity, ease of administration, and safety. Initiate study for promising radioprotectants that prevent/mitigate post-radiation exposure such as cytokines, nutraceuticals (probiotic), and anti-apoptotic and/or decoporating agents. FY 08 - Evaluate three to four promising drug candidates that have a DRF of 1.20 or greater in rodents. Using these promising drug candidates in rodents, initiate evaluation of the efficacy in NHPs for non-clinical toxicological and pharmacokinetic analysis, assessment of drug mechanism of action, and initial determination of formulation. Initiate evaluation of products and regimens that mitigate and/or treat radiation injury post-exposure, with emphasis on broad activity, ease of administration, and safety. Initiate evaluation for additional promising radioprotectants that prevent/mitigate post-radiation exposure such as cytokines, nutraceuticals (probiotic), and anti-apoptotic and/or decoporating agents. FY 09 - Continue to evaluate at least two promising candidate drugs found to have a DRF of 1.20 or greater in rodents. Evaluate efficacy of three to four candidate products and regimens that mitigate and/or treat radiation injury post-exposure, with emphasis on broad activity, ease of administration, and safety in NHPs. Continue to evaluate the preclinical efficacy studies in NHPs to include non-clinical toxicological and pharmacokinetic analysis, assessment of drug mechanism of action, and drug determination of formulation according to the Food and Drug Administration (FDA) two-animal efficacy rule. Evaluate promising radioprotectants that prevent/mitigate post-radiation exposure such as cytokines, nutraceuticals (probiotic), and anti-apoptotic and/or decoporating agents.	0	2132	2189	4825
Total	**0**	**2132**	**2189**	**4825**

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TR3

	FY 2006	FY 2007	FY 2008	FY 2009
SBIR/STTR	0	21	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
SBIR - FY 07 - Small Business Innovative Research.	0	21	0	0
Total	**0**	**21**	**0**	**0**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
MR4 MEDICAL RADIOLOGICAL DEFENSE	0	8967	7117	3321	0	0	0	0	0	19405

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CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TT3**

COST (In Thousands)		FY 2006 Actual	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	FY 2012 Estimate	FY 2013 Estimate	Cost to Complete	Total Cost
TT3	TECHBASE TECHNOLOGY TRANSITION	13661	12623	7667	8150	8463	8329	9430	9533	Continuing	Continuing

A. Mission Description and Budget Item Justification:

Project TT3 TECHBASE TECHNOLOGY TRANSITION: This project supports technology transition efforts. These efforts test and demonstrate technologies being developed for transition from the Joint Science and Technology Office for Chemical and Biological Defense (JSTO-CBD) to the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) and other acquisition programs requiring CB defense technologies. This project, initiated in FY06, was funded by realignment of funds previously in BA6, Anti Terrorism; BA3, CB3 funds for Technology Readiness Evaluations; BA3, CP3 funds for Counter Proliferation Support Program, Advanced Concept Technology Demonstration (ACTD) Planning and Development; and BA3, CM3 Homeland Defense, Weapons of Mass Destruction Civil Support Teams (WMD-CSTs). The WMD-CST program funds Pre-Systems Acquisition in support of Consequence Management teams around the nation. The Force Protection program demonstrates and tests technology for Force Protection/Installation Protection and specifically for PM Guardian's Installation Protection Program. Both the WMD-CST and Force Protection programs are in support of Homeland Defense initiatives. The Technology Transition program supports Advanced Technology Demonstrations and planning for Advanced Concept Technology Demonstrations. . The Technology Readiness Assessment program provides for assessment of technologies against specific criteria postulated by the JPEO in Technology Transition Agreements.

