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**Department of Defense
Fiscal Year (FY) 2017 President's Budget Submission**

February 2016



Chemical and Biological Defense Program

Defense-Wide Justification Book Volume 4 of 4

Research, Development, Test & Evaluation, Defense-Wide

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Chemical and Biological Defense Program • President's Budget Submission FY 2017 • RDT&E Program

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Chemical Biological Defense Program Overview

Chemical, biological, radiological, and nuclear (CBRN) threats are dynamic and ever-expanding. The rapid advancement and global proliferation of chemical and biological (CB) capabilities greatly extends the spectrum of plausible actors, agents, concepts of use, and targets. These advances enable states to develop unique CB threats with the intent of circumventing our current defenses, while simultaneously permitting non-state actors to pursue less sophisticated CB threats. To ensure an effective response to these threats, the Department of Defense (DoD) Chemical and Biological Defense Program (CBDP) continuously and actively develops CBRN defensive capabilities to stay ahead of evolving threats. This 2017 budget request includes \$1.19 billion to allocate against valid capability requirements to achieve a strategy-driven balance of risk in accordance with National Defense Strategies, departmental-level objectives, and Service force development priorities.

Strategic Overview

The CBDP strategic direction reflects current defense policy set by public law, national strategies, DoD Directives and Instructions, and senior leadership guidance. The CBDP mission is to enable the Warfighter to deter, prevent, protect, mitigate, respond, and recover from CBRN threats and effects as part of a layered, integrated defense. This mission aligns with the DoD Strategy for Countering Weapons of Mass Destruction (CWMD), which outlines the elements and enablers of the Department's approach for countering CWMD. CBDP efforts support the continuous cycle of preparing, principally through investments that: "ensure staff expertise; and sustain the Department's science and technology, research and development, and acquisition competencies." CBDP executes its responsibility in support of the Department's strategic approach and provides capabilities supporting the three CWMD strategic lines of effort. These lines of effort are:

- 1) **Prevent Acquisition** focuses on ensuring that those not possessing WMD do not obtain them. One of the primary methods of increasing barriers to acquisition and proliferation of WMD will be through pathway defeat—activities focusing on the specific nodes and linkages in an adversary's WMD pathway.
- 2) **Contain and Reduce Threats** focuses on reducing risks posed by extant WMD. DoD will remain prepared to lead or support operations to locate, characterize, secure, exploit, and destroy WMD in a range of contingency environments and under varying security and political conditions.

3) *Respond to Crises* focuses on activities and operations to manage and resolve complex WMD crises. DoD will assume that hostile non-state actors who acquire WMD or material of concern will plan to use them, and the Department will react accordingly. DoD will be prepared to avoid or defeat WMD attacks and mitigate their immediate effects so as to allow effective operations to continue.

The CBDP supports these lines of effort through materiel and non-materiel capabilities that are interoperable within the Joint Forces and other DoD and United States Government partners countering WMD. The CBDP budget request reflects efforts to balance the dynamic tensions of budget, threat, and scientific development to provide a program that is agile and flexible so as to rapidly adapt to the evolving strategic landscape.

Strategic Objectives

This budget request supports the DoD Strategy for CWMD and advances the following CBDP strategic objectives:

- Early Warning - Develop advanced environmental surveillance and point-of-need diagnostic capabilities against CBRN threats, enabling the Warfighter to achieve information dominance in the CBRN domain and enabling rapid force protection decisions.
 - Biosurveillance – The CBDP is developing pre- and post-event capabilities to improve early warning and characterization of man-made and naturally occurring hazards in near real-time. Persistent surveillance will provide early indications and support effective consequence management of the emergence and re-emergence of infectious diseases, genetically engineered and synthetic biological agents, as well as chemical hazards.
 - Advanced Diagnostics – The CBDP resources a robust portfolio of CBR diagnostics that includes S&T, systems development, and procurement of point-of-need/point-of-care diagnostic equipment. Continuous assay development and procurement support fielded and developmental diagnostic and analytic platforms.
- Avoid, Prevent and Prepare for Surprise - Advancements in biology and chemistry as well as natural evolution can result in new CB agents and new threats the Warfighter must be prepared to counter. The CBDP identifies and studies such CB agents to scientifically characterize and validate the hazard they could pose to the Warfighter. The CBDP is committed to addressing surprise, both to avoid its occurrence and to rapidly mitigate its consequences. The enterprise aims to leverage cross-domain efforts, information, and assessments to manage surprise through scientific breakthrough, rapid fielding, and operational innovation. Focus areas include:

- Non-Traditional Agents (NTA) – The CBDP is developing technologies that address existing and emerging NTAs to address multiple capability gaps and provide multi-layered and integrated defenses. Enhanced warning, protection, and countermeasures save lives and enable more flexible consequence management.
- Synthetic Biology – Rapid advances in biotechnology open a broad range of potential new challenges from genetically engineered organisms. Rapid characterization of new threats and development of countermeasures remain hallmarks of the CBDP portfolio.
- Integrated, Layered Defense - The CBDP invests strategically in a set of distinct and complementary capabilities to defend against CBRN threats. Collectively, CBDP solutions are comprehensive and address the spectrum and time evolution of CBRN events. These solutions enable the Joint Force to maintain freedom of action in a CBRN environment and enable mission accomplishment.
 - Medical Countermeasures – Development of advanced vaccines, therapeutic drugs, and diagnostic capabilities that provide safe and effective medical defense against validated biological threat agents (bacteria, toxins, and viruses), emerging infectious disease, and traditional and non-traditional chemical agents.
 - Personal Protective Equipment and Collective Protection – Advances in materials and systems engineering will enhance the protective properties against a broader array of threats while reducing heat and logistical burdens. Modular and customizable solutions will be effective against a broad range of challenges and demonstrate applicability in varied environments.
 - Detectors and Sensors – The CBDP is developing the next generation of suitable, effective, and affordable broad-spectrum CB detection capabilities to detect current and emerging CB hazards. Development efforts focus on increasing accuracy, range, and effectiveness and ensuring that detector and sensor data integrate seamlessly with relevant information systems.
 - Hazard Mitigation – Efforts will address personnel decontamination, to include mass casualties and human remains, along with materiel decontamination, which includes sensitive electronics and aircraft. Novel decontamination approaches are focusing on broad applicability to chemicals or biologicals, while minimizing harm to individuals, sensitive equipment, and platforms.

FY17 Budget Request Highlights

- The FY 2017 Research, Development, Test and Evaluation (RDT&E) budget request of \$885 million supports key efforts including:
 - \$247 million to continue support of research and development of medical countermeasures vaccines and therapeutics addressing high priority biological threats.
 - \$183 million supporting RDT&E efforts advancing environmental (detectors and sensors) and medical surveillance (diagnostic and analytical devices) capabilities providing enhanced situational awareness.
 - \$90 million to support critical chemical and biological defense research, development, and test infrastructure and operations.
 - \$83 million supporting biosurveillance, warning & reporting, and modeling and simulation capabilities.
 - \$82 million supporting science and technology advancing protection, threat agent sciences, medical countermeasures, detection, and hazard mitigation capabilities to defend against Non-traditional agents.
 - \$53 million to continue support of research and development of medical countermeasures focused on protecting and treating against traditional and non-traditional chemical agents.
 - \$51 million supporting RDT&E for personnel/collective protection and hazard mitigation capabilities.
 - \$45 million supporting basic research advancing fundamental knowledge and experimental research in the life and physical sciences.

- The FY 2017 Procurement budget request of \$309 million supports key efforts including:
 - \$107 million to procure modernized respiratory and ocular protection for ground and air forces.
 - \$90 million to procure CBRN Dismounted Reconnaissance Sets, Kits, and Outfits (DR SKO) which allows warfighters to perform CBRN dismounted reconnaissance, surveillance, and site assessment of WMD suspect areas not accessible by traditional CBRN reconnaissance mounted platforms.
 - \$23 million to procure Common Analytical Laboratory Systems providing a modular, scalable and adaptable analytical capability for a variety of operating and environmental conditions.
 - \$21 million to procure modernized Collective Protection capabilities (Joint Expeditionary Collective Protection and CB Protective Shelters).
 - \$14 million to procure the CBRN Uniform Integrated Protection Ensemble supporting enhanced protection for special purpose units.

Summary

The proliferation of WMD is among the greatest challenges facing the United States, and countering WMD is a top priority of the U.S. National Security Strategy. Accordingly, the CBDP continues to focus on developing enhanced levels of flexibility and adaptability to anticipate, identify, and quickly respond to the challenge. The CBDP continues to effectively meet today's highest priority needs for DoD CBRN defense solutions while shifting to establish the agility and flexibility necessary to rapidly adapt to the evolving strategic landscape. The CBDP's critical role in the U.S. Government's response to the Ebola epidemic in West Africa showcases that flexibility and preparedness. This ongoing transformation ensures that currently available technologies are produced, procured, and provided swiftly and that cutting-edge technologies are harnessed to provide improved capabilities in the future. This is achieved through developing operationally relevant capabilities for the Warfighter that are complementary and holistically reduce identified risks. The CBDP continues to enhance CBRN readiness to counter known and emerging threats and collaborates with other government agencies to foster exchange of knowledge and coordination of CB defense-related activities. This budget request supports the CBDP as a Joint Force enabler fulfilling the needs of the Warfighters to ensure that they are trained, equipped, and resourced to complete missions in CBRN environments now and in the future, preserving the security and freedom of our nation.

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Defense-Wide
 FY 2017 President's Budget
 Exhibit R-1 FY 2017 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

01 Feb 2016

Summary Recap of Budget Activities -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Basic Research	45,720	47,761		47,761	44,800		44,800
Applied Research	212,538	202,611		202,611	188,715		188,715
Advanced Technology Development	147,141	140,094		140,094	127,941		127,941
Advanced Component Development And Prototypes	180,962	170,354		170,354	138,187		138,187
System Development And Demonstration	330,326	282,147		282,147	266,231		266,231
Management Support	119,675	102,238		102,238	85,754		85,754
Operational System Development	28,102	33,561		33,561	33,361		33,361
Total Research, Development, Test & Evaluation	1,064,464	978,766		978,766	884,989		884,989
Summary Recap of FYDP Programs -----							
Research and Development	1,064,464	978,766		978,766	884,989		884,989
Total Research, Development, Test & Evaluation	1,064,464	978,766		978,766	884,989		884,989

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Appropriation	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Chemical and Biological Defense Program	1,064,464	978,766		978,766	884,989		884,989
Total Research, Development, Test & Evaluation	1,064,464	978,766		978,766	884,989		884,989

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

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
7	0601384BP	Chemical and Biological Defense Program	01	45,720	47,761		47,761	44,800		44,800	U
		Basic Research		45,720	47,761		47,761	44,800		44,800	
15	0602384BP	Chemical and Biological Defense Program	02	212,538	202,611		202,611	188,715		188,715	U
		Applied Research		212,538	202,611		202,611	188,715		188,715	
42	0603384BP	Chemical and Biological Defense Program - Advanced Development	03	147,141	140,094		140,094	127,941		127,941	U
		Advanced Technology Development		147,141	140,094		140,094	127,941		127,941	
75	0603884BP	Chemical and Biological Defense Program - Dem/Val	04	180,962	170,354		170,354	138,187		138,187	U
		Advanced Component Development And Prototypes		180,962	170,354		170,354	138,187		138,187	
118	0604384BP	Chemical and Biological Defense Program - EMD	05	330,326	282,147		282,147	266,231		266,231	U
		System Development And Demonstration		330,326	282,147		282,147	266,231		266,231	
149	0605384BP	Chemical and Biological Defense Program	06	104,597	102,238		102,238	85,754		85,754	U
150	0605502BP	Small Business Innovative Research - Chemical Biological Def	06	15,078							U
		Management Support		119,675	102,238		102,238	85,754		85,754	
187	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07	28,102	33,561		33,561	33,361		33,361	U
		Operational System Development		28,102	33,561		33,561	33,361		33,361	
Total Research, Development, Test & Eval, DW				1,064,464	978,766		978,766	884,989		884,989	

R-1C1: FY 2017 President's Budget (Published Version of PB Position), as of February 1, 2016 at 11:59:01

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Chemical and Biological Defense Program
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 (Dollars in Thousands)

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

Line No	Program Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Sec
7	0601384BP	Chemical and Biological Defense Program	01	45,720	47,761		47,761	44,800		44,800	U
		Basic Research		45,720	47,761		47,761	44,800		44,800	
15	0602384BP	Chemical and Biological Defense Program	02	212,538	202,611		202,611	188,715		188,715	U
		Applied Research		212,538	202,611		202,611	188,715		188,715	
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		Advanced Technology Development		147,141	140,094		140,094	127,941		127,941	
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Total Chemical and Biological Defense Program				1,064,464	978,766		978,766	884,989		884,989	

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Department of Defense
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 (Dollars in Thousands)

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Appropriation	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Research, Development, Test & Eval, DW	1,064,464	978,766		978,766	884,989		884,989
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 (Dollars in Thousands)

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Summary Recap of Budget Activities	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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CHEMICAL/BIOLOGICAL DEFENSE (ATD)	0603384BP	42	03.....	Volume 4 - 39
CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	0601384BP	7	01.....	Volume 4 - 1
CHEMICAL/BIOLOGICAL DEFENSE (EMD)	0604384BP	118	05.....	Volume 4 - 169
CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	0607384BP	187	07.....	Volume 4 - 343
CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	0605384BP	149	06.....	Volume 4 - 319
SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	0605502BP	150	06.....	Volume 4 - 339

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	R-1 Program Element (Number/Name) PE 0601384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	45.720	47.761	44.800	-	44.800	44.311	43.793	46.718	46.728	Continuing	Continuing
LF1: <i>CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)</i>	-	29.337	29.338	29.376	-	29.376	28.260	27.891	30.701	30.707	Continuing	Continuing
PS1: <i>CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)</i>	-	16.383	18.423	15.424	-	15.424	16.051	15.902	16.017	16.021	Continuing	Continuing

A. Mission Description and Budget Item Justification

Advances fundamental knowledge and promotes theoretical and experimental research in life and physical sciences.

The projects within this BA reflect the research areas of Life Sciences (LF1) (e.g. microbiology, biochemistry, pathogenic mechanisms, cell and molecular biology, immunology, nanoscale science, and information science) which focus on fundamental efforts to understand living systems' response to biological or chemical agents, to support detection, diagnostics, protection, and medical treatment.

The projects within this BA also include efforts in Physical Sciences (PS1) (e.g. chemistry, physics, materials science, nanotechnologies, nanoscale science and environmental science) which focus on fundamental scientific phenomena. These support investigation of physical and chemical properties and interactions for enhanced functionalities important to detection, diagnostics, protection, and decontamination.

BA1 also supports the DoD Science, Technology, Engineering, and Math (STEM) Strategy Plan to attract, inspire, and develop exceptional STEM talent across the education continuum to enrich our current and future DoD workforce to meet defense technological challenges. This includes the Joint Science and Technology Institute (JSTI) which is a 2-week residential program for high school students and teachers who conduct a research project from a STEM field with a DoD scientist. In addition, the National Research Council Research Associateship Program and the Military Internship Program provide unique opportunities for talented scientists and engineers, and promising midshipmen/cadets, respectively, to conduct research at DOD service laboratories on projects that are of interest to the Chemical and Biological Defense Program Enterprise in an effort to develop the future DoD workforce.

The projects in this PE are placed in BA1 because they are basic research efforts directed towards non-specific or non-unique military applications. Basic research technological breakthroughs support applied research (PE 0602384BP) activities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
0400: <i>Research, Development, Test & Evaluation, Defense-Wide</i> / BA 1: <i>Basic Research</i>	PE 0601384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)</i>

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	48.261	46.261	45.364	-	45.364
Current President's Budget	45.720	47.761	44.800	-	44.800
Total Adjustments	-2.541	1.500	-0.564	-	-0.564
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	1.500			
• Reprogrammings	-1.874	-			
• SBIR/STTR Transfer	-0.667	-			
• Other Adjustments	0.000	-	-0.564	-	-0.564

Change Summary Explanation

Funding: N/A

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) LF1 / CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
LF1: CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)	-	29.337	29.338	29.376	-	29.376	28.260	27.891	30.701	30.707	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project (LF1) focuses on fundamental efforts to understand living systems' response to biological or chemical agents, to support detection, protection, diagnostics, and medical treatment. Research focuses on understanding factors which influence the behavior of chemicals, toxins, and pathogens in relation to the host or target. Understanding of host/agent interactions can drive exploration of novel approaches to detect, diagnose or protect against threats. Research also focuses on medical countermeasures for improved efficacy against a wide array of current and future threat agents.

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

	FY 2015	FY 2016	FY 2017
Title: 1) Life Sciences	29.337	28.762	29.376
Description: Focuses on fundamental efforts to understand living systems' response to biological or chemical agents, to support detection, protection, diagnostics, and medical treatment.			
FY 2015 Accomplishments: Continued efforts to understand pathogens, novel threats and host responses (including human and zoonotic) to prevent/minimize host injury. Investigated and evaluated systemic biological responses following exposure of living systems to CB agents. Improved understanding of how polymicrobial interactions interfere with bacterial activities to influence discovery of novel antagonists for medical countermeasures. Explored computational infectious models that utilize experimental data to generate mathematical models of infection and immunity. Developed human monoclonal antibodies that were protecting from Ebola and Marburg viruses in animal models. Developed artificial DNA and RNA and utilized them for a single assay that was able to detect any of 22 mosquito borne viruses, from a single mosquito carcass. Developed paper-based synthetic gene networks for specific and rapid diagnostics on a low-cost, highly scalable platform. Developed 3-D gut-on-a-chip devices that recapitulate spatial and temporal native function of human GI tract for pharmaceutical in vitro testing and research. Explored micro-, nano- and nanostructured materials as approaches to the needs of chemical and biological countermeasures, including behavior in biological systems and how morphology relates to biological interaction and function. Explored functional cellular and molecular systems and integration of functionality that may provide adaptive materials and/or autonomously functioning materials and capabilities for CB defense countermeasures that sense and transduce threats. Developed understanding and means to recognize the interaction of pathogens, toxicants, and novel threats with the blood-brain barrier and central nervous system. Continued consortium approach to explore the importance of bacterial persistence and antibiotic tolerance in the establishment of recurring/chronic infections such as melioidosis. Initiated evaluation of role of gene amplification and duplication in the development of multiple drug resistance in bacterial pathogens. Investigated the influence of glycosylation patterns on biologic stability and			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	Project (Number/Name) LF 1 / CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)

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

pharmacologic characteristics. The scientific discoveries in the serological and genomic analysis of Burkholderia pseudomallei infections allowed for transition of academic grants research to the TM2 medical biological countermeasures for advancement of biological therapeutics. The scientific advances in the discovery of targeted mutational analysis of Coxiella burnetii allowed for the identification of virulence determinants of acute and chronic disease and transitioned to TM2 biological countermeasures for the advancement of a potential vaccine. The advancements made in nanocarrier-mediated targeting of bioscavengers allowed for the transition of academic grants research to the TM2 chemical countermeasures for the development of improved nerve agent bioscavengers.

FY 2016 Plans:

Continue efforts to understand pathogens, novel threats and host responses (including human and zoonotic) to prevent/minimize host injury. Continue to investigate and evaluate systemic biological responses following exposure of living systems to CB agents. Improve understanding of how polymicrobial interactions interfere with bacterial activities to influence discovery of novel antagonists for medical countermeasures, thus influencing response to or course of disease. Continue to explore nano- and nano-structured materials as approaches to the needs of chemical and biological countermeasures, including behavior in biological systems and how morphology relates to biological interaction and function. Continue evaluation of role of Gene Amplification and Duplication in the development of multiple drug resistance in bacterial pathogens. Continue consortium approach to explore the importance of bacterial persistence and antibiotic tolerance in the establishment of recurring/chronic infections such as melioidosis. Investigate the influence of glycosylation patterns on biologic stability and pharmacologic characteristics.

FY 2017 Plans:

Continue efforts to understand pathogens, novel threats, and host responses (including human and zoonotic) to prevent/minimize host injury. Continue to investigate and evaluate systemic biological responses following exposure of living systems to CB agents. Improve understanding of how polymicrobial interactions interfere with bacterial activities to influence discovery of novel antagonists for medical countermeasures. Continue to explore nano- and nano-structured materials as approaches to the needs of chemical and biological countermeasures, including behavior in biological systems and how morphology relates to biological interaction and function. Continue to evaluate various global processes and mechanisms which lead to bacterial persistence and resistance. Identify biomarkers indicative of resistance and persistence. Investigate novel therapeutics developed and collected from novel sources. Investigate the influence of glycosylation patterns on biologic stability and pharmacologic characteristics. Continue evaluation of role of gene amplification and duplication in the development of multiple drug resistance in bacterial pathogens. Investigate alpha-virus glycoprotein tertiary structure and other viral immunodominant epitopes for improved development of immune assays, which will support identification of an immune correlate of protection for vaccine licensure. Examine mucosal immunity, particularly in the lung, for future development of mucosal vaccines. Investigate new transport mechanisms of the blood-brain barrier, including specific interactions regulating viral entry into the central nervous system.

FY 2015	FY 2016	FY 2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	Project (Number/Name) LF1 / CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Investigate new biomarkers accessible in a minimally-invasive manner, characteristic of CB threats and the development of antimicrobial resistance.			
Title: 2) SBIR/STTR	-	0.576	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	29.337	29.338	29.376

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CB2: CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	52.364	51.131	56.191	-	56.191	60.366	53.979	54.415	54.427	Continuing	Continuing
• TM2: TECHBASE MED DEFENSE (APPLIED RESEARCH)	90.527	84.433	68.048	-	68.048	73.401	76.811	77.325	81.186	Continuing	Continuing
• CB3: CHEMICAL BIOLOGICAL DEFENSE (ATD)	17.362	16.062	19.109	-	19.109	18.343	17.899	18.035	18.038	Continuing	Continuing
• TM3: TECHBASE MED DEFENSE (ATD)	102.610	93.725	83.838	-	83.838	93.720	92.727	94.495	98.357	Continuing	Continuing

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) PS1 / CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
PS1: CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)	-	16.383	18.423	15.424	-	15.424	16.051	15.902	16.017	16.021	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project (PS1) advances fundamental scientific knowledge in physical science areas that include chemistry, physics, materials science, environmental sciences, and nanotechnology that could potentially lead to transformational CB defensive capabilities enhancing Warfighter performance and safety. Research results in physics, chemistry and materials sciences that have potential application in point and standoff detection, diagnostics, as well as protection and decontamination. Surface and environmental sciences focus on the study of physical and chemical properties and phenomena of interactions, especially with regard to Non Traditional Agents (NTAs), that seek to improve capabilities such as detection, protection, and decontamination. Research in nanotechnology and nanoscale sciences, such as nanoelectromechanical systems, molecular motors, nano-mechanical resonance sensing, and nano-meter imaging, has potential application across CB capability areas to provide significant enhancement by, for example, decreasing detection response times, increasing medical countermeasure effectiveness against a wider array of threat agents, and providing currently unavailable modalities like detection imbedded in fabrics.

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

	FY 2015	FY 2016	FY 2017
Title: 1) Physical Sciences	16.383	18.069	15.424
Description: Focuses on fundamental scientific phenomena including chemistry, physics, materials science, environmental science, and nanotechnology.			
FY 2015 Accomplishments:			
Synthesized and designed novel membranes which respond to CB threats via deactivation and conformation change to enable protection and a reduction in overall physical burden; results yielded in synthesis of novel polymer which deactivates CB threat simulants while changing confirmation - thereby providing colorimetric indication of deactivation. Designed and synthesized novel decontamination options that are broadly applicable to multiple chemicals or biologicals and are less harmful to equipment. Investigated novel signatures and analytical methods, new separation approaches, and recognition elements to reduce logistical burden while increasing specificity to overcome limitations in current approaches to identifying and quantifying CB threats. Developed synthetic strategies within nanostructured material to mitigate chemical and biological threats; results yielded promising porous material which catalytically deactivates Soman in less than ten (10) minutes at room temperature. Explored materials and integration of functionality that may provide adaptive materials and capabilities for CB defense countermeasures that bind, catalyze, sense, transduce, respond and/or mitigate threats. Verified reaction mechanisms between CB threats and state-of-the-art surfaces in a vacuum environment to establish a baseline of reactivity; results yielded in the utilization of advanced			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	Project (Number/Name) PS1 / CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>surface interrogation techniques verifying historic assumptions which previously could not be verified. Developed understanding of chemical behavior in the environment, such as atmospheric reactivity and intra material interactions.</p> <p>FY 2016 Plans: Continue exploring multifunctional material design and synthesis to identify dynamic materials that combine functionality and durability to improve CB protection by increasing protection factors and reducing physical burden. Design and synthesize novel decontamination options that are broadly applicable to multiple chemicals or biologicals and are less harmful to equipment. Continue exploration of micro-, nano- and nanostructured materials as novel approaches to needs in chemical and biological countermeasures. Continue exploring materials and integration of functionality that may provide adaptive materials and capabilities for CB defense countermeasures that bind, catalyze, respond and/or mitigate threats. Continue to investigate impact of ambient surface reactivity and structure on performance of state-of-the-art and novel CB mitigating materials. Continue to develop understanding of chemical behavior in the environment, such as intra material interactions.</p> <p>FY 2017 Plans: Continue to examine the impact of processing parameters in designing large scale membranes, which respond to multiple CB threats via deactivation and confirmation change to enable novel means of protection and minimization of thermal burden. Continue designing and synthesizing novel decontamination options that are broadly applicable to multiple chemicals or biologicals and are less harmful to equipment. Continue to investigate the impact of morphology on approaches to mitigate chemical and biological threats on CB relevant substrates - such as fibers and yarns. Continue exploring materials and integration of functionality that may provide adaptive materials and capabilities for CB defense countermeasures that bind, catalyze, respond and/or mitigate threats. Continue to study fundamental mechanisms between CB threats and surfaces at ambient pressure in order to elucidate its impact on reaction mechanisms between CB threats and state-of-the-art and novel CB mitigating surfaces.</p>			
Title: 2) SBIR/STTR	-	0.354	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	16.383	18.423	15.424

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• CB2: CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	52.364	51.131	56.191	-	56.191	60.366	53.979	54.415	54.427	Continuing	Continuing
• CB3: CHEMICAL BIOLOGICAL DEFENSE (ATD)	17.362	16.062	19.109	-	19.109	18.343	17.899	18.035	18.038	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	Project (Number/Name) PS1 / CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	212.538	202.611	188.715	-	188.715	206.855	202.085	203.616	207.504	Continuing	Continuing
CB2: <i>CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	-	52.364	51.131	56.191	-	56.191	60.366	53.979	54.415	54.427	Continuing	Continuing
NT2: <i>TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)</i>	-	69.647	67.047	64.476	-	64.476	73.088	71.295	71.876	71.891	Continuing	Continuing
TM2: <i>TECHBASE MED DEFENSE (APPLIED RESEARCH)</i>	-	90.527	84.433	68.048	-	68.048	73.401	76.811	77.325	81.186	Continuing	Continuing

A. Mission Description and Budget Item Justification

Applies research in the areas of physical technologies (CB protective materials, textiles, and filtration, sensors and sensing algorithms, effects modeling, chemical formulations, processes and methods for hazard mitigation), medical technologies (drug discovery and platform technology development, biomarkers and assay development useful in drug development and diagnostics, human mimicking devices and regulatory science), and non-traditional agent medical and physical defense technologies, including characterization of emerging threats. Major efforts support development of vaccines, therapeutics, next generation diagnostics systems, next generation chemical detectors, nerve agent pretreatments, and individual protection advances.

In the physical sciences area, Project CB2, focuses on continuing improvements in CB defense materiel, including contamination avoidance, decontamination, and protection technologies, as well as biological weapon/agent surveillance.

For Non-Traditional Agents (NTAs), Project NT2 consolidates all NTA efforts (both medical and non-medical) including pretreatments, therapeutics, detection, threat agent science, modeling, and protection and hazard mitigation.

The medical program, Project TM2, focuses on the development of antidotes, drug treatments, disease surveillance and point-of-need diagnostic devices, patient decontamination and medical technologies management.

Efforts under this PE will transition to or will provide risk reduction for Advanced Technology Development (PE: 0603384BP), Advanced Component Development and Prototypes (PE: 0603884BP), and System Development and Demonstration (PE: 0604384BP).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	226.317	208.111	204.941	-	204.941
Current President's Budget	212.538	202.611	188.715	-	188.715
Total Adjustments	-13.779	-5.500	-16.226	-	-16.226
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	0.000	-5.500			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-10.651	-			
• SBIR/STTR Transfer	-3.128	-			
• Other Adjustments	0.000	-	-16.226	-	-16.226

Change Summary Explanation

Funding: N/A

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) CB2 / CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CB2: CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)	-	52.364	51.131	56.191	-	56.191	60.366	53.979	54.415	54.427	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB2 provides physical science applied research to develop future, multi-disciplinary, multi-functional capabilities in life sciences, physical sciences, environmental sciences, mathematics, cognitive sciences, and engineering. Efforts in this project support the seamless integration of state-of-the-art-technologies into a collection of systems across the spectrum of capabilities required to support chemical and biological defense missions. Capability areas in this project include: protection/hazard mitigation; detection; information systems technology; and threat agent science. Protection and hazard mitigation focuses on providing technologies that protect from and reduce the impact of chemical/biological threat or hazard to the Warfighter, weapons platforms, and structures. Detection focuses on developing technologies for standoff and point detection and identification of chemical and biological agents. Information systems technology focuses on advanced hazard prediction, operational effects and risk assessment, and systems performance modeling. Threat agent science is devoted to characterizing threat agents and the hazards they present in terms of agent fate in the environment, toxicology, and pathogenicity, and focuses on the horizontal integration of CB defensive technologies in support of the Joint Services.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) Expeditionary Collective Protection</p> <p>Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their chemical warfare agent (CWA) filters.</p> <p>FY 2015 Accomplishments: Designed and evaluated prototype satellite filter cartridge to serve as Residual Life Indicator (RLI) for collective protection systems. RLI simulates the carbon bed in a Chemical, Biological, Radiological and Nuclear (CBRN) collective protection filter.</p> <p>FY 2016 Plans: Finalize component design and begin verification testing of a satellite filter cartridge system that will be investigated into a field application for long term exposure in an operationally relevant environment.</p> <p>FY 2017 Plans: Analyze and characterize the performance of RLI satellite filter cartridge. Optimize the RLI performance to ensure correlation to that of the carbon bed in a CBRN collective protection filter. Collect data to establish the filter bed performance of the RLI is effectively correlated with Guard Bed (a low profile pre-filter) and the RLI creates an extended filter bed life with Guard Bed.</p>	0.873	0.923	1.233
<p>Title: 2) Material Contamination Mitigation</p>	5.835	3.232	2.975

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) CB2 / CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Development and analysis of non-traditional or novel decontamination technologies and approaches which gain significantly improved effectiveness by complementary application.</p> <p>FY 2015 Accomplishments: Focused efforts on the consolidating formulation component of Dial-a-Decon and enzyme decon projects and provided data package for transition into the Decon Family of Systems (DFoS) General Purpose Decontaminant (DFoS GPD) program. Continued Wide Area Decon project focusing on Bacillus anthracis spore decontamination for seaports, airports, and wide-area operations and validated 3-log kill of candidate technologies on representative surfaces. Initiated non-aqueous sorbent decontaminant formulation effort for immediate decontamination to leverage emerging technologies and data that demonstrates significantly greater efficacy if decontamination process is initiated within the first hour. Continued responsive coatings effort to enhance material hardening. Transitioned new acceptance criteria for chemical agent resistant coating (CARC) acceptance to CARC commodity manager after inter-laboratory validation. Initiated technology enhancement effort for Contamination Indicator/Decontamination Assurance Spray (CIDAS). Completed technology assessment and data transition on blister (HD) CIDAS formulation. Initiated the radiological/nuclear decontamination/hazard mitigation effort to define scope of challenges and outline concept of operations. Transitioned Joint Biological Agent Decontamination System (JBADS) hazard mitigation technology data related to complex spores to the JBADS program of record, also initiated a focus on developing viral (Ebola and surrogates) kill curves to expand application of technology.</p> <p>FY 2016 Plans: Continue Dial-a-Decon, Wide Area Decon of Bacillus anthracis, and sensitive equipment decontamination (enzyme) projects. Continue non-aqueous formulation investigations and incorporate data gathered from surface science investigations to inform design to initiate development of the next generation of hazard mitigation technologies that include integration of multiple systems to achieve efficacy goals. Continue responsive coatings project to enhance decontaminability as part of the systems approach to achieving efficacy goals. Continue the decontamination/hazard mitigation effort.</p> <p>FY 2017 Plans: Transition sorbent decontaminant formulation effort to advanced development for immediate decontamination to leverage emerging technologies and data that demonstrates significantly greater efficacy if decontamination process is initiated within the first hour. Initiate room temperature ionic liquid decontaminant effort to address sensitive equipment decontaminant need (enzyme and catalytic) projects. Continue application of data gathered from surface science investigations to inform design to initiate development of the next generation of hazard mitigation technologies that include integration of multiple systems to achieve efficacy goals. Continue enhanced CB survivability and responsive coatings projects to enhance decontaminability as</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) CB2 / CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
part of the systems approach to achieving efficacy goals. Demonstrate the wide-area decontamination hazard mitigation effort, which focuses on biological spore decontamination in a representative outdoor environment.				
<p>Title: 3) Percutaneous Protection</p> <p>Description: Study and assessment of percutaneous protective technologies.</p> <p>FY 2015 Accomplishments: Transitioned data on low burden fabrics and ensemble designs to the Uniform Integrated Protective Ensemble (UIPE) program of record. Completed development areas that include: evaluation of materials with high resistance to organic compounds, refinement of "man in simulant test" sensors, aerosol system testing, advanced adsorbent nanofiber/textile production technology, and smart materials. Transitioned materials that integrate functionality and durability to improve CB protection by increasing protection factors and reducing physical burden. Conducted a demonstration of new fabric technologies. Continued to engineer polymer membranes with increased moisture permeability and reactive components to selectively and sensitively interact with chemical agents. Continued designing reactive metal-organic/ metal-oxide materials to destroy chemical agents and engineer substrates into forms amenable to protective applications.</p> <p>FY 2016 Plans: Enhance both force protection and situational awareness through the improvement of multi-functional materials that exhibit broad-reaching, cross-cutting capabilities in chemical/biological sensing and detoxification. Validate response mechanisms of dynamic materials that conform to the challenge amount.</p> <p>FY 2017 Plans: Engineer mixed matrix membranes with increased moisture permeability and selectivity against CB threats. Incorporate metal-organic/metal oxide constructs into these membranes to destroy chemical agents. Continue to test reactive metal-organic/ metal-oxide materials with chemical agents and develop deposition strategies to form composite materials. Continue to develop and scale production technologies for novel materials.</p>		5.975	5.076	4.931
<p>Title: 4) Personnel Contamination Mitigation</p> <p>Description: Develop new technologies to alleviate the risk associated with contaminated human remains and personal effects (materials) exposed to and contaminated by chemical agents by neutralizing and/or physically removing the residual chemical agents.</p> <p>FY 2015 Accomplishments: Initiated personnel decontamination assessment and formulation effort examining commercial off-the-shelf (COTS) items and initiated development of zirconium hydroxide technology set. Initiated human remains storage testing to determine how the hazards associated with contaminated human remains are altered by the normal and extended storage conditions. Initiated</p>		1.039	-	0.673

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) CB2 / CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Personnel Decontamination hazard mitigation projects to develop an alternative to RSDL (Reactive Skin Decontamination Lotion). Initiated mass casualty personnel decontamination projects to develop technology to manage the specific issues (throughput and efficacy) associated with mass casualty decontamination to support warfighter operations, including homeland defense mission.</p> <p>FY 2017 Plans: Continue Personnel Decontamination hazard mitigation projects to develop an alternative to RSDL. Continue mass casualty personnel decontamination projects to develop technology to manage the specific issues (throughput and efficacy) associated with mass casualty decontamination to support warfighter operations, including homeland defense mission.</p>				
<p>Title: 5) Respiratory and Ocular Protection</p> <p>Description: Development and integration of novel filtration media into a lightweight, low-profile, and low-burden individual protective filter, which has enhanced performance against a broader range of challenges that includes toxic industrial chemicals (TICs).</p> <p>FY 2015 Accomplishments: Transitioned to the JSGPM program (M-50 mask) a synthetic nano-structured material focused on the removal of toxic industrial chemicals to include ammonia resulting in improved respirator efficiency and breakthroughs in filtration media that meets the Capability Production Document (CPD) objective.</p> <p>FY 2016 Plans: Demonstration of novel filtration media into a lightweight, low-profile, and low-burden individual protective filter, which has enhanced performance against a broader range of challenges that includes toxic industrial chemicals. Develop components of a hybrid respirator that can scale between different challenge environments. Components include nanotechnologies, anti-fogging materials, dynamic response breathing, oxygen storage and CO2 scrubbing.</p> <p>FY 2017 Plans: Continue to develop components of a hybrid respirator that can scale between different challenge environments. Components include nanotechnologies, anti-fogging materials, dynamic response breathing, oxygen storage and CO2 scrubbing.</p>		2.785	3.348	3.698
<p>Title: 6) Biosurveillance (BSV)</p> <p>Description: Integrate existing disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced warning systems, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact, and biological threat assessment. Contribute to the development of global, near real-time, disease monitoring and surveillance systems that address secondary infection, fuse medical syndromic, environmental, and clinical data, and feed into disease modeling, medical resource estimation and decision support tools.</p>		1.643	2.926	8.380

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) CB2 / CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Completed efforts using social media to infer individual and collective health behavior for digital threat surveillance, epidemic planning and response which delivered an analytic capability for the Biosurveillance Ecosystem. Completed efforts to refine technology and implement standards to enable diagnostic device-to-cloud communications in order to fully leverage biosurveillance and point of need diagnostic efforts which is in the process of being transitioned for advanced development. Continued the development of the Biosurveillance Ecosystem to include analyst collaboration tools, advanced analytics, and analyst workbench. Continued effort to develop a trust filter for next generation data sources to be included in biosurveillance analytic capabilities.</p> <p><i>FY 2016 Plans:</i> Complete effort to develop a trust filter for next generation data sources to be included in biosurveillance analytic capabilities of the Biosurveillance Ecosystem. Initiate effort to explore next generation device-to-cloud capabilities and possible applications for biosurveillance.</p> <p><i>FY 2017 Plans:</i> Develop technologies (e.g., event-based surveillance and historical baselines; predictive models of plant and/or animal disease; uncertainty quantification) to intelligently fuse ubiquitous sensing capabilities (wearables, field deployed diagnostics and autonomous environmental sensing vehicles). Data fusion technologies were developed in FY16 under BA2 TM2/Diagnostics; readjustment in FY17 more appropriately aligns these activities as biosurveillance efforts. Continue device-to-cloud capabilities effort to reliably transmit sensed data to a secure repository and appropriately feed into disease modeling, medical resource estimation, and decision support tools.</p>			
<p><i>Title:</i> 7) Detection</p> <p><i>Description:</i> Emphasis on the detection and identification of chemical and biological threats. Objectives include the development of miniaturized detector for sensing of chemical and biological agents, design for prototype whole pathogen genome sequencing system.</p> <p><i>FY 2015 Accomplishments:</i> Continued integration studies for Next Generation Chemical Detector (NGCD) based on Micro Electro-Mechanical Systems components for Gas Chromatography and Mass Spectrometry. The integration studies for NGCD move to BA3 NT3/Detection in FY16. Continued algorithm development to increase range capabilities, reduce false positives, and provide decision capabilities for large data sets. Initiated concept and technology development for biological threat early warning.</p> <p><i>FY 2016 Plans:</i></p>	15.413	15.864	13.831

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continue algorithm development to increase range capabilities, reduce false positives, and provide decision capabilities for large data sets. Continue concept and technology development for biological threat early warning detection. Initiate high sensitivity immunoassay detection platforms for environmental samples.</p> <p>FY 2017 Plans: Continue concept and technology development for the biological threat early warning detection. Initiate development of sample preparation techniques to enhance environmental detection platforms. Continue high sensitivity immunoassay detection platforms for environmental samples.</p>				
<p>Title: 8) Hazard Prediction</p> <p>Description: Improve battlespace awareness by accurately predicting hazardous material releases, atmospheric transport and dispersion, and resulting human effects. Develop capability for predicting the source term of releases of chemical, biological, and industrial materials.</p> <p>FY 2015 Accomplishments: Continued development of next-generation waterborne transport models in conjunction with related validation and verification efforts. Continued interior building transport and dispersion modeling effort to improve modeling of outdoor dispersion from indoor release and modeling of indoor dispersion in multiple buildings from an outdoor release, simulating wide-area effects of a release in an urban environment. Delivered Common CBRN Modeling Interface (CCMI) compliant Internal Building Hazard (IBH) model for inclusion in the Joint Effects Model (JEM). Completed initial verification and validation of interior building transport and dispersion models, which informed planning of the urban component of the Jack Rabbit II Field Trial by identifying data needs. Continued development of a generalized capability for virtual test and evaluation for evaluating/stressing source characterization and hazard refinement techniques. Focused on bridging the gap between meso- and micro-scale turbulence simulations. Delivered missile intercept/functioning missile effects model. Initiated next-generation development of missile intercept/functioning missile effects model. Continued advancing the urban modeling capability and optimizing the urban sub-system for interfacing transport models of varying fidelity and speed.</p> <p>FY 2016 Plans: Complete development of waterborne transport and dispersion models, including advancements to the Incident Command Tool for Drinking Water Protection (ICWater), System for Hazard Assessment of Released Chemicals (SHARC), and associated documentation. Continue related field studies to validate waterborne transport and dispersion model outputs. Continue interior building transport and dispersion modeling effort to improve modeling of outdoor dispersion from indoor release and modeling of indoor dispersion in multiple buildings from an outdoor release, simulating wide-area effects of a release in an urban environment. Continue high-resolution and probabilistic meteorology research, incremental numerical weather prediction system upgrades, and provide operational support for the Environmental Data Enterprise (EDE). Initiate work to optimize the urban subsystem modeling</p>		3.703	4.811	3.867

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>capability and increase the fidelity of source term estimation in urban environments. Continue development of MicroSWIFT/SPRAY (MSS) to improve hazard prediction in urban environments in Hazard Prediction and Assessment Capability (HPAC). Continue advancing the urban modeling capability and optimizing the urban sub-system for interfacing transport models of varying fidelity and speed. Continue research and development to enhance the fidelity of the missile intercept modeling capability within the HPAC.</p> <p>FY 2017 Plans: Continue development of waterborne transport and dispersion models, including advancements to the ICWater and SHARC. Leverage new data sources for higher resolution land-use, bathymetric and oceanographic data. Continue related field studies to validate waterborne transport and dispersion model outputs. Continue interior building transport and dispersion modeling effort to improve modeling of outdoor dispersion from indoor release and modeling of indoor dispersion in multiple buildings from an outdoor release, simulating wide-area effects of a release in an urban environment. Continue work to optimize the urban subsystem modeling capability and develop capability to perform linked Bayesian probability analysis and increase the fidelity of source term estimation for urban environments. Continue development of MSS to improve hazard prediction for urban environments in HPAC. Continue research and development to enhance the fidelity of the missile intercept modeling capability within the HPAC. Continue development of a virtual test and evaluation simulation environment for evaluating/stressing source characterization and hazard refinement techniques.</p>				
<p>Title: 9) Data Analysis</p> <p>Description: Develop CBRN data sharing capabilities and simulation tools. Develop chapters of the Chemical and Biological Agent Effects Manual Number 1 (CB-1), an authoritative source capturing analytical methods for evaluating the effects of CB agents on equipment, personnel, and operations.</p> <p>FY 2015 Accomplishments: Initiated development of chapters for the CB-1 manual. Began providing access to field trial data sources.</p> <p>FY 2016 Plans: Continue providing access of field trial data sources to transport and dispersion community. Continue to develop additional chapters of the Chemical and Biological Agent Effects Manual Number 1 (CB-1). Draft chapters to be completed include Chapter 12 - Human Factors, Chapter 8 - Structures/Site Characteristics. Continue work drafting Chapter 13 - Consequence Assessment and Chapter 15 - Battlespace Management. Begin work on Chapter 18 - Material Effects, Chapter 19 - Mission Effects, and Chapter 20 - Risk Assessment. Much of the efforts to become more mature and transition to CB3.</p> <p>FY 2017 Plans:</p>		3.720	1.327	3.797