B. Accomplishments/Planned Program

	FY 2006	FY 2007	FY 2008	FY 2009
Congressional Interest Items	2136	1585	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TT3**

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Cooperative Unmanned Ground and Aerial Vehicle Incubator - Conducted Phase 2 for the National Testbed for Safety, Security and Rescue Technologies (NT-SSRT) facility. Project administered in CB3.	971	0	0	0
FY 06 - Hackensack University Medical Center Chemical Biological Defense Program Initiative Fund - Developed of a mobile, forward deployable, medical capacity that would respond to bio-terrorist incidents and other mass casualty incidents resulting from WMD, natural and technological disasters. Project administered in CB3.	1165	0	0	0
FY 07 - Unmanned Vehicle CBRNE Unitary Sensor Suite Development and Demonstration.	0	1585	0	0
Total	**2136**	**1585**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Experiment & Technology Demonstrations	4966	6087	5193	5475

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Executed the ATD Demonstration in support of the Military Applications in Reconnaissance and Surveillance (MARS) Unmanned Ground Vehicle (UGV) program testing CBRN detection technologies used on one-man and two-man portable UGVs for technology insertion into the CBRN Unmanned Ground Reconnaissance (CUGR) ACTD. Initiated the ATD Candidate Development for MARS - Unmanned Ground System (UGS) program testing CBRN detection technologies for use on one-man portable UGSs. Biological detection focus initiated with Expeditionary Biological Detection project. Executed the ATD Testing for MARS Manned/Unmanned Aerial Vehicle (M/UAV) program testing CBRN detection technologies for use on small UAVs dedicated to CBRN passive defense or CBRN consequence management, reconnaissance and surveillance applications. Conducted Table Top Exercises (TTX) and discovered military user priorities for further experimentation.	4966	6087	5193	5475

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TT3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - MARS - Continue Unattended Ground Sensors (UGS) program testing CBRN detection technologies for use on one man portable UGSs. Biological detection ATD initiated and transitioned to BA4 funding under Expeditionary Biological Detection ATD and the MARS M/UAV program testing CBRN detection technologies for use on small UAVs dedicated to CBRN passive defense or CBRN consequence management, reconnaissance and surveillance applications. Initiate development of the aerial CBRN test methodology. Initiate ATD demonstration Special Platform Interior Decontamination and Equipment Remediation (SPIDER), testing of vaporous decontamination on designated aircraft to confirm biological agent kill, development of technical order for the qualification of the decontamination of designated aircraft using the vaporous decontamination process. Initiate technical testing to confirm biological agent kill. Perform candidate technology maturation testing in preparation for FY08 ATD candidate, SPIDER. Initiate aircraft interior biological remediation project. FY 08 - Complete the M/UAV program testing CBRN detection technologies for use on small UAVs dedicated to CBRN passive defense or CBRN consequence management, reconnaissance and surveillance applications. Initiate all hazards awareness technology testing to identify and integrate data sources for Joint Warning and Response Network (JWARN) to improve capability to sense and identify CBRN hazards sooner than current situational awareness capabilities. Continue CBRN capability insertion into non CBDP platforms, systems and programs of record. Initiate Integrated CBRN Sensing, Unmanned/Unattended Systems program testing CBRN detection technologies for use in unmanned air or surface carriers, stationary and mobile. Analyze the capability of current and near term platforms that may either be capable of or are required to sense the CBRN hazards. Complete candidate technology maturation testing in preparation for a FY08 ATD candidate, SPIDER. Perform candidate technology maturation testing in preparation for a FY09 ATD candidate, Advanced Remediation Technologies (ART).	4966	6087	5193	5475

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DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TT3

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 09 - Continue Integrated CBRN Sensing, Unmanned/Unattended Systems program testing CBRN detection technologies for use in unmanned air or surface carriers, stationary and mobile. Analyze the capability of current and near term platforms that may either be capable of or are required to sense the CBRN hazards. Perform candidate technology maturation testing in preparation for a FY09 ATD candidate for ART. Perform candidate technology maturation testing in preparation for a FY10 ATD candidate. Continue all hazards awareness technology testing to identify and integrate data sources for JWARN to improve capability to sense and identify CBRN hazards sooner than current situational awareness capabilities. Complete testing of candidate technologies for ART and CBRN capability insertion into non CBDP platforms, systems and programs of record.	4966	6087	5193	5475
Total	**4966**	**6087**	**5193**	**5475**

	FY 2006	FY 2007	FY 2008	FY 2009
Force Protection	439	0	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Initiated effort for the development and demonstration of medical surveillance technology integration for the installation protection program. Program transitions in FY 07 to the Homeland Defense capability area.	439	0	0	0
Total	**439**	**0**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Homeland Defense	0	2889	0	0

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BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TT3**