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Improve modeling of subsurface chemical concentrations of contaminants. Complete several CB-1 chapters, currently planned to include "Meteorological/Environmental Data", "Geographic Data", "Battlespace Management" and "Reconnaissance". Initiate several CB-1 chapters, currently planned to include "Test and Evaluation" and "Consequence Management".</p> <p>Title: 10) Operational Effects & Planning</p> <p>Description: Increase effort to develop decision support tools and information management capabilities for planning and real-time analysis to determine and assess operational effects, risks, and impacts of CBRN incidents on decision making. Focus areas include consequence management, population modeling, and human knowledge management.</p> <p>FY 2015 Accomplishments: Continued system performance model integration and applied research development for program-wide exploitation for collective and individual protection and contamination avoidance. Continued operational effects risk management framework development to inform service-specific analyses and decision-makers. Initiated Decision Support Tool to address Joint Operations Effects requirements and risk-based planning and decision making.</p> <p>FY 2016 Plans: Continue system performance model integration and advanced development for program-wide exploitation for collective and individual protection and contamination avoidance. Initiate health and human effects modeling capability for expanded threat list. Continued operational effects research and analysis efforts, previously referred to as Decision Support Tool, to provide objective, quantitative analysis in support of science and technology initiatives, material developments, operational guidance, and requirements setting.</p> <p>FY 2017 Plans: Continue system performance model integration and advanced development for program-wide exploitation for collective and individual protection and contamination avoidance. Continue to develop health and human effects modeling capability. Increase effort on operational effects research and analysis efforts, to provide objective, quantitative analysis in support of science and technology initiatives, material developments, operational guidance, and requirements setting.</p>		5.257	8.850	8.395
<p>Title: 11) Threat Agent Sciences</p> <p>Description: Supports defensive countermeasure development against chemical and biological (CB) threats by delivering the scientific understanding and relevant estimates of the hazards posed to humans by exposure to CB agents.</p> <p>Toxicological and/or infectious-dose information and environmental response supports development and/or enhancing both operational risk and exposure guidelines; limits for detection and protection; goals for decontamination; and medical</p>		6.121	3.770	4.411

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
countermeasures. The knowledge generated from this program is used to inform hazards and hazard prediction models as well informing countermeasure development.			
<p>FY 2015 Accomplishments: Continued to define particle properties and predict aerosolization behavior to inform hazard assessment. Moved towards methods for rapid prediction of agent-substrate interactions, including correlation of agent physical properties. Developed a barcoded spore for use in Developmental Testing and other RDT&E needs; a subset of this library was delivered to West Desert Test Center, DPG. Completed studies on Ebola virus viability in biological fluids on operationally relevant materials.</p> <p>FY 2016 Plans: Continue to define particle and agent properties and predict aerosolization behavior to inform hazard assessment. Continue developing methods to facilitate rapid prediction of agent-substrate interactions, including correlation of physical agent properties. Continue assessing the impact of environmental factors on threat agent activity (pyrotechnic dissemination, persistence, transport, degradation, resuspension, etc). Continue developing Absorption, Distribution, Metabolism, Excretion, and Toxicity (ADMET) models of physiological response to agent and predictive toxicology capabilities. Characterize priority emerging chemical and biological threats to provide critical agent parameters to decision makers and technology developers.</p> <p>FY 2017 Plans: Continue to develop methods for biological agent characterization including genomic fingerprinting and tracing initiated with Ebola virus efforts. Provide environmental persistence and decontamination estimates on high priority biological threat agents, including genomic finger printing and/or tracing. Continue to define particle properties to predict aerosolization behavior to inform hazard assessment. Continue efforts to characterize the effects growth media have on the environmental fate of biological aerosols for understanding hazards. Continue developing methods to predict agent-substrate interactions.</p>			
Title: 12) SBIR/STTR	-	1.004	-
<p>FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.</p>			
Accomplishments/Planned Programs Subtotals	52.364	51.131	56.191

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CB3: CHEMICAL BIOLOGICAL DEFENSE (ATD)	17.362	16.062	19.109	-	19.109	18.343	17.899	18.035	18.038	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program			Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) NT2 / TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
NT2: TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)	-	69.647	67.047	64.476	-	64.476	73.088	71.295	71.876	71.891	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project NT2 provides early applied research to enhance and develop defensive capabilities against Non-Traditional Agents (NTAs). This project focuses on expanding scientific knowledge required to develop defensive capabilities and to demonstrate fast and agile scientific responses to enhance or develop capabilities that address emerging threats. Efforts in this project support an integrated approach to counter emerging threats through innovative science and technology (S&T) solutions for detection, protection, decontamination, information systems and modeling and simulation, and medical countermeasures. This project is a comprehensive and focused effort for developing NTA defense capabilities, coordinated with specific interagency partners for doctrine, equipment, and training for the Warfighter and civilian population for defense against NTAs.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) Expeditionary Collective Protection</p> <p>Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their chemical warfare agent (CWA) filters.</p> <p>FY 2015 Accomplishments: Completed testing of a brass board photoluminescent Residual Life Indicator (RLI), which was tested to determine if it can be used to evaluate both adsorptive and reactive changes in chemical capacity.</p>	0.163	-	-
<p>Title: 2) Material Contamination Mitigation</p> <p>Description: Study and assessment of decontamination technologies.</p> <p>FY 2015 Accomplishments: Continued to assess performance and unique aspects of full spectrum of NTAs and developed technologies to optimize performance against NTAs, focusing on dial-a-decon NTA formulation components. This included initiating the investigation and analysis of additional categories of emerging threats.</p> <p>FY 2016 Plans:</p>	1.070	1.577	3.142

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Integrate NTAs, including newly identified emerging threats into the continuing Dial-a-Decon, sensitive equipment decontamination (enzyme) projects, responsive coatings, multiple system integration, and the full hazard mitigation technology development portfolio.</p> <p>FY 2017 Plans: Continue integrating NTAs, including newly identified emerging threats into the continuing Government owned decontaminant formulation, sensitive equipment decontamination (enzyme and catalytic) projects, responsive coatings, multiple system integration, and the full hazard mitigation technology development portfolio. Initiate focus on hazard mitigation of other emerging threats and classes of NTAs, including data sharing with international partners. Incorporate data gathered from surface science effort to inform design of new approach on Government owned formulation.</p>			
<p>Title: 3) Personnel Contamination Mitigation</p> <p>Description: Develop new technologies to alleviate the risk associated with contaminated human remains and personal effects (materials) exposed to and contaminated by chemical agents by neutralizing and/or physically removing the residual chemical agents.</p> <p>FY 2015 Accomplishments: Initiated human remains storage testing to determine how the hazards associated with contaminated human remains are altered by the normal and extended storage conditions, including storage effects on NTAs.</p> <p>FY 2016 Plans: Transition Human Remains storage data to the human remains related programs and the Joint Mortuary Affairs Center (JMAC), Fort Lee, Virginia. Initiate Personnel Decontamination hazard mitigation projects to develop an alternative to RSDL (Reactive Skin Decontamination Lotion). Initiate mass casualty Personnel Decontamination projects to develop technology to manage the specific issues (throughput and efficacy) associated with mass casualty decontamination.</p> <p>FY 2017 Plans: Continue mass casualty personnel decontamination projects to develop technology to manage the specific issues (throughput and efficacy) associated with mass casualty decontamination that include efficacy against NTAs and emerging threats decontamination to support warfighter operations, including homeland defense mission.</p>	0.133	0.519	1.669
<p>Title: 4) Respiratory and Ocular Protection</p> <p>Description: Development and analysis of design alternatives for chemical and biological air-purifying respirators to provide enhanced protection with lower physiological burden and improved interface with mission equipment.</p>	0.163	-	0.358

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Continued to investigate performance limitations current and developmental of respiratory protection technologies against NTA challenges.</p> <p>FY 2017 Plans: Continue to investigate performance limitations current and developmental of respiratory protection technologies against NTA challenges and investigate counter-measures to these specific limitations.</p>			
<p>Title: 5) Chemical Diagnostics - Medical</p> <p>Description: Focuses on developing state-of-the-art laboratory/fieldable methods to detect exposure to non-traditional agents in clinical samples. Identifies biomolecular targets that can be leveraged as analytical methodologies, as well as, laboratory and animal studies characterizing time-course and longevity of a particular analyte/biomarker. Supports the analytics for traditional agent diagnostics and hand-held diagnostic technologies that might be applied to NTA diagnostics.</p> <p>FY 2015 Accomplishments: Expanded NTA biomarker discovery efforts for additional compounds. Continued development of systems biology-based pipeline for the identification and validation of NTAs in clinical and animal samples for compounds of interest.</p> <p>FY 2016 Plans: Continue to expand NTA biomarkers for additional compounds. Optimize method development for identification and validation of NTAs in clinical samples for additional compounds of interest.</p>	2.384	2.248	-
<p>Title: 6) Chemical Pretreatments - Medical</p> <p>Description: Develops pretreatments and prophylactics that provide protection against NTAs and emerging chemical threats. Prophylactic medical countermeasures (MCMs) include catalytic and stoichiometric bioscavengers that rapidly bind and detoxify a broad spectrum of NTAs.</p> <p>FY 2015 Accomplishments: Continued studies to develop prophylactic bioscavengers for NTA exposure. These studies included investigations of FDA approved drugs, designer enzymes and novel assays to support countermeasure development.</p> <p>FY 2016 Plans:</p>	14.341	13.242	11.755

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continue focused studies to identify lead catalytic bioscavenger candidates against NTA exposure in validated animal models. Support development of a catalytic bioscavenger cocktail effective against multiple NTAs.</p> <p>FY 2017 Plans: Explore bioscavengers administered as post-exposure, pre-symptomatic prophylaxis against NTAs in validated animal models. Evaluate Food and Drug Administration (FDA) licensed MCMs for potential pretreatment/prophylaxis against NTAs and emerging chemical threats.</p>				
<p>Title: 7) Chemical Therapeutics - Medical</p> <p>Description: Investigates common mechanisms of agent injury. Determines the toxic effects of agents by probable routes of field exposure, as well as standard experimental routes. Physiological parameters and pathological assessments will be used to establish the general mode and mechanism(s) of toxicity. Develops, assesses, evaluates, and validates therapeutics for treatment resulting from exposure to NTAs and emerging chemical threats.</p> <p>FY 2015 Accomplishments: Continued to develop novel therapeutic compounds for NTAs that cross the blood brain barrier and can be used to treat symptoms of exposure and prevent damage. Continued to screen currently licensed FDA approved countermeasures to determine potential efficacy against NTAs. Utilized assays at the ADMET Center of Excellence (CoE) to improve understanding of medical countermeasure cellular and mechanistic effects to facilitate NTA therapeutic discovery, development, transition, and licensure.</p> <p>FY 2016 Plans: Continue optimizing centrally acting novel therapeutic compounds that cross the blood brain barrier. Investigate identified licensed FDA approved countermeasures for potential efficacy against other classes of NTAs for potential Emergency Use Authorization (EUA). Continue research projects at the ADMET CoE that improves Medical Countermeasure (MCM) profile understanding that will facilitate development.</p> <p>FY 2017 Plans: Continue to optimize novel therapeutic compounds that cross the blood brain barrier and can be used as treatments for NTA exposures. Continue to evaluate licensed FDA therapeutics against NTAs for potential EUA. Continue to utilize the ADMET CoE to support evaluation and development of new NTA therapeutics.</p>		14.703	13.241	15.575
<p>Title: 8) Detection</p> <p>Description: Primary focus is to assess the potential of multiple technologies to meet the needs to detect the presence of NTAs.</p> <p>FY 2015 Accomplishments:</p>		12.267	12.376	10.333

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Continued development from technology concepts and models to meet the needs to detect contamination on surfaces in pre and post decontamination application. Completed integration studies for chemical aerosol detection into the Next Generation Chemical Detector (NGCD) MS B, and transitioned to BA3 NT3/Detection in FY16. Initiated concept and technology development for chemical threat early warning detection.</p> <p>FY 2016 Plans: Continue development from technology concepts and models to meet the needs to detect contamination on surfaces in pre and post decontamination application. Continue concept and technology development for chemical threat early warning detection.</p> <p>FY 2017 Plans: Continue development from technology concepts and models to meet the needs to detect contamination on surfaces in pre and post decontamination applications. Continue concept and technology development for chemical threat early warning detection.</p>			
<p>Title: 9) Modeling & Simulation</p> <p>Description: Provide modeling of NTA materials for hazard prediction. Develop NTA source term algorithms for predicting chemical hazards from intentionally functioning weapons, counter-proliferation scenarios (bomb on target), and missile intercept. Investigate NTA agent fate for secondary effects, environmental/atmospheric chemistry, atmospheric and waterborne transport and dispersion, human effects, model Validation and Verification (V&V), scaled testing, casualty estimation, and supporting data management.</p> <p>FY 2015 Accomplishments: Continued analysis of data resulting from experimentation phase of small-scale testing for NTA simulants for use in creating and verifying NTA source terms, for defense against CBRN hazards. Continued to develop new NTA source term models and flexible NTA scenario models.</p> <p>FY 2016 Plans: Continue analysis of data resulting from small-scale testing of NTA simulants and continue test execution. Continue sensitivity and validation studies on NTA source term models and update and expand NTA databases. Continue development of agent fate modeling for NTAs.</p> <p>FY 2017 Plans: Continue sensitivity and validation studies on NTA source term models and update and expand NTA databases. Continue development of agent fate modeling for NTAs.</p>	2.082	1.814	1.738
<p>Title: 10) Percutaneous Protection</p>	0.640	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Study and assessment of percutaneous protective technologies.</p> <p>FY 2015 Accomplishments: Assessed and optimized technologies to improve whole system performance against NTAs. The whole system performance included the integration of the percutaneous protection with the respiratory protection, as well as effectiveness of the closures between the components of protective equipment. The final report and data was transitioned to UIPE 1 and UIPE 2 programs.</p>			
<p>Title: 11) Threat Agent Sciences</p> <p>Description: Provide critical agent characterization (physical and physiological/toxicological) on current and emerging threat agents to prepare for surprise which enables and informs development and testing of NTA defense technology such as detection, decontamination, protection, hazard assessment, and more. This preliminary assessment of new threats informs decision makers, Concept of Operations (CONOPs) and Tactics, Techniques and Procedures (TTP) Development as well as provides the basis for all countermeasure development and assessment.</p> <p>FY 2015 Accomplishments: Continued to characterize the synthesis and physico-chemical properties of priority NTAs (informed by intelligence assessments and program requirements). Refined and delivered human toxicity estimates for selected priority threat agents; continued work to develop human toxicity estimates for other selected classified, priority threat agents. Provided characterization of priority threat agents to enable countermeasure development and testing as well as inform CONOPs, policies, doctrines and procedures. Developed in vitro, in vivo and in silico models for ADMET for understanding operationally relevant exposure effects and use in building predictive toxicology capabilities.</p> <p>FY 2016 Plans: Provide supportable data to enable countermeasure development and testing as well as inform CONOPs, policies, doctrines and procedures. Continue to characterize the synthesis and physico-chemical properties of priority NTAs (informed by intelligence assessments and program requirements). Continue preparing laboratory and operational toxicity estimates for next priority NTAs. Refine and deliver human toxicity estimates for next priority NTAs. Continue to develop in-silico platforms for predicting human ADMET of threat agents. Characterize priority emerging threats, including those areas where the threats converge, to provide critical agent parameters to decision makers and technology developers.</p> <p>FY 2017 Plans: Continue to characterize priority emerging threats to provide critical agent parameters to decision makers and technology developers to support countermeasure development and testing, informs concept CONOPs, policies, doctrines and procedures. Build linkages between emerging threat characterization and advanced development capability assessments to better define</p>	21.701	20.745	19.906

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
current capability gaps. Continue the evaluation of synthesis pathways, physico-chemical properties and environmental fate properties for priority threats. Continue assessing the impact of environmental factors and substrate properties on threat agent activity (pyrotechnic dissemination, persistence, transport, degradation, resuspension, etc). Continue preparing laboratory and operational toxicity estimates for next priority NTAs. Refine and deliver human toxicity estimates for next priority NTAs. Continue to develop in-silico platforms for predicting human ADMET of threat agents.			
Title: 12) SBIR/STTR	-	1.285	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	69.647	67.047	64.476

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• NT3: TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)	21.534	22.948	17.173	-	17.173	19.885	19.378	19.541	19.544	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) TM2 / TECHBASE MED DEFENSE (APPLIED RESEARCH)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TM2: TECHBASE MED DEFENSE (APPLIED RESEARCH)	-	90.527	84.433	68.048	-	68.048	73.401	76.811	77.325	81.186	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TM2 provides for applied research for innovative technology approaches to advance medical systems designed to rapidly identify, diagnose, prevent, and treat disease due to exposure to all three of radiological, chemical and biological threat agents. Categories for this project include core science efforts in Medical Chemical, Medical Biological, Diagnostics, and the Medical Countermeasures Initiative (MCM). Against radiological threats, this project provides investment for the development of pretreatments (prophylaxis) and post-irradiation therapeutics against radiological/nuclear exposure. Against chemical and biological agents, this project supports applied research for the investigation of new medical countermeasures to include prophylaxes, pretreatments, antidotes, skin decontaminants, and therapeutic drugs against identified and emerging biological and chemical warfare agents. Medical Science and Technology (S&T) efforts in this Budget Activity refine promising medical initiatives identified in Budget Activity 1, resulting in the development of countermeasures to protect against and treat the effects of exposure to chemical and biological (CB) agents. Diagnostic research focuses on providing high quality data closer to the point-of-need comprising device innovation, panels of biomarkers driven by bioinformatics, and epidemiological modeling tools.

The Medical Countermeasures Initiative (MCM) was established to coordinate inter-related advanced development and flexible manufacturing capabilities, providing a dedicated, cost-effective, reliable, and sustainable MCM process that meets the Warfighter and national security needs. MCM efforts within science and technology (S&T) are concentrated in advancing two areas: 1) regulatory science and 2) flexible manufacturing technologies and processes for MCMs. Efforts conducted in these areas are enablers supporting the DoD Medical Countermeasures Advanced Development and Manufacturing (MCM-ADM) capability.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) Biosurveillance</p> <p>Description: Biosurveillance/Disease Surveillance: Integrate existing disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced warning systems, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact and biological threat assessment. Contribute to the development of global, near real-time, disease monitoring and surveillance systems that address secondary infection, fuse medical syndromic, environmental, and clinical data, and feed into disease modeling, medical resource estimation and decision support tools. The Chemical Biological Defense Program partners with civil agencies and DoD agencies to provide near real-time information and provide situational awareness, yielding analytical and predictive capabilities for DoD decision makers including Combatant Commanders.</p> <p>FY 2015 Accomplishments:</p>	3.603	3.920	4.182

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) TM2 / TECHBASE MED DEFENSE (APPLIED RESEARCH)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Completed effort to develop a flexible set of data driven models that dynamically assesses the socio-economic response to the spread of disease and, in turn, the effect of that response on disease spread which delivered an analytic capability for the Biosurveillance Ecosystem. Initiated various biosurveillance analytic capabilities, including real-time influence forecasting, agricultural animal population database for zoonotic disease analysis, an online crowdsourcing game for bacterial genome assembly to enhance rapid pathogen discovery and identification, biosurveillance analysis using clinical diagnoses and social media indicators in military populations, capability to assess the risk of disease spread to the United States, a data-driven framework for zoonotic disease prediction, biosurveillance visualization capabilities, a Global Rapid Identification Tool for diagnosing infectious disease bioevents, and a biosurveillance analytics verification and validation capability.

FY 2016 Plans:
Continue the development of the Biosurveillance Ecosystem to include analyst collaboration tools, advanced analytics, and analyst workbench. Continue various biosurveillance analytic capabilities, including real-time disease forecasting, agricultural animal population database for zoonotic disease analysis, an online crowdsourcing game for bacterial genome assembly to enhance rapid pathogen discovery and identification, biosurveillance analysis using clinical diagnoses and social media indicators in military populations, capability to assess the risk of disease spread to the United States, a data-driven framework for zoonotic disease prediction, biosurveillance visualization capabilities, and a Global Rapid Identification Tool for diagnosing infectious disease bioevents.

FY 2017 Plans:
Development of Biosurveillance Ecosystem is shifted to Biosurveillance. Complete the next iteration of analytic capabilities, specifically an agricultural animal population database for zoonotic disease analysis, an online crowdsourcing game for bacterial genome assembly to enhance rapid pathogen discovery and identification, a capability to assess the risk of disease spread to the United States, a data-driven framework for zoonotic disease prediction, and tools for diagnosing infectious disease bioevents. Continue development of biosurveillance analytic capabilities, including real-time disease forecasting capabilities, novel visualization capabilities, mobile applications, an ecological analytics capability to monitor and map global, near-real-time areas at risk of emerging infectious diseases, an ability to link sequencing at remote locations with the Biosurveillance Ecosystem. Develop next generation of technologies with focus on synthesizing large volumes of data to enable analysts and decision makers to make informed decisions in real-time. Initiate new efforts to explore utilizing ensemble approaches to disease forecasting.

Title: 2) Chemical Diagnostics	0.845	0.882	0.149
Description: Focuses on developing state-of-the-art laboratory/fieldable methods that detect exposure to chemical warfare agents (CWA) (e.g., nerve agents and vesicants) or radiological agents in clinical samples. Identifies biomolecular targets that can be leveraged as analytical methodologies, as well as, laboratory and animal studies characterizing time-course and longevity of a particular analyte/biomarker.			

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) TM2 / TECHBASE MED DEFENSE (APPLIED RESEARCH)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Continued development of assays for enhancing the ability to identify sublethal exposure to emerging chemical agent threats using newly-identified biomolecular targets for second series of compounds. Completed final stability tests and transitioned Forensic Liquid Analysis Kit (FLAK) to partners. Expanded the discovery for generic long-term ion-based markers of nerve agent exposure and developed confirmatory assays using previously discovered markers.</p> <p>FY 2016 Plans: Continue development of assays for enhancing the ability to identify sublethal exposure to emerging chemical agent threats using newly-identified biomolecular targets for third series of compounds. Continue developing confirmatory assays for discovered markers and initiate assay verification studies.</p> <p>FY 2017 Plans: Complete development of assays for enhancing the ability to identify sublethal exposure to emerging chemical agent threats using newly-identified biomolecular targets for third series of compounds. Complete the development of confirmatory assays for discovered markers and continue assay verification studies.</p>				
<p>Title: 3) Diagnostic Assays</p> <p>Description: Focuses on in-vitro assay development for viral vaccines.</p> <p>FY 2016 Plans: Develop in-vitro assays for Western, Eastern, and Venezuelan Equine Encephalitis (VEE) virus vaccines. Develop in-vitro assays for VEE virus protease activity and structure based discovery of viral protease inhibitors. These efforts transition to TM2/TBMDB BIO CM in FY17.</p>		-	1.177	-
<p>Title: 4) Diagnostic Assays</p> <p>Description: Development and verification of rapid, sensitive, and specific tests for the identification of BWAs and their expressed pathogens and toxins in clinical specimens from Warfighters for the diagnosis of exposure/infection. Discovery of host biomarkers generated in response to exposure to biological threat agents, whether known or emerging.</p> <p>FY 2015 Accomplishments: Continued to optimize processes and platform technologies employed in laboratory characterization of host and pathogen biomarker signatures of exposure and disease processes. Continued to develop nanomaterial structure designs to enable companion diagnostics. Completed the development of a prototype for transport of biothreat agents in clinical and environmental</p>		10.572	9.177	4.268

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Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) TM2 / TECHBASE MED DEFENSE (APPLIED RESEARCH)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>samples from field to laboratory. Initiated efforts for Rapid Automated Diagnostics for Antimicrobial Resistance (RADAR) and investigations into the feasibility of integrating identification of antimicrobial resistance into future diagnostic systems.</p> <p>FY 2016 Plans: Continue to optimize processes and platform technologies employed in laboratory characterization of host and pathogen biomarker signatures of exposure and disease processes. Continue to develop nanomaterial structure designs to enable companion diagnostics.</p> <p>FY 2017 Plans: Continue to optimize processes and platform technologies employed in laboratory characterization of host and pathogen biomarker signatures of exposure and disease. Continue discovery and identification of host response biomarkers. Continue efforts and initiate verification studies for RADAR and feasibility of integrating identification of antimicrobial resistance into future diagnostic systems. Initiate the investigation for designing biomarker validation methods and activities.</p>				
<p>Title: 5) Next Generation Diagnostics</p> <p>Description: Diagnostic device development to include systems able to harness next generation technologies to revolutionize clinical diagnostics in care facilities and in hospital laboratories. This investment will incorporate capabilities such as next generation sequencing and advanced biomolecular methods to harness both host and pathogen biomarkers in a threat agnostic approach that will serve all echelons of military medical care.</p> <p>FY 2015 Accomplishments: Expanded multiplexed point of need diagnostic platform technologies into syndromic-based panels. Began transition of candidate diagnostic technologies to Next Generation Diagnostic Systems (NGDS), Increment 2. Developed and evaluated candidate host biomarker diagnostic targets in analytical test environments.</p> <p>FY 2016 Plans: Continue development of multiplexed point of need diagnostic platform technologies into syndromic-based panels. Continue transition of candidate diagnostic technologies to NGDS, Increment 2.</p> <p>FY 2017 Plans: Complete development of multiplexed point of need diagnostic platform technologies into syndromic-based panels. Initiate development of sample preparation techniques to enhance clinical diagnostic platforms.</p>		11.864	9.849	3.685
<p>Title: 6) Medical Countermeasures Initiative</p> <p>Description: Integrate the regulatory science and manufacturing technologies and processes developed into the DoD MCM-ADM as enablers of the advanced development and flexible manufacturing.</p>		8.905	6.000	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
The MCMI budget line will transition to TM2/Bacterial Therapeutics in FY17.				
<p>FY 2015 Accomplishments: Continued project that investigated organotypic platforms for MCM evaluation (ex-vivo heart, liver, kidney, lung, or blood-brain barrier) with the goal of accelerating and enhancing the FDA-regulated medicinal product development process. Constructed one next generation high-yield protein-expression platform for biotechnology-based MCMs.</p> <p>FY 2016 Plans: Evaluate novel conjugation approaches for polysaccharide based vaccines. Technology transfer process development and manufacturing activities to long-term partner for Advanced Development Manufacturing capability.</p>				
<p>Title: 7) Viral/Bacterial/Toxins Vaccines</p> <p>Description: Generate novel or improved vaccines against viral, bacterial and toxin biothreat agents, and demonstrate preliminary efficacy in small animal models. Develop assays that identify correlates of protective immunity in animal models.</p> <p>FY 2015 Accomplishments: Continued the most promising in-progress animal model development projects, refined with regulatory guidance, including animal models for aerosolized Burkholderia mallei (glanders), and B. pseudomallei (melioidosis). Animal models for Type A Francisella tularensis (Tularemia) were established. Initiated correlates of immunity elicited by Burkholderia (glanders and melioidosis) and Coxiella (Q-fever) species. Novel subunit, polysaccharide, and OMV (outer membrane vesicle) based Burkholderia (glanders and melioidosis) vaccine candidates were evaluated in small or large animal models with and without adjuvants. Activities, including in vitro analysis through computational biology and serological surveys, were initiated to identify Coxiella (Q-fever) protective antigens. Developed and evaluated promising vaccine candidates designed to protect against genetically engineered Bacillus anthracis (anthrax) strains and successfully tested for safety and efficacy in pilot animal model studies. Initiated testing of lead vaccine candidates for protection against aerosolized Type A Francisella tularensis (Tularemia) infection in established small animal models [moved to TM3/Viral Vaccines in FY16]. Initiated development of additional promising but immature vaccine candidates for protection against aerosolized Type A Francisella tularensis (Tularemia) infection. Initiated development of a monoclonal antibody-based pretreatment against multiple serotypes of botulinum neurotoxin. Initiated early development of prototypic three-component vaccines to protect against WEVEE.</p> <p>FY 2016 Plans: Animal model development projects will be refined with regulatory guidance, including animal models for aerosolized Burkholderia mallei and B. pseudomallei. Evaluate candidate Burkholderia vaccines in small and large animal models. Assess correlates of immunity elicited by Burkholderia and Coxiella species. Test promising vaccine candidates designed to protect against genetically engineered Anthrax strains for safety and efficacy in non-human primates. Continue testing of vaccine candidates for protection</p>		10.236	10.479	15.026

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>against aerosolized Type A Francisella tularensis infection and initiate alternative candidate vaccine. Expand to two approaches for Q Fever vaccines. Develop and evaluate bridging strategies for interim fielding capability readiness.</p> <p>FY 2017 Plans: Execute down-selection of FDA Animal Rule compliant non-human primate model for aerosolized Burkholderia pseudomallei (melioidosis), which adequately mimics progression of human disease. Continue correlates of immunity studies: Characterize specific antibody responses during human Burkholderia pseudomallei (melioidosis) and Coxiella (Q-fever) infections. Complete data analysis for studies involving novel subunit, polysaccharide, and OMV-based candidate Burkholderia (glanders and melioidosis) vaccines in small and large animal models. Continue to evaluate and define in composition type A Francisella tularensis (Tularemia) vaccine prototypes in established small animal and NHP models for safety and efficacy. Develop a non-reactogenic Coxiella (Q-fever) vaccine and a humanized mouse model for aerosolized Q-fever [moved from TM2/MCMI]. Evaluate prototypic three-component vaccines against WEVEE viruses in small animal models with down-selected adjuvants. Initiate immune correlate studies with a three-component vaccine against WEVEE viruses in small animal models. Evaluate immunogenicity and efficacy of nanoparticle adjuvants with the VEEV DNA vaccine and the trivalent (WEVEE) vaccine in mice. Continue to assess the ability of novel adjuvants to enhance the protective efficacy of viral vaccines. Initiate research to assess MCM capabilities and strategies to defend against emerging and genetically engineered bioweapon (BW) threat agents.</p>				
<p>Title: 8) Vaccine Platforms and Research Tools</p> <p>Description: Use novel technology and methods to support development of vaccine candidates. Conduct studies to determine potential immune interference between lead vaccine candidates, the effect of alternative vaccine delivery methods, and thermo-stabilization technologies on the efficacy of lead vaccine candidates. Identify correlates of protection in humans, and predict the success of lead vaccine candidates in humans.</p> <p>FY 2015 Accomplishments: Collected clinical samples from Filovirus outbreaks in multiple international locations to help define clinically relevant correlates of immunity. Relevant small animal models were evaluated in terms of immune response, in novel multi-antigen platforms. Evaluated the efficacy of mosaic glycoproteins in protecting against multiple filoviruses in mice [moved to TM3/Vaccine Platforms and Research Tools in FY16]. Continued to identify improved technologies to enhance viral vectors and DNA vaccine platform technologies. Further refined the capabilities of the surrogate human immune system, modular immune in vitro construct (MIMIC), which provides an in vitro assessment of the human immune response. Assessed capabilities for production of novel synthetic molecules with potential applications as pretreatments against relevant targets.</p> <p>FY 2016 Plans:</p>		15.505	8.575	6.928

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Maintain studies that utilize clinical samples from Filovirus outbreaks in multiple international locations to refine definition of clinically relevant correlates of immunity. Initiate novel adjuvants as platforms for utilization in biodefense vaccines. Develop and evaluate bridging strategies for interim fielding capability readiness.</p> <p>FY 2017 Plans: Complete evaluation of hybrid antigenic proteins for use in broad spectrum vaccines for Staphylococcus Enterotoxins in relevant small animal models [moved from TM2/MCMI]. Downselect to most promising Toll-Like Receptors against adjuvants for testing in vivo with relevant vaccines [moved from TM2/MCMI]. Exploration of novel formulation and targeting systems for enhanced vaccine potency.</p>				
<p>Title: 9) Viral Therapeutics</p> <p>Description: Identify, optimize and evaluate lead candidate therapeutics for efficacy against viral pathogens.</p> <p>FY 2015 Accomplishments: Evaluated FDA-approved drugs for potential repurposing as effective antivirals. Evaluated novel antibody-based therapeutics for Filovirus infections. Identified and evaluated novel pathogen-directed therapeutics for Alphaviruses.</p> <p>FY 2016 Plans: Evaluate FDA-approved drugs for potential repurposing as effective antivirals. Continue to evaluate novel antibody-based therapeutics for Filovirus infections. Continue identification and evaluation of novel pathogen-directed therapeutics for Filoviruses and Alphaviruses.</p> <p>FY 2017 Plans: Screen and evaluate novel small molecule inhibitors of alphaviral infections in vitro and in vivo. Evaluate novel formulations to deliver antivirals to target sites and/or to enable new dosing methods. Evaluate modified nucleoside analogues as inhibitors of alphaviral infections in animal models for their access to the central nervous system and ability to inhibit encephalitic complications. Identify novel nuclear import and export inhibitors for modulation of capsid localization against alphaviruses. Initial studies target Venezuelan equine encephalitis (VEE), but there is potential for broad spectrum activity against WEE and EEE, as well.</p>		8.975	6.867	9.284
<p>Title: 10) Bacterial Therapeutics</p> <p>Description: Identify, optimize and evaluate lead therapeutic candidates effective against designated bacterial threat agents.</p> <p>FY 2015 Accomplishments:</p>		4.630	9.243	8.484

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Maintained FDA approved drug screening programs for Burkholderia, Francisella tularensis and determined in vitro susceptibilities. Refocused program on later stage optimization and testing of novel inhibitors of bacterial biological warfare agents, reducing efforts in discovery and addressing a limited number of priority pathogens.</p> <p>FY 2016 Plans: Augment FDA approved and late stage development drug screening programs for BWA and determine in vitro susceptibilities. Evaluate reformulation and/or targeted delivery approaches to enhance efficacy of poorly performing or failed drug candidates. Evaluate efficacy of bioactive peptides for the ability to stimulate host protective pathways in mouse models. Identify and validate novel targets and initiate small molecule screening for inhibitors. Develop alternative animal models to evaluate efficacy of candidates against otherwise nonpathogenic Multi-Drug Resistant (MDR) BW surrogate strains.</p> <p>FY 2017 Plans: Evaluate FDA approved or late stage therapeutics for activity against Burkholderia, Francisella tularensis, Bacillus anthracis, and Yersinia pestis. Continue to evaluate reformulation and/or targeted delivery approaches to enhance efficacy of poorly performing or failed drug candidates. Continue the discovery and advancement of non-traditional strategies to diversify approaches to identify lead therapeutic candidates against bacterial infection. Continue generation of MDR surrogate panels to bridge the gap between antimicrobial resistant biowarfare agents and multi-drug resistant clinical pathogens. Organotypic platform-related work previously funded under TM2/MCMI will be continued here.</p>				
<p>Title: 11) Toxin Therapeutics</p> <p>Description: Identify, optimize and evaluate therapeutic candidates that are effective against biological toxin agents.</p> <p>FY 2015 Accomplishments: Continued to characterize Botulinum neurotoxin (BoNT) small molecule inhibitors in vitro. Continued co-crystallization studies of BoNT-inhibitor complexes.</p> <p>FY 2016 Plans: Continue to characterize BoNT small molecule inhibitors in vitro. Continue co-crystallization studies of BoNT-inhibitor complexes. Initiate evaluation of late development and FDA approved drugs for treatment of staphylococcal enterotoxin B intoxication.</p> <p>FY 2017 Plans: Further evaluate most potent small molecule BoNT/A inhibitors in neuronal assays and ex vivo model systems.</p>		2.974	2.943	2.015
<p>Title: 12) Pretreatments, Nerve Agents</p>		6.826	9.825	6.312

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Develop pretreatments and prophylactics that provide protection against all organophosphorous (OP) nerve agents. Pretreatments/prophylactics include both stoichiometric and catalytic bioscavengers that rapidly bind and detoxify a broad spectrum of OP nerve agents.</p> <p>FY 2015 Accomplishments: Continued efforts to develop effective bioscavengers (stoichiometric and catalytic). Continued development of a broad spectrum regimen of catalytic bioscavengers effective against multiple types of OP nerve agents.</p> <p>FY 2016 Plans: Realign efforts to emphasize catalytic bioscavengers. Select promising G-type nerve agent catalytic bioscavengers candidates to humanize. Continue developing V-type nerve agent catalytic bioscavenger, and a regimen of catalytic bioscavengers effective against multiple nerve agents.</p> <p>FY 2017 Plans: Continue to optimize catalytic bioscavengers for acceptable in vivo toxicity profile, pharmacokinetic (PK) and efficacy activity against G-type and V-type OP nerve agents in appropriate animal models.</p>				
<p>Title: 13) Chemical Therapeutics</p> <p>Description: Focuses on therapeutic strategies to effectively minimize neurologic injuries resulting from exposure to chemical warfare agents (CWAs). This effort involves the development of neuroprotectants, anticonvulsants, and improved therapies for brain enzyme reactivation. This work is designed to develop potential candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment of chemical warfare casualties.</p> <p>FY 2015 Accomplishments: Continued to investigate technology to facilitate delivery of therapeutics to the brain (crossing the blood brain barrier). Explored molecular, nanomaterial-based drug delivery platforms. Continued to investigate the potential for broad spectrum cholinesterase enzyme reactivators that work in the brain. Continued development of animal models for operationally relevant threat agent exposure and medical countermeasure (MCM) development.</p> <p>FY 2016 Plans: Continue focus on refined technology that facilitates delivery of therapeutic regimen to the central nervous system (crossing the blood brain barrier). Select promising molecular, nanomaterial-based drug delivery platforms for further development. Continue supporting the development and screening for new potential leads as broad spectrum/centrally acting cholinesterase reactivators.</p> <p>FY 2017 Plans:</p>		5.592	3.838	7.715

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Support in vivo validation and characterization of therapeutics for: 1) an improved broad spectrum oxime; 2) compounds effective in the brain for enhanced neuroprotection and 3) compounds effective in the brain for enhanced survival. Continue exploring technologies for delivery of therapeutics to the brain (crossing the blood brain barrier). Continue supporting development and screening for broad spectrum cholinesterase reactivators that work in the brain. Continue development of animal models for realistic operational threat agent exposure and MCM development. Investigate dermal treatments and therapeutics for nerve agent and sulfur mustard exposure.			
Title: 14) SBIR/STTR	-	1.658	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	90.527	84.433	68.048

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• TM3: TECHBASE MED DEFENSE (ATD)	102.610	93.725	83.838	-	83.838	93.720	92.727	94.495	98.357	Continuing	Continuing
• MB4: MEDICAL BIOLOGICAL DEFENSE (ACD&P)	114.230	79.516	65.648	-	65.648	61.660	41.306	29.440	50.001	Continuing	Continuing
• MC4: MEDICAL CHEMICAL DEFENSE (ACD&P)	0.000	0.000	5.681	-	5.681	0.000	0.000	0.000	0.000	0	5.681
• MB5: MEDICAL BIOLOGICAL DEFENSE (EMD)	169.400	107.883	106.223	-	106.223	170.667	190.756	188.537	181.318	Continuing	Continuing
• MC5: MEDICAL CHEMICAL DEFENSE (EMD)	25.966	42.911	39.504	-	39.504	44.656	25.358	11.155	4.855	Continuing	Continuing
• MB7: MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing

Remarks

D. Acquisition Strategy
N/A

E. Performance Metrics
N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	147.141	140.094	127.941	-	127.941	142.815	140.382	143.221	147.091	Continuing	Continuing
CB3: <i>CHEMICAL BIOLOGICAL DEFENSE (ATD)</i>	-	17.362	16.062	19.109	-	19.109	18.343	17.899	18.035	18.038	Continuing	Continuing
NT3: <i>TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)</i>	-	21.534	22.948	17.173	-	17.173	19.885	19.378	19.541	19.544	Continuing	Continuing
TM3: <i>TECHBASE MED DEFENSE (ATD)</i>	-	102.610	93.725	83.838	-	83.838	93.720	92.727	94.495	98.357	Continuing	Continuing
TT3: <i>TECHBASE TECHNOLOGY TRANSITION</i>	-	5.635	7.359	7.821	-	7.821	10.867	10.378	11.150	11.152	Continuing	Continuing

A. Mission Description and Budget Item Justification

Demonstrates technologies supporting transition to advanced component development. This includes physical capabilities which cover biological and chemical detection, situational awareness and effects modeling, and protection and hazard mitigation. Other major efforts support enhanced chemical detection capabilities for aerosols and non-traditional agents, expanded capabilities for biosurveillance in pathogen detection and diagnosis, and pretreatments and therapeutics against a broader set of chemical and biological agents. Medical capabilities (pretreatments, therapeutics, diagnostics capabilities, and drug manufacturing and regulatory science technologies), include capabilities against non-traditional agents.

In the physical sciences area, Project CB3 focuses on demonstrations of CB defense technologies, including biological detection, chemical detection, information system technology for hazard prediction and systems performance, and protection, and decontamination. The Project continues to pursue solutions against traditional agents.

All non-traditional agent (NTA)-dedicated research (both medical and non-medical) is consolidated in Project NT3. This Project includes NTA chemical diagnostics, medical pretreatments, therapeutics, detection, and protection and hazard mitigation.

The medical program in Project TM3, aims to produce biological diagnostic assays and reagents, diagnostic device platforms, pretreatments and therapeutics for bacterial, viral, and toxin threats as well as for chemical threats, and medical devices, as countermeasures for CBR threat agents. Specific areas of medical investigation include: prophylaxis, pretreatment, antidotes and therapeutics, personnel and patient decontamination, and medical management of casualties.

Project TT3, Techbase Technology Transition, pursues efforts to enhance military operational capability, concepts of operation, WMD elimination, and hazard mitigation following a biological warfare or chemical warfare attack.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>
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The PE is dedicated to conducting proof-of-principle field demonstrations, and testing system-specific technologies to meet specific military needs. Work conducted under this PE will transition to and will provide risk reduction for PE 0603884BP/PE 0604384BP activities.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	155.374	140.094	145.877	-	145.877
Current President's Budget	147.141	140.094	127.941	-	127.941
Total Adjustments	-8.233	0.000	-17.936	-	-17.936
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-6.086	-			
• SBIR/STTR Transfer	-2.147	-			
• Other Adjustments	0.000	-	-17.936	-	-17.936

Change Summary Explanation

Funding: N/A

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) CB3 / CHEMICAL BIOLOGICAL DEFENSE (ATD)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CB3: CHEMICAL BIOLOGICAL DEFENSE (ATD)	-	17.362	16.062	19.109	-	19.109	18.343	17.899	18.035	18.038	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB3 develops technology advancements for joint service application in the area of information systems and modeling and simulation technologies. These activities will speed maturing of advanced technologies to reduce risk in system-oriented integration/demonstration efforts. Information systems advanced technology focuses on areas of advanced warning and reporting, hazard prediction and assessment, simulation analysis and planning, and systems performance modeling.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) Expeditionary Collective Protection</p> <p>Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their chemical warfare agent (CWA) filters.</p> <p>FY 2015 Accomplishments: Completed the fabrication and laboratory verification of the satellite cartridge Residual Life Indicator (RLI). RLI simulates the carbon bed in a CBRN collective protection filter. Overall design and efficacy of preliminary prototypes were assessed on Naval ships. In prototype evaluation, RLI cartridge system was placed in filter plenum and exposed to field environment, removed along with lots of carbon from filters in plenum, and subsequently subjected to breakthrough tests to initially assess correlation of RLI performance to carbon in the filter plenum. Information from initial field assessment was used to optimize cartridge design.</p> <p>FY 2017 Plans: Assess performance of optimized RLI satellite filter cartridge. Verify the RLI performance is correlated to that of the carbon bed in a CBRN collective protection filter. Establish the filter bed performance is effectively correlated with the RLI and extended with Guard Bed.</p>	0.790	-	0.566
<p>Title: 2) Material Contamination Mitigation</p> <p>Description: Demonstration of non-traditional or novel decontamination technologies and approaches which gain significantly improved effectiveness by complementary application.</p> <p>FY 2015 Accomplishments: Initiated non-aqueous sorbent decontaminant formulation effort for immediate decontamination to leverage emerging technologies and data that demonstrates significantly greater efficacy if decontamination process is initiated within the first hour. Transitioned new acceptance criteria for chemical agent resistant coating (CARC) acceptance to the CARC commodity manager after inter-laboratory validation. Initiated technology enhancement effort for Contamination Indicator/Decontamination Assurance</p>	0.822	2.056	2.230