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 07 - Conduct reach-back capability study to identify significant CBRNE reach-back requirements and resources of DoD components and Federal, State and local agencies for Weapons of Mass Destruction Civil Support Teams (WMD-CSTs). Complete operational testing and Homeland Defense Demonstrations for WMD-CSTs. Complete the transition of technologies tested in FY06 processes thru the JPEO-CBD Non-Standard Equipment Review Panel (NSERP) process. Initiate coordination and development of the Interagency Biological Remediation Demonstration (I-BRD). This DOD-DHS cooperative program is focused on providing a coordinated, systems approach to the recovery and restoration of wide urban areas, to include DOD infrastructures and high traffic areas following the aerosol release of a biological agent.	0	2889	0	0
Total	**0**	**2889**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
Technology Readiness Assessment	3133	1952	2474	2675

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Completed Technology Readiness Evaluation (TRE) for Collective Protection in the following focus areas: CB Barrier Material, Quick Erect, Collective Protection (COLPRO) Support Equipment, and Whole COLPRO Systems and performance testing of the Collective Protection Air Purification technologies. Conducted Technology Readiness Assessments (TRAs) for the Military Applications in Reconnaissance and Surveillance Unmanned Ground Vehicle (MARS-UGV) and the Joint Chemical Biological Radiological Agent Water Monitor (JCBRAWM). Initiated the development of a tailored Manufacturing Readiness Assessment process for future S&T transitions.	3133	1952	2474	2675

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DATE: **February 2007**

BUDGET ACTIVITY: **RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)**

PE NUMBER AND TITLE: **0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)**

PROJECT: **TT3**

Bullet Text (cont)	FY2006	FY2007	FY2008	FY2009
FY 07 - Continue the development of a tailored Manufacturing Readiness Assessment process appropriate for transitioning technologies. Continue the MARS - UGV program testing CBRN detection technologies for use on one-man and two-man portable UGVs for technology insertion into the Chemical, Biological, Radiological, and Nuclear (CBRN) Unmanned Ground Reconnaissance (CUGR) Advanced Concept Technology Demonstration (ACTD) or the transition program for CUGR ACTDs UGV portion. FY 08 - Conduct TRE in support of the Interagency Biological Remediation Demonstration (I-BRD). This DOD-DHS cooperative program is focused on providing a coordinated, systems approach to the recovery and restoration of wide urban areas, to include DOD infrastructures and high traffic areas following the aerosol release of a biological agent. FY 09 - Conduct Technology Readiness Evaluations in support of remediation and restoration technology demonstrations to identify technologies in support of IBRD, Installation Protection and Civil Support mission areas.	3133	1952	2474	2675
Total	**3133**	**1952**	**2474**	**2675**

	FY 2006	FY 2007	FY 2008	FY 2009
WMD-CST	2987	0	0	0

CBDP BUDGET ITEM JUSTIFICATION SHEET (R-2a Exhibit)

DATE: February 2007

BUDGET ACTIVITY: RDT&E DEFENSE-WIDE/ BA3 - Advanced Technology Development (ATD)

PE NUMBER AND TITLE: 0603384BP CHEMICAL/BIOLOGICAL DEFENSE (ATD)

PROJECT: TT3

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
FY 06 - Performed operational testing and Homeland Defense Demonstrations. Continued evaluation and testing of new commercial products being considered in response to WMD-CST requirements. Transitioned technologies tested in FY05 and FY06 processes thru the Joint Program Executive Office Chemical and Biological Defense (JPEO-CBD) Non-Standard Equipment Review Panel (NSERP) process. Program transitions in FY 07 to the Homeland Defense capability area.	2987	0	0	0
Total	**2987**	**0**	**0**	**0**

	FY 2006	FY 2007	FY 2008	FY 2009
SBIR/STTR	0	110	0	0

Accomplishments/Planned Program	FY2006	FY2007	FY2008	FY2009
SBIR - FY 07 - Small Business Innovative Research.	0	110	0	0
Total	**0**	**110**	**0**	**0**

C. Other Program Funding Summary:

	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Compl	Total Cost
CP4 COUNTERPROLIFERATION SUPPORT (ACD&P)	21960	0	0	0	0	0	0	0	0	21960