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Spray (CIDAS) to advanced development. Completed technology assessment and transitioned data on mustard (HD) CIDAS formulation in support of CIDAS program of record. Initiated the radiological/nuclear decontamination/hazard mitigation effort to define scope of challenges and outline concept of operations. Transitioned Joint Biological Agent Decontamination System (JBADS) hazard mitigation technology data related to complex spores to advanced development. Continued S&T efforts to complete the formulation component of dial-a-decon.</p> <p>FY 2016 Plans: Complete maturation of formulation component of Dial-a-Decon project. Conduct a technology readiness assessment and transition data package. Continue development of the Dial-a-Decon brassboard to enhance efficacy by modifying dissemination of formulations. Initiate development of the next generation of hazard mitigation technologies that include integration of multiple systems to achieve efficacy goals. Conduct a field trial of Wide Area Decon technologies. Continue responsive coatings projects to enhance decontaminability as part of the systems approach to achieving efficacy goals.</p> <p>FY 2017 Plans: Transition sorbent decontaminant formulation effort to advanced development for immediate decontamination, focusing on efficacy testing and final formulation compatibility testing. Initiate room temperature ionic liquid decontaminant effort to address sensitive equipment decontaminant need (enzyme and catalytic) projects, specifically focusing on efficacy testing and formulation. Continue application of data gathered from surface science investigations to inform design to initiate development of the next generation of hazard mitigation technologies that include integration of multiple systems to achieve efficacy goals. Continue enhanced CB survivability and responsive coatings projects to enhance decontaminability as part of the systems approach to achieving efficacy goals. Demonstrate the wide-area decontamination hazard mitigation effort, which focuses on biological spore decontamination in a representative outdoor environment.</p>			
<p>Title: 3) Percutaneous Protection</p> <p>Description: Study and assessment of percutaneous protective technologies.</p> <p>FY 2015 Accomplishments: Completed demonstration of ensemble concepts that use protective fabric technologies developed during the previous year's programs. Completed whole-system man-in simulant testing and manikin live agent testing of selected ensembles. Transitioned data from Government and industry lightweight, lower thermal burden materials to the Uniform Integrated Protective Ensemble (UIPE) program.</p> <p>FY 2016 Plans:</p>	1.595	1.241	0.453

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Investigate engineering and manufacturing limitations for the production and system integration of multifunctional materials. Develop system integration approaches for incorporation of those materials in protective garments.</p> <p>FY 2017 Plans: Develop and demonstrate fully integrated ensembles for full-spectrum hazards that support tactical operations for all services. Develop ensembles that include novel garment designs that integrate with body armor, helmet, cooling systems, breathing apparatuses, and combat loads that are scalable to mission demands which will fill a broad set of existing capability gaps for many diverse DoD units.</p>				
<p>Title: 4) Personnel Contamination Mitigation</p> <p>Description: Develop new technologies to alleviate the risk associated with contaminated human remains and personnel effects (materials) exposed to and contaminated by chemical agents by neutralizing and/or physically removing the residual chemical agents to support warfighter operations, including homeland defense mission.</p> <p>FY 2015 Accomplishments: Initiated effort to explore enhancement of operational concepts related to mitigation of hazards related to human remains and personnel effects.</p> <p>FY 2017 Plans: Continue to develop new technologies to alleviate the risk associated with contaminated human remains and personnel effects (materials) exposed to and contaminated by chemical agents by neutralizing and/or physically removing the residual chemical agents to support warfighter operations, including the homeland defense mission. This effort also leverages the related BA2 development effort started in FY16.</p>		0.139	-	0.085
<p>Title: 5) Respiratory and Ocular Protection</p> <p>Description: Demonstration of novel filtration media into a lightweight, low-profile, and low-burden individual protective filter, which has enhanced performance against a broader range of challenges that includes toxic industrial chemicals.</p> <p>FY 2015 Accomplishments: Developed several promising respiratory and ocular protection technologies including a dual cavity pressurization of a full-facepiece respirator that isolates the nose cup for respiration, dynamic response pressure sensors to evaluate the real time performance of the mask seal or overall mask protection, and Closed Circuit-SCBA systems to allow for adaptable tactical respiratory protection systems with lower logistical burden. Emerging technologies for oxygen (O2) storage, carbon dioxide (CO2) removal, and process cooling of respirable air offer the potential for significant system weight reduction.</p> <p>FY 2016 Plans:</p>		1.037	0.807	0.905

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Develop, fabricate, and evaluate hybrid system technology prototypes. Transition a synthetic nano-structured material focused on toxic industrial chemical removal, including ammonia. FY 2017 Plans: Continue integration of respirator component technologies into a full-spectrum protection system which provides scalable protection. Research and development efforts will include nanotechnologies, anti-fogging materials, dynamic response breathing, oxygen storage and CO2 scrubbing.				
Title: 6) Biosurveillance (BSV) Description: Integrate existing disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced warning systems, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact and biological threat assessment. Contribute to the development of global, near real-time, disease monitoring and surveillance systems that address secondary infection, fuse medical syndromic, environmental, and clinical data, and feed into disease modeling, medical resource estimation and decision support tools. FY 2017 Plans: Continue biosurveillance analytic evaluations and various analytic capability development, including sequence data sharing, disease reemergence analytics, and pathogen spread visualizations in support of the Joint Program Management Office - Information Systems (JPM-IS). These efforts were developed in FY16 under BA3 TM3 Biological Diagnostics.		-	-	2.643
Title: 7) Detection Description: Focuses on the detection and identification of chemical and biological threats in near real-time at a distance from the detector. Future programs focus on the improvement of algorithms, excitation sources, and detector elements to increase range, reduce false positives, increase sensitivity, and reduce cost. FY 2015 Accomplishments: Continue processes of validating ground truth systems for detection technologies (genomic and proteomic technology) field assessments to lead into the initiation of sequence based comprehensive identification and characterization platform development for field forward capability. FY 2016 Plans: Continue sequence based comprehensive identification and characterization platform development for field forward capability. FY 2017 Plans: Continue handheld sequencer based platforms for comprehensive identification and characterization for field forward capabilities.		3.863	4.159	4.066
Title: 8) Hazard Prediction		4.470	1.379	2.309

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Improve battlespace awareness by accurately predicting hazardous material releases, atmospheric transport and dispersion, and resulting human effects. Develop predictive capability for the source term of releases of chemical, biological, and industrial materials.</p> <p>FY 2015 Accomplishments: Continued implementation of new numerical schemes and performance optimization for transport and dispersion models. Continued enhancement of high-fidelity urban transport and dispersion. Continued configuration management of science and technology prototype to establish upgraded capabilities listed as valid requirements for Hazard Prediction and Assessment Capability/Joint Effects Model (HPAC/JEM). Completed implementation and testing of new numerical schemes for future establishment of 64-bit/multi-core-capable models, improving model speed and performance by increasing addressable memory and improving parallel processing.</p> <p>FY 2016 Plans: Continue implementation of new numerical schemes and performance optimization for transport and dispersion models. Continue enhancement of high-fidelity urban transport and dispersion. Continue configuration management of science and technology prototype to establish upgraded capabilities listed as valid requirements for HPAC/JEM. Continue next-generation development of missile intercept/functioning missile effects model.</p> <p>FY 2017 Plans: Continue implementation of new numerical schemes and performance optimization for transport and dispersion models. Continue enhancement of high-fidelity urban transport and dispersion. Continue configuration management of science and technology prototype to establish upgraded capabilities listed as valid requirements for HPAC/JEM.</p>			
<p>Title: 9) Data Analysis</p> <p>Description: Develop chemical, biological, radiological and nuclear data-sharing capabilities. Develop chapters of the Chemical and Biological Warfare Agent Effects Manual Number 1 (CB-1), an authoritative source capturing analytical methods for evaluating the effects of CB warfare agents on equipment, personnel, and operations. Create a framework for implementing CB-1 and provide CBRN defense community access to CB-1.</p> <p>FY 2015 Accomplishments: Initiated development of a framework for the Chemical and Biological Agent Effects Manual Number 1 (CB-1) within a test version of the Defense Threat Reduction Information Analysis Center (DTRIAC) Next Gen Scientific and Technical Information Archival and Retrieval System (STARS). Began to develop initial chapters of CB-1.</p> <p>FY 2016 Plans:</p>	0.348	3.722	1.416

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Implement the Chemical and Biological Agent Effects Manual Number 1 (CB-1) on the DTRIAC STARS. FY 2017 Plans: Continue to implement the Chemical and Biological Agent Effects Manual Number 1 (CB-1) on DTRIAC STARS. Provide CBRN defense community access to CB-1.				
Title: 10) Operational Effects Description: Develop decision support tools and information management capabilities for planning and real-time analysis to determine and assess operational effects, risks, and overall impacts of CBRN incidents on decision-making. Focus areas include consequence management, population modeling, and knowledge management. FY 2015 Accomplishments: Continued system performance model integration with advanced development programs. Completed second generation system performance model for multiple decontamination systems to evaluate concepts and methodologies that predict the technology efficacy and hazards for a range of agents, materials, decontaminants, and environmental conditions. Produced a risk assessment tool in support of the decision-makers choice using the necessary source terms. Initiated operational effects research and analysis efforts to provide objective, quantitative analysis in support of science and technology initiatives, material developments, operational guidance, and requirements setting. FY 2016 Plans: Continue operational effects research and analysis efforts to provide objective, quantitative analysis in support of science and technology initiatives, material developments, operational guidance, and requirements setting. FY 2017 Plans: Continue system performance model integration and advanced development for program-wide exploitation for collective and individual protection and contamination avoidance. Continue operational effects research and analysis efforts to provide objective, quantitative analysis in support of science and technology initiatives, material developments, operational guidance, and requirements settings.		4.298	2.384	4.436
Title: 11) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.		-	0.314	-
Accomplishments/Planned Programs Subtotals		17.362	16.062	19.109

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA4: CONTAMINATION AVOIDANCE (ACD&P)	39.930	60.192	42.308	-	42.308	8.238	9.679	12.802	17.381	Continuing	Continuing
• DE4: DECONTAMINATION SYSTEMS (ACD&P)	2.051	1.594	0.500	-	0.500	2.500	5.500	12.000	12.500	Continuing	Continuing
• IS4: INFORMATION SYSTEMS (ACD&P)	7.585	7.464	5.928	-	5.928	6.187	1.451	0.870	0.783	Continuing	Continuing
• TE4: TEST & EVALUATION (ACD&P)	10.913	17.371	14.887	-	14.887	14.823	23.458	14.017	14.991	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) NT3 / TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
NT3: TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)	-	21.534	22.948	17.173	-	17.173	19.885	19.378	19.541	19.544	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project NT3 develops future capabilities against emerging and novel threats and verifies current capabilities against Non-Traditional Agents (NTAs). This project focuses on demonstrating fast and agile scientific responses to enhance or develop capabilities that address emerging threats. Efforts in this project support an integrated approach to develop new or enhanced countermeasures against novel and emerging threats through innovative science and technology (S&T) solutions for detection, protection, decontamination and medical countermeasures (MCMs). Efforts supply test methodologies and supporting science to verify capabilities, develop protection and hazard mitigation options, expand hazard assessment tools, and develop MCMs against NTAs. This project is a comprehensive and focused effort for developing NTA defense capabilities, coordinated with specific interagency partners for doctrine, equipment, and training for the Warfighter and civilian population for defense against NTAs. This project supports advanced technology development of NTA defense science and technology initiatives and transitions them to Budget Activities 4 and 5.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) Diagnostics - Medical</p> <p>Description: Focuses on state-of-the-art laboratory/fieldable methods that detect exposure to non-traditional agents in clinical samples. It also targets the identification of biomolecular targets that can be leveraged as analytical methodologies, as well as, laboratory and animal studies characterizing time-course and longevity of a particular analyte/biomarker.</p> <p>NOTE: Starting in FY17, program will be accomplished in TM3/Diagnostics.</p> <p>FY 2015 Accomplishments: Continued development of mature technologies that can quickly diagnose pre-symptomatic NTA exposure. Continued transition method development for identification and validation of NTAs in clinical samples to the Laboratory Response Network.</p> <p>FY 2016 Plans: Continue development of mature technologies that can quickly diagnose pre-symptomatic NTA exposure. Continue transition method development for identification and validation of NTAs in clinical samples to the Laboratory Response Network.</p>	0.571	0.695	-
<p>Title: 2) Expeditionary Collective Protection</p> <p>Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their chemical warfare agent (CWA) filters.</p>	0.335	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Designed and evaluated pre filter to extend life of collective protection systems. Overall design and efficacy of preliminary prototypes were assessed on Naval ships. In prototype evaluation, Guard Bed was placed in filter and exposed to field environment, removed along with lots of carbon from filters in plenum, and subsequently subjected to breakthrough tests to initially assess extension of filter carbon life. Information from initial field assessment was used to optimize Guard Bed composition and design.</p>				
<p><i>Title:</i> 3) Material Contamination Mitigation</p> <p><i>Description:</i> Study and assessment of decontamination technologies.</p> <p><i>FY 2015 Accomplishments:</i> Continued to assess performance and unique aspects of full spectrum of NTAs and developed technologies to optimize performance against NTAs.</p> <p><i>FY 2016 Plans:</i> Continue integration of a Point-of-Use decontaminant formulation system with optimized methods for delivery matching the agent, surface and environmental conditions, and optimized application method. Construct a multi-dimensional "Decontamination Performance Region Map" that will facilitate Point-of-Use decontaminant formulation in the field. Continue development of the Dial-a-Decon brassboard to enhance NTA efficacy by modifying dissemination of formulations and complete an assessment of Dial-a-Decon formulas. Integrate NTAs into the continuing responsive coatings projects to enhance decontaminability as part of the systems approach to achieving efficacy goals.</p> <p><i>FY 2017 Plans:</i> Continue integration of a Government owned decontaminant formulation system, specifically addressing other classes of emerging threats. Integrate NTAs into the continuing responsive coatings projects to enhance decontaminability as part of the systems approach to achieving efficacy goals. Complete NTA efficacy testing for primary and other emerging threat NTAs to support the transition of the sorbent decontamination formulation effort. Examine room temperature ionic liquid decontaminant efficacy against representative agents from three categories of NTAs.</p>		0.385	2.298	1.585
<p><i>Title:</i> 4) Personnel Contamination Mitigation</p> <p><i>Description:</i> Develop new technologies to alleviate the risk associated with contaminated human remains and personnel effects (materials) exposed to and contaminated by chemical agents by neutralizing and/or physically removing the residual chemical agents.</p> <p><i>FY 2015 Accomplishments:</i></p>		0.154	0.058	0.623

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Initiated human remains storage testing to determine how the hazards associated with contaminated human remains are altered by the normal and extended storage conditions, including storage effects on NTAs.</p> <p>FY 2016 Plans: Explore combinations of complementary technologies to reduce the contamination hazard faster with less outside support and develop revolutionary prototype systems that sense, respond, and signal contamination.</p> <p>FY 2017 Plans: Continue exploring combinations of complementary technologies to reduce the NTA contamination hazard faster with less outside support and develop revolutionary prototype systems that sense, respond, and signal contamination to support warfighter operations, including homeland defense mission; specifically, advancing formulation options and concepts of operations that include efficacy testing for multiple classes of NTAs.</p>				
<p>Title: 5) Respiratory and Ocular Protection</p> <p>Description: Development and analysis of design alternatives for chemical and biological air-purifying respirators to provide enhanced protection with lower physiological burden and improved interface with mission equipment.</p> <p>FY 2015 Accomplishments: Continued to investigate performance limitations current and developmental of respiratory protection systems against NTA challenges.</p> <p>FY 2017 Plans: Continued to investigate performance limitations current and developmental of respiratory protection systems against NTA challenges and investigate counter-measures to these specific limitations.</p>		0.335	-	0.226
<p>Title: 6) Pretreatments - Medical</p> <p>Description: Develop pretreatments and prophylactics that provide protection against NTAs and emerging chemical threats. Prophylactic bioscavengers should rapidly bind and detoxify a broad spectrum of compounds of interest (COIs).</p> <p>FY 2015 Accomplishments: Continued efforts to investigate the feasibility of alternative delivery methods of bioscavengers to afford protection against COIs. Continued to assess an alternate manufacturing process for recombinant butyrylcholinesterase (rBuChE). Contributed to medical countermeasures (MCM) assay efforts at the Absorption, Distribution, Metabolism, Excretion and Toxicity (ADMET) Center of Excellence (CoE).</p> <p>FY 2016 Plans:</p>		6.693	7.621	2.129

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continue efforts to demonstrate proof-of-concept for IM and pulmonary delivery of a stoichiometric bioscavenger. Continue contributing to alternate manufacturing processes for rBuChE. Demonstrate impact ADMET Research Center of Excellence across multiple medical countermeasure product development efforts.</p> <p>FY 2017 Plans: Continue studies to advance recombinant bioscavenger MCM through established animal models and pre-IND efforts.</p>				
<p>Title: 7) Therapeutics - Medical</p> <p>Description: Efforts in this area support the confirmation of mechanisms of action for NTAs and emerging chemical threats by probable routes of field exposure and seek to refine standard experimental routes in order to identify/assess targets for therapeutic development. Physiological parameters and pathological assessments will be used to establish the general mode and mechanisms of toxicity required for therapeutic development.</p> <p>FY 2015 Accomplishments: Continued to investigate the development of technology to facilitate delivery of therapeutics to the brain. Refined small animal models to support Food and Drug Administration (FDA) licensure.</p> <p>FY 2016 Plans: Continue support of enabling technology to facilitate delivery of therapeutic regimen to the brain. Continue to refine and validate small animal models to support FDA licensure.</p> <p>FY 2017 Plans: Continue support of enabling technology to facilitate delivery of therapeutics to the brain. Continue to validate small animal models to support FDA licensure of therapeutics used in the treatment of NTA exposures.</p>		2.274	2.146	1.217
<p>Title: 8) Detection</p> <p>Description: Detection NTA: Focuses on technologies to provide NTA detection capabilities.</p> <p>FY 2015 Accomplishments: Continued the development of test methodology to validate signatures for chemical aerosol threat materials, including detection characterization efforts for current and emerging threats at laboratories with chemical surety programs, integrating these validated signatures for platforms that are in development for NGCD.</p> <p>FY 2016 Plans:</p>		8.955	8.669	10.351

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continue integration studies for Next Generation Chemical Detector (NGCD) based on Micro Electro-Mechanical Systems components for Gas Chromatography and Mass Spectrometry. Continue the development of test methodology to validate signatures for chemical aerosol threat materials. Initiate the transfer of validated signatures into the NGCD.</p> <p>FY 2017 Plans: Complete integration studies and prototype delivery for transition to NGCD based on Micro Electro-Mechanical Systems components for Gas Chromatography and Mass Spectrometry.</p>				
<p>Title: 9) Modeling & Simulation</p> <p>Description: This effort develops NTA technology advancements for joint service application in the area of information systems and modeling and simulation technologies. These activities will speed maturation of advanced technologies to reduce risk in system-oriented integration/demonstration efforts. Information systems advanced technology focuses on areas of advanced warning and reporting, hazard prediction and assessment, simulation analysis and planning, and systems performance modeling.</p> <p>FY 2015 Accomplishments: Completed analysis of NTA simulant testing.</p> <p>FY 2016 Plans: Continue sensitivity and validation studies on NTA source term models and update and expand NTA databases.</p> <p>FY 2017 Plans: Continue sensitivity and validation studies on NTA source term models and update and expand NTA databases.</p>		0.239	0.235	0.240
<p>Title: 10) Percutaneous Protection</p> <p>Description: Study and assessment of percutaneous protective technologies.</p> <p>FY 2015 Accomplishments: Assessed and optimized technologies to improve whole system performance against NTAs through NSRDEC resulting in an expanded knowledge base for NTA protection. Transitioned technologies to the Uniform Integrated Protective Ensemble (UIPE) program.</p>		0.913	-	-
<p>Title: 11) Test & Evaluation</p> <p>Description: Develops test and evaluation technologies and processes in support of NTA activities.</p> <p>FY 2015 Accomplishments:</p>		0.680	0.775	0.802

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continued further prioritized select agent testing.			
FY 2016 Plans: Continue methodology and protocol development to support the evaluation of Next Generation Chemical Detector technologies.			
FY 2017 Plans: Initiate rapid prototyping and evaluation of chemical detection platforms.			
Title: 12) SBIR/STTR	-	0.451	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	21.534	22.948	17.173

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• CA4: CONTAMINATION AVOIDANCE (ACD&P)	39.930	60.192	42.308	-	42.308	8.238	9.679	12.802	17.381	Continuing	Continuing
• DE4: DECONTAMINATION SYSTEMS (ACD&P)	2.051	1.594	0.500	-	0.500	2.500	5.500	12.000	12.500	Continuing	Continuing
• IP4: INDIVIDUAL PROTECTION (ACD&P)	6.253	4.217	3.235	-	3.235	0.000	0.000	0.500	3.500	Continuing	Continuing
• MC4: MEDICAL CHEMICAL DEFENSE (ACD&P)	0.000	0.000	5.681	-	5.681	0.000	0.000	0.000	0.000	0	5.681
• TE4: TEST & EVALUATION (ACD&P)	10.913	17.371	14.887	-	14.887	14.823	23.458	14.017	14.991	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) TM3 / TECHBASE MED DEFENSE (ATD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TM3: <i>TECHBASE MED DEFENSE (ATD)</i>	-	102.610	93.725	83.838	-	83.838	93.720	92.727	94.495	98.357	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TM3 supports preclinical and early phase clinical development of vaccines, therapeutic drugs, and diagnostic capabilities to provide safe and effective medical defense against validated biological threat agents or emerging infectious disease biothreats including bacteria, toxins, and viruses. Innovative biotechnology approaches to advance medical systems designed to rapidly identify, diagnose, prevent, and treat disease due to exposure to biological threat agents will be evaluated. In addition this project supports the advanced development of medical countermeasures to include prophylaxes, pretreatments, antidotes, skin decontaminants and therapeutic drugs against identified and emerging chemical warfare threat agents. Entry of candidate vaccines, therapeutics, and diagnostic technologies into advanced development is facilitated by the development of technical data packages that support the Food and Drug Administration (FDA) Investigational New Drug (IND) processes, DoD acquisition regulations, and the oversight of early phase clinical trials in accordance with FDA guidelines. This project also supports the advanced development of medical countermeasures to protect the Warfighter against radiological/nuclear exposure.

The Medical Countermeasures Initiative (MCMi) was established to coordinate inter-related advanced development and flexible manufacturing capabilities, providing a dedicated, cost-effective, reliable, and sustainable MCM process that meets the Warfighter and national security needs. MCMi efforts within science and technology (S&T) are concentrated in advancing two areas: 1) regulatory science and 2) flexible manufacturing technologies and processes for MCMs. Efforts conducted in these areas are enablers supporting the DoD Medical Countermeasures Advanced Development and Manufacturing (MCM-ADM) capability.

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

	FY 2015	FY 2016	FY 2017
Title: 1) Assays and Reagents	18.205	11.335	16.488
Description: Development and verification of rapid, sensitive, and specific tests for the identification of Biological Warfare Agents (BWAs) and their expressed pathogens and toxins in clinical specimens from Warfighters for the diagnosis of exposure/infection. Discovery of host biomarkers generated in response to exposure to biological threat agents.			
FY 2015 Accomplishments:			
Continued to mature thermostable reagents for use in austere biosurveillance environments. Continued to collaborate with the CDC to improve diagnostic and surveillance capabilities needed to counter traditional, engineered, emerging and biological threats. Continued development and transition signature analysis and assay/device for strain identification and genotyping of Burkholderia pseudomallei and CCHF virus. Continued development of mass spectrometry protocol capable of identifying HHA false positive triggers on multiple toxin lateral flow assays. Transitioned sequencing and analysis of B. pseudomallei genomes			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>and near neighbor genomes to the Critical Reagents Program. Began Phase II of Republic of Korea (ROK) Project Agreement to expand into pathogen discovery capabilities.</p> <p>FY 2016 Plans: Validate the performance of 50 multi-plex assays utilizing the MAGPIX format (multiplexing platform capable of performing qualitative and quantitative analysis) for the detection of Burkholderia pseudomallei and its near neighbors. Continue Phase II of ROK Project Agreement.</p> <p>FY 2017 Plans: Continue the development and production of thermostable reagents. Continue the development of assays and technologies for biothreat agent detection and characterization. Continue verification and testing performance of biomarker assays and reagents for point-of-need diagnostic platforms. Continue to optimize pipelines to improve unbiased pathogen discovery and/or detection in clinical and environmental samples. Continue optimization and enhancement of updated bioinformatics platform to support genomic and clinical informatics. Evaluate optimization and enhancement of updated bioinformatics platform in the field including efforts in the ROK.</p>			
<p>Title: 2) Bacterial Therapeutics</p> <p>Description: Identify, optimize and evaluate potential therapeutic compounds effective against bacterial threat agents.</p> <p>FY 2015 Accomplishments: Evaluated FDA approved compounds for efficacy in non-human primate models against aerosolized challenge of Bacillus anthracis.</p> <p>Developed novel ribosome inhibitors as therapeutics for priority bacterial pathogens. Continued non-clinical research required to submit IND applications to the FDA for additional products. Continued non-clinical work utilizing the Animal Rule for the submission of Supplemental New Drug Applications (sNDAs), reducing the focus to novel topoisomerase inhibitors and addressing a limited number of priority pathogens.</p> <p>FY 2016 Plans: Conduct evaluation of an FDA approved compound for efficacy in pivotal GLP non-human primate studies against an aerosolized challenge of F. tularensis in support of submission of a sNDA under the Animal Rule. Down select between novel ribosome inhibitors and a novel topoisomerase inhibitor as therapeutics for priority bacterial pathogens. Continue non-clinical research required to submit IND applications to the FDA for additional products. Continue supportive pivotal GLP studies to further the advancement of both novel and approved therapeutics for limited priority pathogen indications under the Animal Rule.</p> <p>FY 2017 Plans:</p>	10.869	10.198	16.033

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Expand evaluation of FDA approved compounds for efficacy in pivotal GLP non-human primate models against aerosolized challenge of Yersinia pestis, Bacillus anthracis, or Francisella tularensis in support of submission of a sNDA under the Animal Rule. Combinatorial testing of FDA approved drugs for efficacy and decreased development of resistance. Submission of an IND to the FDA for a small molecule inhibitor for the treatment of Burkholderia pseudomallei. Continue non-clinical research to advance additional therapeutic products with the goal of submission of an IND to the FDA. Work previously funded under TM3/MCMI to evaluate and develop platforms for enablers of the advanced development of medical countermeasures will be continued here.			
<p>Title: 3) Bacterial/Toxin Vaccines</p> <p>Description: Evaluate the best single agent bacterial and toxin vaccines for effectiveness against aerosol challenge in large animal models.</p> <p>FY 2015 Accomplishments: Completed Phase 1 clinical trial to assess safety, tolerability and immunogenicity of RVEc, a ricin toxin vaccine. Down-selected to ricin toxin vaccine candidate, RVEc, developed at USAMRIID and completed passive transfer studies in mice. Continued with the advanced developer to fulfill S&T needs in support of the ricin vaccine transition.</p> <p>FY 2016 Plans: Complete transition ricin vaccine. Utilize ongoing clinical work to generate monoclonal antibodies against ricin toxin. Demonstrate proof-of-concept efficacy for lead Tularemia Vaccine in nonhuman primate model. Continue development of a monoclonal antibody-based pretreatment against botulinum neurotoxin. Explore technology transfer of manufacturing to a suitable long-term manufacturing partner. Develop and evaluate bridging strategies for interim fielding capability readiness.</p> <p>FY 2017 Plans: Conduct feasibility studies to assess efficacy of lead type A Francisella tularensis (Tularemia) vaccine prototypes. Demonstrate feasibility and efficacy of combinations of vaccines designed with different antigens to protect against aerosolized, engineered pathogens in animal models. Assess feasibility of prototype oral Bacillus anthracis (anthrax) vaccines in small animal model. Complete tri-target and penta-target formulations of monoclonal antibody-based pretreatment against botulinum neurotoxin. Continue studies utilizing human monoclonal antibodies against ricin toxin in assay development and post-exposure prophylaxis models.</p>	6.389	12.126	17.971
<p>Title: 4) Biosurveillance</p> <p>Description: Integrate existing disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced warning systems, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact and biological threat assessment. Contribute to the development of global, near real-</p>	0.936	9.264	4.552

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>time, disease monitoring and surveillance systems that address secondary infection, fuse medical syndromic, environmental, and clinical data, and feed into disease modeling, medical resource estimation and decision support tools.</p> <p>FY 2015 Accomplishments: Completed the development of a scalable, replicable framework to serve as the basis for a biosurveillance cloud for Government data which delivered an analytic capability for the Biosurveillance (BSV) Ecosystem. Completed efforts using social media to infer individual and collective health behavior for digital threat surveillance, epidemic planning and response which delivered an analytic capability for the BSV Ecosystem. Continued the development of analytic capabilities to synthesize and interrogate multiple sources of data to provide high confidence in the prediction, early warning and forecasting (inclusive of mitigation strategies) of infectious disease outbreaks. Continued the development of the BSV Ecosystem to include analyst collaboration tools, advanced analytics, and analyst workbench. Continued the development and testing of a fieldable "smart trap" for long-term autonomous surveillance of arboviruses in mosquitoes. Initiated the development of various biosurveillance analytic capabilities including a Surveillance Window App (SWAP), a suite of five epidemiological tools for integration into the BSV Ecosystem, and a Biosurveillance Ecosystem evaluation support capability. Initiated a field forward diagnostic evaluation capability to assess technical feasibility and limitations of deploying point of need diagnostics in austere environments.</p> <p>FY 2016 Plans: Complete the development and testing of a fieldable "smart trap" for long-term autonomous surveillance of arboviruses. Continue the development of the BSV Ecosystem to include analyst collaboration tools, advanced analytics, and analyst workbench. Continue the development of various biosurveillance analytic capabilities including a SWAP, a suite of five epidemiological tools for integration into the BSV Ecosystem, and a BSV Ecosystem evaluation support capability. Continue the field forward diagnostic evaluation capability to assess technical feasibility and limitations of deploying point of need diagnostics in austere environments.</p> <p>FY 2017 Plans: Complete the development of the BSV Ecosystem platform to include analyst collaboration tools, advanced analytics, and analyst workbench. Complete the development of various biosurveillance analytic capabilities including a SWAP, and a suite of epidemiological forecasting and prediction tools. Continue the field forward diagnostic evaluation capability to assess technical feasibility and limitations of deploying point of need diagnostics in austere environments.</p>				
<p>Title: 5) Chemical Diagnostics</p> <p>Description: Focuses on state-of-the-art laboratory/fieldable methods that detect exposure to chemical warfare agents (CWA) (e.g., nerve agents and vesicants) in clinical samples. It also targets the identification of biomolecular targets that can be leveraged as analytical methodologies, as well as laboratory and animal studies characterizing time-course and longevity of a particular analyte/biomarker.</p>		0.338	0.393	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
NOTE: Starting in FY17, program will be moved to TM3 - Diagnostics.			
<p>FY 2015 Accomplishments: Continued the current set of analytical methods to more sensitive analytical platforms for the detection of CWAs in clinical samples. Completed final stability tests and initiated discussion for the transitioning of the Forensic Liquid Analysis Kit (FLAK) to the Next Generation Diagnostic System. Continued development of new analytical methods against currently used methods.</p> <p>FY 2016 Plans: Continue the current set of analytical methods to more sensitive analytical platforms for the detection of CWAs in clinical samples.</p> <p>Title: 6) Diagnostic Device Platforms</p> <p>Description: Diagnostic device development to include systems able to harness next generation technologies to revolutionize clinical diagnostics in care facilities and in hospital laboratories. This investment will incorporate capabilities such as next generation sequencing and advanced biomolecular methods to harness both host and pathogen biomarkers in a threat agnostic approach that will serve all echelons of military medical care. Technology transitions to the Next Generation Diagnostic System.</p> <p>FY 2015 Accomplishments: Evaluated candidate host biomarker diagnostic targets in clinical test environments. Developed point-of-need diagnostic platforms with host biomarker diagnostic assays and test performance. Evaluated metrics of host-based diagnostics with pathogen detection approaches in analytical and/or clinical environments. Continued to develop candidate devices for potential transition to support the deployment of point of care diagnostic capabilities. Continued development of hardware solutions and assay formats to enable point of need diagnostic capabilities. Verified clinical utility of host and pathogen biomarkers and integrated onto diagnostic platform prototypes that confer(s) the ability to identify and type novel infectious agents as a function of their relationship to previously characterized pathologies. Completed proof-of-concept for the development of a bioinformatics platform and transitioned Version 1.0 to the Global Biosurveillance Technology Initiative program.</p> <p>FY 2016 Plans: Continue to develop candidate devices for potential transition to support the development of point of care diagnostic capabilities. Continue development of hardware solutions and assay formats to enable point of need diagnostic capabilities. Continue to verify clinical utility of host and pathogen biomarkers and integrate onto diagnostic platform prototypes that confer(s) the ability to identify and type novel infectious agents as a function of their relationship to previously characterized pathologies. Continue sequence based comprehensive identification and characterization platform development for field forward capability.</p> <p>FY 2017 Plans: Continue developing point-of-need diagnostic platforms with host biomarker diagnostic assays and testing performance. Continue evaluating metrics of host-based diagnostics with pathogen detection approaches in analytical and/or clinical environments.</p>	17.409	20.435	16.354

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Complete the development of candidate devices for potential transition to support the development of point of care diagnostic capabilities, and initiate the verification and test validation for these candidate devices. Continue development of hardware solutions and assay formats to enable point of need diagnostic capabilities. Continue genomic-based and initiate proteomic-based comprehensive identification and characterization platform development for field forward capabilities. Continue optimization and enhancement of updated bioinformatics platform to support genomic and clinical informatics.</p> <p>Title: 7) Medical Countermeasures Initiative</p> <p>Description: The MCMI will integrate the regulatory science and manufacturing technologies and processes developed into the Advanced Development and Manufacturing (MCM-ADM) as enablers of the advanced development and flexible manufacturing capability. The MCMI will be continued under TM3/Bacterial Therapeutics.</p> <p>FY 2015 Accomplishments: Continued development of human in vitro immune mimetic assays for FDA acceptance to enable rapid and accurate prediction of the human response to experimental vaccines and other MCMs. Continued to develop and make practical improvements to existing agile, flexible, manufacturing bioprocesses for the purpose of accelerating access to biodefense MCMs.</p> <p>FY 2016 Plans: Continue development of human in vitro immune mimetic assays for FDA acceptance to enable rapid and accurate prediction of the human response to experimental vaccines and other MCMs. Continue to develop and make practical improvements to existing agile, flexible, manufacturing bioprocesses for the purpose of accelerating access to biodefense MCMs. Continue to develop agile, flexible manufacturing processes that are amenable to the DoD Advanced Development and Manufacturing capability (ADMc).</p>	9.517	10.222	-
<p>Title: 8) Neurologic Therapeutics</p> <p>Description: Focuses on therapeutic strategies to effectively minimize neurologic injuries resulting from exposure to chemical warfare agents (CWA). This effort involves the development of neuroprotectants, anticonvulsants, and improved therapies for brain enzyme reactivation. Supports eventual Food and Drug Administration (FDA) licensure of new compounds or to identify licensed products for use in the treatment of chemical warfare casualties.</p> <p>FY 2015 Accomplishments: Formal transition memorandum and technical information package (TIP) for scopolamine as an adjunct therapeutic was transferred to advanced development. Continued efforts supporting regulatory science to facilitate FDA licensure including in vitro and in vivo testing.</p> <p>FY 2016 Plans:</p>	1.464	1.220	0.405

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Maintain Absorption, Distribution, Metabolism and Excretion (ADME) Research Center of Excellence partnership to ensure capability for supporting regulatory science to facilitate FDA licensure. FY 2017 Plans: Maintain the ADMET CoE partnership and capability to ensure capability for development of and supporting regulatory science to facilitate FDA licensure of chemical therapeutics.			
Title: 9) Toxin Therapeutics Description: Identify, optimize and evaluate potential therapeutic candidates effective against biological toxin threat agents. FY 2015 Accomplishments: Continued evaluation of novel small molecule inhibitors for pharmacokinetic and toxicology profiles. Continued to test novel small molecule inhibitors in mouse model of BoNT A intoxication for efficacy. Initiated production, characterization, and evaluation of humanized antibody cocktail to prevent and/or treat BoNT intoxication. FY 2016 Plans: Continue characterization and evaluation of humanized pentavalent antibody cocktail to prevent and/or treat BoNT intoxication, advancing to preclinical studies. Complete testing of novel small molecule inhibitors in NHP model of BoNT A intoxication for efficacy. Finalize preclinical studies to advance antibody based therapeutic for staphylococcal enterotoxin B intoxication into phase I clinical trials.	0.606	9.312	-
Title: 10) Vaccine Platforms and Research Tools Description: Use novel technology and methods to support development of vaccine candidates. Conduct studies to determine potential immune interference between lead vaccine candidates, the effect of alternative vaccine delivery methods, and thermo-stabilization technologies on the efficacy of lead vaccine candidates. Identify correlates of protection in humans, and predict the success of lead vaccine candidates in humans. FY 2015 Accomplishments: Continued development of alternative production platforms applying them to current vaccine needs. Conducted side-by-side studies to identify optimal adjuvants against viral targets. FY 2016 Plans: Maintain studies that utilize clinical samples from Filovirus outbreaks in multiple international locations to refine definition of clinically relevant correlates of immunity. Evaluate novel adjuvants as platforms for utilization in biodefense vaccines. Develop and evaluate bridging strategies for interim fielding capability readiness. FY 2017 Plans:	3.829	3.515	0.405

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Down-select target antigens based on immunogenicity for Yersinia pestis (plague), Coxiella (Q-fever) and other relevant indications for production in plant-based vaccine platform. Continue platform vaccine assessment activities: Explore antigen candidates for type A Francisella tularensis (Tularemia) using the RNActive vaccine platform technology. (Moved from TM3 - MCMI.) Further evaluate and define the DNA-based and nanoparticle vaccine platforms and targeted vaccine delivery systems. (Transitioned from TM2 - Vaccine Platforms and Research Tools.)				
<p>Title: 11) Viral Therapeutics</p> <p>Description: Identify, optimize and evaluate potential therapeutic candidates effective against designated viral threat agents.</p> <p>FY 2015 Accomplishments: Evaluated small molecules for filoviruses in non-human primate models. Continued a repurposing screening program to determine efficacy of FDA approved compounds against emerging infectious diseases and initiated nonclinical (GLP) studies for most promising compounds . Isolated human monoclonal antibodies that show in vitro activity against Sudan Ebolavirus.</p> <p>FY 2016 Plans: Evaluate immunotherapies for alphaviruses in small animal and non-human primate models. Continue a repurposing screening program to determine the efficacy of FDA approved compounds against emerging infectious diseases. Continue pre-clinical research required to submit IND applications to the FDA for additional products or additional product indications to refresh the viral therapeutics product pipeline.</p> <p>FY 2017 Plans: Continue to develop and evaluate broad spectrum therapies against various strains of alphaviruses. Evaluate human plasma from people exposed to the Sudan strain of Ebola to optimize a monoclonal or polyclonal cocktail for use as a prophylactic. Support diagnostic evaluation of clinical samples from West Africa to assess the efficacy of immune plasma from Ebola survivors as a potential treatment.</p>		6.516	1.961	6.198
<p>Title: 12) Viral Therapeutics - Ebola</p> <p>Description: Title X - Ebola Response</p> <p>FY 2015 Accomplishments: Accelerated Ebola Virus countermeasures development in response to the West Africa outbreak. Initiated pre-clinical research, including optimization, required to submit Investigational New Drug (IND) applications to the Food and Drug Administration (FDA) and conducted Phase I clinical safety studies for near-term candidate products targeting the Ebola virus. Continued development of a pan-Ebola antibody cocktail and evaluated cocktail efficacy in animal models. Optimized expression of ZMapp to enhance product output. Evaluated ZMapp in a non-human primate animal model to identify the optimal dosing regimen for therapeutic efficacy. Supported diagnostic evaluation of clinical samples from West Africa to assess the efficacy of immune plasma from</p>		13.814	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Ebola survivors as a potential treatment. Reformulation of Ebola monoclonal antibodies therapies to provide a more stable formulation that is highly resistant to high temperature exposures, which will allow for room temperature storage and shipping without the need for a cold chain, thus greatly reducing the cost and logistics, particularly on the battlefield or in remote areas. Evaluated FDA-approved combination therapies for potential prophylactic activity against the Ebola virus.</p> <p>Title: 13) Viral Vaccines</p> <p>Description: Evaluates the best vaccine candidates for Alphaviruses and Filoviruses for effectiveness and duration of protective immune response against aerosol challenge in large animal models. Animal models will be developed to support FDA licensure of mature vaccine candidates.</p> <p>FY 2015 Accomplishments: Conducted Good Lab Practices (GLP) animal efficacy studies utilizing a candidate VEEV DNA vaccine delivered by in vivo electroporation, comparing intra-muscular or intra-dermal routes of administration. Continued to support model and assay development associated with pre-clinical studies of the Alphavirus replicon vaccine vector in coordination with the advanced developer. Conducted pilot studies to inform GLP natural history studies for Alphaviruses (WEVEEV) to initiate fulfillment of future FDA 'Animal Rule' requirements necessary for vaccine licensure. Continued the development of animals models for Alphaviruses (EEE and WEE), to fulfill future FDA 'Animal Rule' requirements necessary for vaccine licensure. Conducted in-study portion of a Phase 1 trial to assess the safety, tolerability and immunogenicity of a Venezuelan equine encephalitis virus (VEEV) DNA vaccine in volunteers. Developed single-component vaccine for Zaire Ebolavirus utilizing the Ebola Zaire vaccine (rVSV, ZEBOV) platform and conducted non-clinical non-human primate protection and Phase 1 clinical dose-definition studies.</p> <p>FY 2016 Plans: Continue to support Alphavirus and Filovirus vaccine candidates by determining correlates of protective immunity. Continue natural history studies for Alphaviruses (W/E/VEEV) to fulfill future FDA 'Animal Rule' requirements necessary for vaccine licensure. Demonstrate proof-of-concept safety and immunogenicity with a monovalent Filovirus vaccine candidate. Develop and evaluate bridging strategies for interim fielding capability readiness.</p> <p>FY 2017 Plans: Continue studies toward the development of Alphavirus and Filovirus vaccine candidates. Develop multivalent Filovirus vaccine for Zaire and Sudan Ebolavirus and Marburg Marburgvirus, building on the Ebola Zaire vaccine (rVSV, ZEBOV) platform and experience. Continue FDA requested biodistribution and non-human primate efficacy studies for FDA Animal Rule licensure of the Ebola rVSV ZEBOV vaccine. Explore calibrated non-human primate animal models and challenges for Alphaviruses (W/E/VEEV). Continue non-clinical and clinical development of a Venezuelan equine encephalitis virus (VEEV) DNA vaccine. Explore accelerated pathways for VEEV DNA vaccine development [moved from TM2/Viral/Bacterial/Toxins Vaccines].</p>	4.238	1.933	5.432
<p>Title: 14) Viral Vaccines</p>	8.480	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Description: Title X - Ebola Response			
FY 2015 Accomplishments: Determined appropriate human dosage for the rVSV uG Ebola vaccine and extended safety and efficacy data. Initiated biodistribution studies and transmission studies to support vaccine licensure.			
Title: 15) SBIR/STTR	-	1.811	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	102.610	93.725	83.838

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MB4: MEDICAL BIOLOGICAL DEFENSE (ACD&P)	114.230	79.516	65.648	-	65.648	61.660	41.306	29.440	50.001	Continuing	Continuing
• MC4: MEDICAL CHEMICAL DEFENSE (ACD&P)	0.000	0.000	5.681	-	5.681	0.000	0.000	0.000	0.000	0	5.681
• MB5: MEDICAL BIOLOGICAL DEFENSE (EMD)	169.400	107.883	106.223	-	106.223	170.667	190.756	188.537	181.318	Continuing	Continuing
• MC5: MEDICAL CHEMICAL DEFENSE (EMD)	25.966	42.911	39.504	-	39.504	44.656	25.358	11.155	4.855	Continuing	Continuing
• MB7: MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) TT3 / TECHBASE TECHNOLOGY TRANSITION
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TT3: TECHBASE TECHNOLOGY TRANSITION	-	5.635	7.359	7.821	-	7.821	10.867	10.378	11.150	11.152	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TT3 validates high-risk/high-payoff technologies, concepts-of-operations, and a Joint Combat Development concept development and experimentation process that could significantly improve Warfighter capabilities in preparation for transition of mature technologies to advanced development programs requiring chemical and biological (CB) defense technologies. These programs offer an opportunity to identify and efficiently mature emerging technologies including limited objective experiments, laboratory experiments, risk reduction efforts, engineering and integration. These demonstrations and programs seek to demonstrate the potential for enhanced military operational capability and/or cost effectiveness. Upon conclusion of the technical and operational demonstrations, the user or sponsor provides a determination of the military utility and operational impact of the technology and capability demonstrated. Successfully demonstrated technologies with proven military utility can remain in place for future extended user evaluations, accepted into the advanced stages of the formal acquisition process, proceed directly into limited or full-scale production or be returned to the technical base for further development. This project addresses four family of products areas: Biological Resiliency, to include Biosurveillance; Integrated Early Warning, to include Remote Detection; Chemical and Biological Warfare Agent Destruction and Disablement; and Hazard Mitigation. Biological resiliency efforts are targeted to reduce biological threats. Integrated Early Warning is conducted through a coordinated program approach focused on layering Chemical and Biological Detection technologies and integrating CB threat indicators with rapid response actions. WMD Disablement and Destruction addresses detection, identification, verification and baseline assessments in support of expeditionary forces deployed in non-permissive environments. Hazard Mitigation addresses Chemical, Biological, and Radiological (CBR) remediation and decontamination processes.

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

	FY 2015	FY 2016	FY 2017
Title: 1) Experiment & Technology Demonstrations	5.635	7.206	7.821
Description: Project TT3 validates high-risk/high-payoff technologies and concepts-of-operations through the use of the Advanced Technology Demonstration (ATD) and Rapid Military Utility Assessment (RMUA) processes. The RMUA is a development and experimentation process that could significantly improve Warfighter capabilities through the efficient transition of mature technologies to Advanced Component Development and Prototype programs. This project addresses four family of products areas: Biological Resiliency, to include Biosurveillance; Integrated Early Warning, to include Remote Detection; Chemical and Biological Warfare Agent Destruction and Disablement; and Hazard Mitigation.			
FY 2015 Accomplishments: Completed and transitioned Coalition Warfare Program S&T efforts with Poland to OSD-ATL, which aimed at improving biological agent standoff detection. As part of the Transatlantic Collaborative Biological Resiliency Demonstration (TaCBRD), conducted extended user evaluation of capabilities for persistent and contagious bio agent scenarios in the US European Command Area of Responsibility (EUCOM AOR). These capabilities recently transitioned to the JPM-Guardian, JPM-Information Systems, and JPM-NBC Contamination Avoidance for potential inclusion into multiple PORs and Poland Ministry of Defense. Initiated			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) TT3 / TECHBASE TECHNOLOGY TRANSITION

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>biosurveillance and rapid response ATD, named Homeland Integrated Biosurveillance Response and Information Demonstration (HIBRID), in the U.S. Pacific Command (PACOM) AOR through FY18. Conducted a rapid military utility assessment and field experiment process to assess early technology capability contributions, in collaboration with the CBDP Joint Combat Developer. Completed demonstration of decontamination technologies for airframe interiors and exteriors against bio agents as part of a JCTD initiative with US TRANSCOM, allowing aircraft to return to service and achieving considerable cost savings over the alternative of removing those assets from service. Completed and transitioned the Thermal Imaging Dual-use for Aerosol Monitoring Alarms and Security (TIDAMAS) ATD to Joint Project Manager-Guardian for detection of biological threat aerosol attacks, which allows for enhanced integrated base defense posture and protection of critical DoD infrastructure. JPM-Guardian will continue to conduct advanced development of TIDAMAS in support of the DoD Physical Security Enterprise and Analysis Group (PSEAG). Initiated risk reduction activities in preparation for the WMD expeditionary disablement ATD and a proposed mass casualty decontamination and medical support ATD for a planned FY16 start.</p> <p>FY 2016 Plans: Develop and demonstrate prototypes and technologies for the expeditionary and disablement ATD. For the DoD/DHS collaborative biosurveillance ATD, begin technology and CONOPS/TTP development and system integration of information systems for the whole of Government. Continue to conduct rapid military utility assessments and field experiments process to assess early technology capability contributions, in collaboration with the CBDP Joint Combat Developer and with outcomes to support warfighter requirements and capability development. Initiate risk reduction activities for a comprehensive early warning ATD scheduled to commence in FY17. Focus of activities will be to develop an architecture for the development of sensor and mobile platforms along with methods of information sharing to enable early warning in forward deployed locations.</p> <p>FY 2017 Plans: Continue to develop and demonstrate prototypes and technologies for the WMD expeditionary disablement ATD which will address WMD rapid disablement and destruction program area in support of key operational planning scenarios. Initiate S&T integration activities for CB sensor technologies onto mobile platforms as part of the comprehensive early warning ATD. Conduct risk reduction activities for the development and integration of wearable sensors as part of the comprehensive early warning ATD. Continue to conduct rapid military utility assessments and field experiments to assess early technology capability contributions, in collaboration with the CBDP Joint Combat Developer. Continue risk reduction activities through baseline assessments in preparation for a mass casualty decontamination and medical support ATD.</p>			
Title: 2) SBIR/STTR	-	0.153	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	5.635	7.359	7.821

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) TT3 / <i>TECHBASE TECHNOLOGY TRANSITION</i>
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C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	180.962	170.354	138.187	-	138.187	93.408	81.394	69.629	99.156	Continuing	Continuing
CA4: <i>CONTAMINATION AVOIDANCE (ACD&P)</i>	-	39.930	60.192	42.308	-	42.308	8.238	9.679	12.802	17.381	Continuing	Continuing
DE4: <i>DECONTAMINATION SYSTEMS (ACD&P)</i>	-	2.051	1.594	0.500	-	0.500	2.500	5.500	12.000	12.500	Continuing	Continuing
IP4: <i>INDIVIDUAL PROTECTION (ACD&P)</i>	-	6.253	4.217	3.235	-	3.235	0.000	0.000	0.500	3.500	Continuing	Continuing
IS4: <i>INFORMATION SYSTEMS (ACD&P)</i>	-	7.585	7.464	5.928	-	5.928	6.187	1.451	0.870	0.783	Continuing	Continuing
MB4: <i>MEDICAL BIOLOGICAL DEFENSE (ACD&P)</i>	-	114.230	79.516	65.648	-	65.648	61.660	41.306	29.440	50.001	Continuing	Continuing
MC4: <i>MEDICAL CHEMICAL DEFENSE (ACD&P)</i>	-	0.000	0.000	5.681	-	5.681	0.000	0.000	0.000	0.000	0	5.681
TE4: <i>TEST & EVALUATION (ACD&P)</i>	-	10.913	17.371	14.887	-	14.887	14.823	23.458	14.017	14.991	Continuing	Continuing

A. Mission Description and Budget Item Justification

Operational forces have an immediate need to survive, safely operate, and sustain operations in a Chemical and Biological (CB) threat environment across the continuum of global, contingency, special operations/low intensity conflict, counternarcotics, and other high-risk missions. This program element supports the Advanced Component Development and Prototypes (ACD&P) of medical and non-medical CB defensive equipment and materiel. Congress directed centralized management of Department of Defense (DoD) medical and non-medical CB Defense initiatives. DoD missions for civil support operations have recently expanded and have resulted in providing focus to develop technologies to support CB counterterrorism initiatives. ADC&P is conducted for an array of chemical, biological, and toxin detection and warning systems providing early warning, collector concentrators, generic detection, improved reagents, and decontamination systems using solutions that will remove and/or detoxify contaminated materiel without damaging combat equipment, personnel, or the environment. CB sensors and diagnostics enhance the Departments environmental and medical surveillance efforts by improving the monitoring and surveillance of threats and forces preparing for and engaged in military operations. These efforts are required to enable military commanders and the Military Health System to prevent, treat, and mitigate threats to individual Service Members and military units. Integration of CB sensor and diagnostic data from the programs in this ACD&P will also be usable within the homeland security and Federal public health common operating pictures.

The Department of Defense is responsible for research, development, acquisition, and deployment of medical countermeasures to prevent or mitigate the health effects of CB threats to the Armed Forces and directs strategic planning for and oversight of programs to support medical countermeasures development and acquisition for

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>
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our Armed Forces personnel. The CB medical threat to the Armed Forces, in contrast with public health threats to U.S. citizens, encompasses all potential or continuing enemy actions that can render a Service Member combat ineffective. CB medical threats, because they apply as a whole to military units deployed on a specific mission and/or operations, may result in the unit being unable to complete its mission. CB medical countermeasures developed by DoD, unlike those developed to support U.S. population, must support military commanders practical operational requirements and deployment strategies and must emphasize prevention of injury and illness and protection of the force. Preventive measures in this ACD&P, such as vaccines against the most likely biological threat agents and traditional / non-traditional chemical agent prophylaxis, conserves fighting strength, decreases the logistics burden by reducing the need for larger deployed hospital footprint and greater demand for tactical and strategic medical evacuation, and satisfies the need for greater flexibility in military planning and operations. When vaccines and other prophylactic medical countermeasures are not available, efforts on this ACD&P support pre-hospitalization treatment, en-route care, hospital care, and long-term clinical outcomes. Specific items in this category include improvements to CB diagnostics and therapeutics to mitigate the consequences of biologic agents and exposure to ionizing radiation due to nuclear or radiological attacks. DoD is the only Federal activity conducting ACD&P on these prophylactic, diagnostic, and therapeutic CB medical countermeasures.

The Department of Defense coordinates its efforts with the Departments of Health and Human Services to promote synergy and minimize redundancy. The Department of Defense ensures coordination by participating in the Public Health Emergency Medical Countermeasures Enterprise interagency strategic planning process ("One Portfolio"). The Department of Defense's longstanding experience and success in CB medical countermeasure research, development, acquisition, and deployment not only ensures protection of the Armed Forces, it also accelerates and improves the overall national efforts in CB medical countermeasure research, development, and acquisition because of its unique facilities, testing capabilities, and trained and experienced personnel.

ACD&P also supports the development of updated test capabilities to evaluate Chemical, Biological, Radiological, and Nuclear Defense systems.

The projects in this program element support efforts in the technology development phase of the acquisition strategy and are therefore correctly placed in Budget Activity 4.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	180.536	172.754	118.284	-	118.284
Current President's Budget	180.962	170.354	138.187	-	138.187
Total Adjustments	0.426	-2.400	19.903	-	19.903
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	0.000	-2.400			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	2.921	-			
• SBIR/STTR Transfer	-2.495	-			
• Other Adjustments	0.000	-	19.903	-	19.903

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity
0400: *Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)*

R-1 Program Element (Number/Name)
PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*

Change Summary Explanation

Funding: FY17 - Adjustments due to underexecution and fact-of-life changes (-\$15M). Other Departmental adjustments (-\$4M). Combined efforts of Emerging Infectious Diseases Therapeutic program and the Hemorrhagic Fever Virus program to develop and deliver FDA approved antiviral countermeasures (+\$39M).

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CA4: CONTAMINATION AVOIDANCE (ACD&P)	-	39.930	60.192	42.308	-	42.308	8.238	9.679	12.802	17.381	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Advanced Component Development and Prototypes (ACD&P) Project supports Component Advanced Development and System Integration (CAD/SI) of reconnaissance, detection, identification, and hazard prediction equipment, hardware, and software. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs. Individual efforts are: (1) Biosurveillance (BSV), (2) Next Generation Chemical Detector (NGCD); (3) Non-Traditional Agent (NTA) Defense.

Biosurveillance (BSV) is a set of capabilities that acquire, integrate, and analyze medical, environmental, and incident management data using existing and next generation systems, medical and non-medical sample collection tools and identifiers/diagnostics; and transition hardware/software tools and devices as residuals from the Biosurveillance Joint United States Force Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD). BSV will align the biosurveillance efforts across DoD and national strategies. BSV will scope and influence BSV capabilities as products to meet Warfighter requirements through innovative management of key BSV initiatives. BSV requirements address medical and physical CBRN mission needs spanned in over 11 requirements documents and through Combatant Commander (COCOM) identified needs. BSV supports Joint US Forces Korea (USFK) Portal and Integrated Threat recognition (JUPITR) ATD/BSV ATD which find, demonstrate, transition, and transfer the best operational concepts and technology solutions in support of a holistic approach to countering biological threats from the laboratory to operational use and theater confirmation of a Biological Event. JUPITR ATD consists of four legs; Early Warning (EW), Biological Identification Capabilities Sets (BICS), Assessment of Environmental Detectors (AED), and Biosurveillance Portal (BSP). The JUPITR ATD provides the USFK with a holistic biosurveillance capability to provide early warning, detection, collection, identification, and theater confirmation of a Biological event. The JUPITR ATD consists of filling capability gaps through information sharing and communication systems and detection/diagnostic systems for the USFK. Outputs will focus on proving component, CONOPS, and subsystem transition into relevant technologies that are currently programs of record (PORs) to include G-BSP, NGDS, JBTDS and CALS. Systems used in Operational Demonstration will be left behind with a two year sustainment plan for continuing use. Whole system live agent test (WSLAT) of AED units will support the Joint Project Manager for Nuclear Biological Chemical Contamination Avoidance business case analysis for maritime and fixed site Point Biological Detection.

The Next Generation Chemical Detector (NGCD) is several detection systems for multi-phase of matter sampling, location of liquid and solids on surfaces, and vapor and aerosol monitoring. NGCD will detect and identify non-traditional agents, chemical warfare agents (CWAs), toxic industrial chemicals (TICs) in the air and on surfaces. The NGCD will provide improved NTA/CWA/TIC selectivity and sensitivity on multiple platforms as well as multiple environments. There are four capability areas, of which three; NGCD 1 Detector Alarm, NGCD 2 Survey Detector and NGCD 3 Sample Analysis are in the Technical Maturation and Risk Reduction Phase. The fourth capability, NGCD 4 Individual Detector - personal chemical detection is still in material solution analysis. These sensors will improve detection, consequence management and reconnaissance, and weapons of mass destruction (WMD) interdiction capabilities. The scope of the project includes detection of chemical a few feet away from the detector as well as the sampling point of the detector.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)
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The Non-Traditional Agent (NTA) Defense program supports the on-going chemical and biological (CB) defense efforts as acquisition programs address emerging threat requirements across the full spectrum of commodities. Dedicated initiatives and projects will transition information, technologies, and capabilities into acquisition options/efforts (Programs of Record, Advanced Technology Demonstration (ATD), and Accelerated Acquisition) that account for the breadth and depth of emerging threats which span the full range of military missions. The NTA Defense program will provide essential enablers such as threat understanding; operational impacts of performance trades; and comprehensive, integrated, and layered defense concepts against emerging threats. The program will support a balanced portfolio which will target capabilities to reduce operational and tactical risk from technology gaps inherent from emerging threats. Additional efforts in conducting systems engineering analysis will occur in order to identify and consolidate capability knowledge gaps and prioritize required investments.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) BSV</p> <p>Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD).</p> <p>NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.</p> <p>FY 2016 Plans: Continue to provide residual capability for the Biological Identification Capability Sets (BICS) under the BSV USFK JUPITR ATD.</p> <p>FY 2017 Plans: Continue to provide residual capability for the BICS under the BSV USFK JUPITR ATD.</p>	-	1.710	0.480
<p>Title: 2) BSV</p> <p>Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD).</p> <p>NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.</p> <p>FY 2016 Plans: Continue to provide residual capability for JUPITR Technologies specifically the Assessment of Environmental Detectors (AED).</p> <p>FY 2017 Plans: Continue to purchase and integrate sensors into residual capabilities for JUPITR Technologies specifically the AED.</p>	-	3.960	1.110
<p>Title: 3) BSV</p> <p>Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD).</p>	-	9.337	1.703

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.			
FY 2016 Plans: Continue to provide residual capability and conduct an integration assessment for the Early Warning (EW) component under the BSV USFK JUPITR ATD.			
FY 2017 Plans: Continue to provide residual capability for the EW components under the BSV USFK JUPITR ATD.			
Title: 4) BSV Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD). NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.	-	0.680	0.190
FY 2016 Plans: Continue to provide residual capability for the Biosurveillance Portal (BSP) under the BSV USFK JUPITR ATD.			
FY 2017 Plans: Continue to provide residual capability for the BSP under the BSV USFK JUPITR ATD.			
Title: 5) BSV Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD). NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.	-	0.500	0.140
FY 2016 Plans: Continue to provide residual capability and operational demonstration test support for AED, EW, BSP and BICS within the USFK JUPITR ATD.			
FY 2017 Plans: Continue to provide residual capability and operational demonstration test support for AED, EW, BSP and BICS within the USFK JUPITR ATD.			
Title: 6) BSV	-	1.190	0.330

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD).</p> <p>NOTE: Prior to FY16 the BSV effort was programmed in Project MB4 - Medical Biological Defense.</p> <p>FY 2016 Plans: Continue to support the ATD efforts and overall transition of technologies to programs of record. Supports program management and systems engineering to ensure integration across residual capabilities for AED, EW, BSP and BICS within the USFK JUPITR ATD.</p> <p>FY 2017 Plans: Continue to support the ATD efforts and overall transition of technologies to programs of record. Supports program management and systems engineering to ensure integration across residual capabilities for AED, EW, BSP and BICS within the USFK JUPITR ATD.</p>			
<p>Title: 7) NGCD</p> <p>FY 2015 Accomplishments: Completed Breadboard testing. Initiated Brassboard testing.</p> <p>FY 2016 Plans: Complete Brassboard testing. Initiate Final prototype testing and Early Operational Assessment (EOA).</p> <p>FY 2017 Plans: Complete Final Prototype testing. Initiate manufacturing and affordability assessment.</p>	3.125	3.560	8.541
<p>Title: 8) NGCD</p> <p>Description: NGCD 1 - Smith Detection Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototype and supported Government testing (two systems).</p> <p>FY 2016 Plans:</p>	0.972	0.964	0.619

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (five systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>				
<p>Title: 9) NGCD</p> <p>Description: NGCD 1 - Signature Science Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (two systems).</p> <p>FY 2016 Plans: Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (five systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>		5.261	2.753	1.854
<p>Title: 10) NGCD</p> <p>Description: NGCD 1 - Chemring Chemhound Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (two systems).</p> <p>FY 2016 Plans:</p>		2.066	2.040	1.169

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (five systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>				
<p>Title: 11) NGCD</p> <p>Description: NGCD 2 - Chemring TCSD Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems).</p> <p>FY 2016 Plans: Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>		2.617	2.345	1.525
<p>Title: 12) NGCD</p> <p>Description: NGCD 2 - FLIR/NOMADICS Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems).</p> <p>FY 2016 Plans: Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p>FY 2017 Plans:</p>		4.449	3.115	2.153

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.				
<p>Title: 13) NGCD</p> <p>Description: NGCD 2 - ChemImage Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems).</p> <p>FY 2016 Plans: Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>		3.273	2.730	1.926
<p>Title: 14) NGCD</p> <p>Description: NGCD 3 - Bruker Contract</p> <p>FY 2015 Accomplishments: Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems)</p> <p>FY 2016 Plans: Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p>FY 2017 Plans: Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>		2.814	2.068	0.992
<p>Title: 15) NGCD</p> <p>Description: NGCD 3 - Chemring MARS Contract</p>		2.775	2.984	1.576

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) CA4 / CONTAMINATION AVOIDANCE (ACD&P)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems).</p> <p><i>FY 2016 Plans:</i> Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p><i>FY 2017 Plans:</i> Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>			
<p><i>Title:</i> 16) NGCD <i>Description:</i> NGCD 3 - Battelle Contract</p> <p><i>FY 2015 Accomplishments:</i> Awarded option to mature system, designed Brassboard prototypes, continued performing system engineering, technical management, technology experimentation, system design, manufactured Brassboard prototypes and supported Government testing (2 systems).</p> <p><i>FY 2016 Plans:</i> Complete maturation of Brassboard system. Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing. Award option to develop Final prototype systems (5 systems).</p> <p><i>FY 2017 Plans:</i> Continue performing system engineering, technical management, technology experimentation, system design, and support Government testing.</p>	4.109	3.819	2.085
<p><i>Title:</i> 17) NGCD <i>FY 2016 Plans:</i> Evaluate transitional technology from S&T. <i>FY 2017 Plans:</i> Continue to evaluate transitional technology from S&T.</p>	-	1.000	3.000
<p><i>Title:</i> 18) NGCD</p>	0.367	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Initiated program management and IPT support for experimentation and demonstration activities.</p> <p>Title: 19) NGCD</p>	8.102	13.597	10.234
<p>FY 2015 Accomplishments: Continued Government Integrated Product Development Team, program management, systems engineering and IPT support.</p> <p>FY 2016 Plans: Continue Government Integrated Product Development Team, program management, systems engineering and IPT support.</p> <p>FY 2017 Plans: Continue Government Integrated Product Development Team, program management, systems engineering and IPT support.</p>			
<p>Title: 20) NTA Defense - Technology Assessments</p> <p>FY 2016 Plans: Initiate testing / characterization of Commercial Off The Shelf (COTS) CB systems to determine potential technology candidates for inclusion into program acquisition strategies to support emerging threat priorities.</p> <p>FY 2017 Plans: Continue testing / characterization of emerging Commercial Off The Shelf (COTS) technologies to determine potential candidates for inclusion into advanced and emerging threat test and experimentation activities.</p>	-	0.688	0.884
<p>Title: 21) NTA Defense - Threat Understanding/ATD Front End Analysis</p> <p>FY 2017 Plans: Conduct analysis of threat understanding for additional threat classes to enable refinement of technology and capability gaps identified during mission analysis. Conduct planning for expanded threat characterization and initiate execution. Conduct front end analysis to support future Multi Threat Multi Commodity ATDs and experimentation.</p>	-	-	0.920
<p>Title: 22) NTA Defense - Systems Engineering</p> <p>FY 2017 Plans: Conduct mission modeling and incorporate emerging technology to refine advanced threat investment strategies.</p>	-	-	0.537
<p>Title: 23) NTA Defense - Strategic Coordination</p> <p>FY 2017 Plans:</p>	-	-	0.340

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Conduct NTA Library transition readiness to the CB Effects Manual. Update and maintain NTA Library. Conduct development of the Integrated Acquisition Portal for analysis to support refinement of investment strategies.			
Title: 24) SBIR/STTR	-	1.152	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	39.930	60.192	42.308

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA5: CONTAMINATION AVOIDANCE (EMD)	48.333	56.104	50.203	-	50.203	127.558	62.229	50.951	11.200	Continuing	Continuing
• JF0100: JOINT CHEMICAL AGENT DETECTOR (JCAD)	36.924	24.834	7.547	-	7.547	0.000	0.000	0.000	0.000	0	69.305
• JF0104: NEXT GEN CHEMICAL DETECTOR (NGCD)	0.000	1.000	2.378	-	2.378	1.000	17.208	17.204	44.155	Continuing	Continuing
• JX0300: BIOSURVEILLANCE (BSV)	1.311	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	1.311
• MC0100: JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)	3.600	3.600	1.956	-	1.956	0.000	0.000	10.000	35.000	Continuing	Continuing
• MC0101: CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)	132.121	108.704	90.094	-	90.094	80.633	94.074	60.425	41.977	Continuing	Continuing
• MX0001: JOINT BIO TACTICAL DETECTION SYSTEM (JBTD)	0.000	0.000	0.000	-	0.000	5.000	61.559	108.751	98.248	Continuing	Continuing

Remarks

D. Acquisition Strategy
BIOSURVEILLANCE (BSV)

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BSV is a set of capabilities that acquire, integrate, and analyze medical, environmental, and incident management data using existing and next generation systems, medical and non-medical sample collection tools and identifiers/diagnostics; and transition hardware/software tools and devices as residuals from the Biosurveillance Joint United States Force Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD). Prototype family of systems will be released to Busan Pier 8 and Camp Humphreys with a two year paid sustainment. Lessons learned, technologies, concepts of employment from the ATD will be transitioned to the programs of record associated with the CBDP (such as G-BSP, NGDS, JBTDS & CALS). The acquisition strategy will address the materiel solutions identified out of the multiple Biosurveillance (BSV) related Analysis of Alternatives (AoA's).

NEXT GENERATION CHEMICAL DETECTOR (NGCD)

System Engineering and market survey results suggested the most effective way to develop NGCD was to divide the program into four unique capabilities to detect and identify the full spectrum of chemical compounds in all phases of matter. The Government awarded ten (10) contracts in June 2014 to support Technology Maturation Risk Reduction (TMRR) acquisition phase activities in three of the four capability areas: three (3) contracts for the NGCD 1 capability, four (4) contracts for the NGCD 2 capability, and three (3) contracts for the NGCD 3 capability. Full and Open competition will be used to award Engineering and Manufacturing Development (EMD) contracts with production options for each capability at Milestone B.

NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)

The Non-Traditional Agent (NTA) Defense program supports the Chemical Biological Defense Program (CBDP) to develop countermeasures for all emerging threats across all commodities. The NTA Defense program consists of a number of projects and initiatives through full and open competition contract actions that enhance the CBDP's portfolio and mission and feed directly into Programs of Record, Advanced Technology Demonstrations, and Acquisition Programs. NTA Defense efforts: (1) evaluate COTS and GOTS technologies and systems, (2) conduct demonstrations and experiments, (3) integrates Intelligence Community threat analysis, operational risk analysis with systems technical performance to identify technologies or systems that can be rapidly developed, and deployed, and/or transitioned to an Acquisition Program for technology insertion or derive an Engineering Change Proposal (ECP) to a fielded system, and (4) provides coordination of DoD, interagency, international NTA projects. These initiatives allow the CBDP to mitigate risk against emerging threats and better prepare the warfighter to deal with technological surprise across the full range of military missions.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGCD - HW S - Prototype System Design #1	C/CPIF	Smiths Detection : Edgewood, MD	0.506	0.972	Dec 2014	0.964	Dec 2015	0.619	Jun 2017	-		0.619	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #2	C/CPIF	Signature Science : Austin, TX	1.174	5.261	Jan 2015	2.753	Dec 2015	1.854	Jun 2017	-		1.854	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #3	C/CPIF	Chemring Chemhound : Charlotte, NC	1.158	2.066	Dec 2014	2.040	Dec 2015	1.169	Jun 2017	-		1.169	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #5	C/CPIF	Chemring TCSD : Charlotte, NC	1.340	2.617	Jan 2015	2.345	Jan 2016	1.525	Jun 2017	-		1.525	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #6	C/CPIF	FLIR/Nomadics : Stillwater, OK	1.532	4.449	Dec 2014	3.114	Jan 2016	2.153	Jun 2017	-		2.153	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #7	C/CPIF	ChemImage : Pittsburgh, PA	1.061	3.273	Dec 2014	2.730	Jan 2016	1.926	Jun 2017	-		1.926	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #8	C/CPIF	Bruker Detection Corp. : Billerica, MA	0.637	2.814	Jan 2015	2.068	Jan 2016	0.992	Jun 2017	-		0.992	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #9	C/CPIF	Chemring MARS : Charlotte, NC	1.425	2.775	Dec 2014	2.984	Jan 2016	1.576	Jun 2017	-		1.576	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #10	C/CPIF	Battelle Memorial Institute : Columbus, OH	0.842	4.109	Jan 2015	3.819	Jan 2016	2.085	Jun 2017	-		2.085	Continuing	Continuing	0.000
NTA DEFENSE - HW S - COTS Characterization	C/CPFF	Various : TBD	0.000	0.000		0.438	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - COTS Characterization #2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.250	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Technology Assessments	MIPR	Various : TBD	0.000	0.000		0.000		0.545	Mar 2017	-		0.545	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Strategic Coordination	MIPR	Various : TBD	0.000	0.000		0.000		0.210	Mar 2017	-		0.210	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Systems Engineering	MIPR	Various : TBD	0.000	0.000		0.000		0.330	Mar 2017	-		0.330	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTA DEFENSE - NHW S - Threat Understanding	MIPR	Various : TBD	0.000	0.000		0.000		0.380	Mar 2017	-		0.380	Continuing	Continuing	0.000
Subtotal			9.675	28.336		23.505		15.364		-		15.364	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSV - TD/D C - BSP residual purchase and sustainment	MIPR	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.000		1.050	Jan 2016	0.300	Jan 2017	-		0.300	Continuing	Continuing	0.000
BSV - ES S - Assessment of Environmental Detectors (6 systems at OSAN)	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		4.330	Jan 2016	1.200	Jan 2017	-		1.200	Continuing	Continuing	0.000
BSV - TD/D C - Biological Identification Capability Sets sustainment assays	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		2.080	Oct 2015	0.600	Nov 2016	-		0.600	Continuing	Continuing	0.000
BSV - ES S - Early Warning sustainment costs for software package	MIPR	Various : TBD	0.000	0.000		9.712	Oct 2015	1.678	Jan 2017	-		1.678	Continuing	Continuing	0.000
NGCD - ES S - Joint Service T&E/SE IPT	MIPR	Various : TBD	0.620	1.840	Nov 2014	1.708	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - ES S - Integrated Product Team	MIPR	Various : TBD	0.000	0.000		0.000		0.170	Mar 2017	-		0.170	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		1.152	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.620	1.840		20.032		3.948		-		3.948	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGCD - Brassboard Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	3.125	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - Blind Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		1.400	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - Early Operational Assessment (EOA)	MIPR	Operational Test Command (OTC) : Ft. Hood, TX	0.000	0.000		0.000		1.200	Nov 2016	-		1.200	Continuing	Continuing	0.000
NGCD - OTHT C - DT/OT Chemical Chamber	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		3.898	Nov 2016	-		3.898	Continuing	Continuing	0.000
NGCD - OTHT SB - MIL-STD 810G	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.800	Nov 2016	-		0.800	Continuing	Continuing	0.000
NGCD - OTHT SB - False Alarm Testing	MIPR	Operational Test Command (OTC) : Ft. Hood, TX	0.000	0.000		0.000		0.600	Dec 2016	-		0.600	Continuing	Continuing	0.000
NGCD - OTHT SB - CARD/SPIRES Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.560	Jan 2016	1.143	Feb 2017	-		1.143	Continuing	Continuing	0.000
NGCD - OTHT SB - Chemical Purchase	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.706	Mar 2016	0.900	Mar 2017	-		0.900	Continuing	Continuing	0.000
NGCD - OTHT SB - Tech Test 2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.294	Oct 2015	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - OTHT SB - Simulant V&V Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.600	Oct 2016	0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTA DEFENSE - HW S - Threat Understanding	MIPR	Various : TBD	0.000	0.000		0.000		0.200	Mar 2017	-		0.200	Continuing	Continuing	0.000
Subtotal			0.000	3.125		3.560		8.741		-		8.741	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSV - PM/MS S - BMO Labor & Travel Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.050	Aug 2016	0.050	Nov 2016	-		0.050	Continuing	Continuing	0.000
BSV - PM/MS S - ECBC Matrix Govt labor	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.080	Oct 2015	0.080	Dec 2016	-		0.080	Continuing	Continuing	0.000
BSV - PM/MS S - ECBC ATD Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.075	Mar 2016	0.045	Jan 2017	-		0.045	Continuing	Continuing	0.000
NGCD - PM/MS S - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	5.603	6.262	Nov 2014	12.890	Nov 2015	13.234	Nov 2016	-		13.234	Continuing	Continuing	0.000
NGCD - Joint CBRNE Advanced Technology Demonstration	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.367	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NTA DEFENSE - System Engineering/Mission Modeling																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BSV - JUPITR ATD	1	2015	3	2016
BSV - JUPITR ATD Op Demo	3	2015	4	2015
BSV - JUPITR ATD Residuals	1	2016	4	2018
BSV - Biological Identification Capability Sets (BICS) Exercises	1	2015	1	2016
BSV - Biosurveillance (BSP) Portal Software 3.0	4	2015	4	2015
BSV - Early Warning Fusion and Integration	1	2015	3	2015
BSV - Assessment of Environmental Detectors (AED) Down-Select	2	2015	2	2015
BSV - Residual Purchase - Additional Systems	2	2016	3	2018
BSV - Transition of purchase of residual end items	4	2015	3	2018
NGCD - TMRR	1	2015	3	2017
NGCD - Prototype Build	1	2015	2	2015
NGCD - Milestone B	3	2017	3	2017
NGCD - EMD Contract	3	2017	3	2019
NGCD - Milestone C	3	2019	3	2019
NGCD - LRIP	3	2019	1	2021
NGCD - FRP	1	2021	1	2021
NGCD - NGCD- Individual Detector (TMRR)	1	2019	4	2021
NTA DEFENSE - Technology Assessments: COTS Characterization	1	2016	4	2021
NTA DEFENSE - Strategic Coordination	1	2017	4	2021
NTA DEFENSE - Threat Understanding/ATD Front End Analysis	1	2017	4	2021
NTA DEFENSE - System Engineering/Mission Modeling	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
DE4: DECONTAMINATION SYSTEMS (ACD&P)	-	2.051	1.594	0.500	-	0.500	2.500	5.500	12.000	12.500	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project supports the development of Contamination Mitigation (ConMit) systems utilizing solutions that will remove and/or detoxify contaminated material without damaging combat equipment, personnel, or the environment. ConMit systems provide a force restoration capability for units that become contaminated. Development efforts will provide systems that reduce operational impact and logistics burden, reduce sustainment costs, increase safety, and minimize environmental effects associated with decontamination and contamination mitigation operations. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and Tactics, Techniques, and Procedures (TTPs).

The programs supported under this Project include (1) Contaminated Human Remains System (CHRS), (2) Contamination Indicator Decontamination Assurance System (CIDAS), and (3) Joint Biological Agent Decontamination System (JBADS).

CHRS is a new start in FY17. The CHRS will address two capabilities identified within the Contamination Mitigation (ConMit) Initial Capabilities Document: a Contaminated Human Remains Transfer Case (CHRT) packaging solution to safely repatriate chemical, biological, or radiological contaminated human remains to the Continental United States and a sustainable Contaminated Human Remains Decontamination System (CHRDS) to reduce the hazard to warfighters by decontaminating chemical, biological, or radiological contaminated human remains.

The CHRT is a containment system which will protect personnel from the hazards associated with transporting human remains that are potentially contaminated with chemical, biological or radiological agents and Toxic Industrial Materials (TIM) without posing additional risk to the handlers or the environment in accordance with federal and international transportation standards.

The CHRDS is a system of tents, plumbing, generators, and medical equipment necessary to establish a decontamination site to perform decontamination, identification, and packaging of contaminated human remains for further disposition. The CHRDS will reduce the hazards associated with contaminated human remains through decontamination of remains and enable positive identification of remains for the Armed Forces Medical Examiner before packaging in a CHRT.

The CIDAS will provide a nerve and blister contamination indicator/decontamination assurance technology, henceforth called an "indicator", which will be packaged for application via small, mid or large scale applicators. The indicator will be sprayed on tactical vehicles, aircraft, ships, crew-served weapons, and individual weapons that may have been exposed to traditional and non-traditional chemical contamination. CIDAS is a new capability for the Joint Forces that will reduce the logistics burden of decontamination by indicating presence and location of traditional (Nerve and Blister) and non-traditional chemical agents on militarily relevant surfaces pre- and post-decontamination.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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The JBADS will provide the capability to conduct biological and chemical agent decontamination of the interior and exterior of aircraft and vehicle platforms. The capabilities will be provided in two phases. Phase One will provide thorough biological decontamination of the interior and exterior of cargo aircraft. The JBADS Phase One is a capability set that will include a shelter to encapsulate an airframe, a decontamination delivery system (e.g. hot-humid air-blower, etc.), environmental control and monitoring system(s), and other ancillary components required to ensure efficacious biological agent decontamination. It will provide the capability to decontaminate biologically contaminated airframes to safe levels and allow more rapid return to service. Phase Two will expand upon the Phase One capability set. Phase Two will develop multiple decontaminants and modular designs to address various platforms and chemical agent decontamination.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: 1) CHRS FY 2017 Plans: Prepare documentation for and conduct Milestone A review for the Contaminated Human Remains Transfer Case (CHRT) to verify Service Requirements, assess market research, provide an independent cost estimate and validate Acquisition Strategy. Conduct an industry day to communicate the acquisition strategy for the CHRT to commercial vendors and provide context to an upcoming Request for Proposal for remains packaging solutions.	-	-	0.500
Title: 2) DFoS - CIDAS FY 2015 Accomplishments: Completed Technology Demonstration and contract documentation. Achieved Milestone B.	0.498	-	-
Title: 3) JBADS - System Design Support FY 2015 Accomplishments: Developed Requirements Traceability Matrix and Performance Specification. Conducted Engineering Trade Analysis to identify design modifications to optimize the system design. Initiated Biothermal Decontamination characterization testing to support Phase One. FY 2016 Plans: Complete and release RFP and prepare documentation to support Milestone B Decision.	1.553	1.564	-
Title: 4) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.	-	0.030	-
Accomplishments/Planned Programs Subtotals	2.051	1.594	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• DE5: DECONTAMINATION SYSTEMS (EMD)	9.031	15.244	9.984	-	9.984	16.164	10.416	14.209	17.681	Continuing	Continuing
• JD0050: DECONTAMINATION FAMILY OF SYSTEMS (DFoS)	0.000	7.254	7.602	-	7.602	8.913	14.862	12.058	9.958	Continuing	Continuing
• JD0063: CONTAMINATED HUMAN REMAINS POUCH (CHRP)	0.500	1.542	0.000	-	0.000	0.000	0.000	0.000	0.000	0	2.042
• JD0070: JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)	0.000	0.000	3.000	-	3.000	5.000	3.000	16.234	16.611	Continuing	Continuing

Remarks

D. Acquisition Strategy

CONTAMINATED HUMAN REMAINS SYSTEM (CHRS)

The CHRS will consist of two separate approaches for the Contaminated Human Remains Transfer Case (CHRT) and the Contaminated Human Remains Decontamination System (CHRDS). The CHRT will use Competitive Prototyping (CP) to evaluate multiple alternatives in the Technology Maturation and Risk Reduction phase (Minimum TRL level of 4) that can meet the Contamination Mitigation (ConMit) ICD requirements. A solution will be chosen at Milestone B and developed under a cost plus incentive fee contract in the Engineering Manufacturing Development phase with incentives for weight reduction and processing time. The CHRDS will consist of a request for proposal to assemble Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) components for a Contaminated Human Remains Decontamination System using a best value firm-fixed price contracting strategy.

DFoS CONTAMINATION INDICATOR DECONTAMINATION ASSURANCE SYSTEM (DFoS CIDAS)

The CIDAS program will follow an evolutionary acquisition strategy in consonance with user developed capability documents. Following MS A, collaborated with program efforts, including the Hazard Mitigation, Materiel and Equipment Restoration (HaMMER) Advanced Technology Development Operational Demonstration and Extended User Evaluations, and conducted technology demonstrations on candidate indicator and applicator technologies to mitigate risk and identify affordable mature technologies that meet requirements. Determined need for and initiated Government designed mid and large scale applicators to provide an affordable solution to meet specific User requirements. Following MS B, used full and open competition to award a performance based firm fixed price contract with options for LRIP and FRP for nerve indicator and small scale applicator systems. Used full and open competition to award a performance based firm fixed price contract for engineering and manufacturing development and limited developmental testing of two blister technologies, with options for LRIP and FRP of preferred blister technology. Integrate and test the contractor and Government designs in the developmental and operational testing.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)

The JBADS program will be executed utilizing a phased approach. Phase One will deliver a biological agent decontamination capability for interior and exterior decontamination of cargo aircraft. For Phase One, the program will leverage the Joint Biological Agent Decontamination System Joint Capability Technology Demonstration (JCTD) and prior testing of candidate technologies to skip Milestone B and proceed directly to Milestone C, Low Rate Initial Production Decision. Modifications to the JCTD design will be made and technical testing will be conducted to support a Milestone C/Low Rate Initial Production Decision. A single, firm fixed price production contract with full and open competition will be awarded using a performance-based specification for the Aircraft Decontamination Units and a detailed specification for the Aircraft Enclosure. Low Rate Initial Production/Operational test assets will be purchased using procurement funding due to the low density and estimated cost of the Phase One system. These assets will be retrofitted and fielded following a successful Full Rate Production decision.

JBADS Phase Two will expand the biological agent decontamination capability to other platforms such as tactical and rotary wing aircraft, as well as ground vehicles. In addition, Phase Two will provide chemical agent decontamination capabilities. Phase Two will enter the acquisition process at Milestone B and a full and open cost plus fixed fee contract will be awarded to conduct the Engineering and Manufacturing Development (EMD) phase. Candidate technologies will be evaluated during EMD to determine the most cost effective combination of biological and chemical agent decontamination for a variety of platforms. Following Milestone C/LRIP decision, a single, firm fixed price production contract with full and open competition will be awarded.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DFoS CIDAS - HW S - Prototype Development	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.635	0.077	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.635	0.077		0.000		0.000		-		0.000	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CHRS - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.000		0.000		0.399	Nov 2016	-		0.399	Continuing	Continuing	0.000
DFoS CIDAS - TD/D SB - IPT and Technical Support	MIPR	Various : TBD	1.520	0.120	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.474	Jan 2015	1.271	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.030	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			1.520	0.594		1.301		0.399		-		0.399	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DFoS CIDAS - DTE S - Technology Demonstration	MIPR	Various : TBD	0.825	0.126	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - DTE S - Biothermal/Hot Air Dry Testing	C/CPFF	Materials Engineering and Technical Support Services	0.000	0.344	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Corp. (METSS) : Westerville, OH													
Subtotal			0.825	0.470		0.000		0.000		-		0.000	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CHRS - PM/MS S - Program Management and Technical Support	MIPR	Various : TBD	0.000	0.000		0.000		0.101	Nov 2016	-		0.101	Continuing	Continuing	0.000
DFoS CIDAS - PM/MS S - Program Management and Technical Support	MIPR	Various : TBD	0.872	0.175	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - PM/MS S - Program Management and Technical Support	MIPR	Various : TBD	0.000	0.735	Mar 2015	0.293	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.872	0.910		0.293		0.101		-		0.101	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.852	2.051	1.594	0.500	-	0.500	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

CHRS - Milestone A	■																											
CHRS - Release Request for Proposal (RFP)	■																											
CHRS - Systems Readiness Review (SRR)	■																											
CHRS - Competitive Prototyping	■																											
CHRS - Preliminary Design Review (PDR)	■																											
CHRS - Capability Development Document (CDD)	■																											
CHRS - Milestone B	■																											
CHRS - Critical Design Review (CDR)	■																											
CHRS - Developmental/Operational Testing (DT/OT)	■																											
CHRS - Capability Production Document (CPD)	■																											
CHRS - Milestone C (MS C)/Low Rate Initial Production (LRIP)	■																											
DFOS - CIDAS Technology Demonstrations	■																											
DFOS - CIDAS MS B	■																											
DFOS - CIDAS CDR (Large Scale Applicator)	■																											
DFOS - CIDAS DT (Nerve Indicator and Applicators)	■																											
DFOS - CIDAS CPD (Nerve Indicator and Applicators)	■																											
DFOS - CIDAS MS C/LRIP	■																											
DFOS - CIDAS LRIP Delivery (Nerve Indicator and Applicators)	■																											
DFOS - CIDAS OT (Nerve Indicator and Applicators)	■																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DFOS - CIDAS DT (Blister Indicator)																												
DFOS - CIDAS CPD (Blister Indicator)																												
DFOS - CIDAS MS C/LRIP (Blister Indicator)																												
DFOS - CIDAS LRIP Delivery (Blister Indicator)																												
DFOS - CIDAS OT (Blister Indicator)																												
DFOS - CIDAS FRP (Nerve Indicator and Applicators)																												
DFOS - CIDAS FPR (Blister Indicator)																												
JBADS - TRA																												
JBADS - Engineering Trade Analysis/Design Modifications																												
JBADS - Biothermal Decontamination Characterization Testing (Phase One)																												
JBADS - Fabricate Aircraft Enclosure (Phase One)																												
JBADS - Design Verification Testing (Phase One)																												
JBADS - Capability Production Document (CPD) (Phase One)																												
JBADS - MS C/LRIP (Phase One)																												
JBADS - LRIP Contract Award (Phase One)																												
JBADS - LRIP Production (Phase One)																												
JBADS - Production Qualification Testing (Phase One)																												
JBADS - Initial Operational Test and Evaluation (IOT&E) (Phase One)																												
JBADS - FRP (Phase One)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>DECONTAMINATION SYSTEMS (ACD&P)</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
JBADS - Hot Air Dry Testing (Phase Two)					[REDACTED]																											
JBADS - MS B (Phase Two)																																
JBADS - EMD Contract Award (Phase Two)																																
JBADS - Design Verification Testing (Phase Two)																	[REDACTED]															
JBADS - MS C/LRIP (Phase Two)																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>DECONTAMINATION SYSTEMS (ACD&P)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CHRS - Milestone A	2	2017	2	2017
CHRS - Release Request for Proposal (RFP)	4	2017	4	2017
CHRS - Systems Readiness Review (SRR)	3	2018	3	2018
CHRS - Competitive Prototyping	1	2019	2	2019
CHRS - Preliminary Design Review (PDR)	3	2019	3	2019
CHRS - Capability Development Document (CDD)	3	2019	3	2019
CHRS - Milestone B	4	2019	4	2019
CHRS - Critical Design Review (CDR)	2	2020	2	2020
CHRS - Developmental/Operational Testing (DT/OT)	3	2020	4	2020
CHRS - Capability Production Document (CPD)	1	2021	1	2021
CHRS - Milestone C (MS C)/Low Rate Initial Production (LRIP)	3	2021	3	2021
DFOS - CIDAS Technology Demonstrations	1	2015	1	2015
DFOS - CIDAS MS B	3	2015	3	2015
DFOS - CIDAS CDR (Large Scale Applicator)	4	2015	4	2015
DFOS - CIDAS DT (Nerve Indicator and Applicators)	1	2016	1	2017
DFOS - CIDAS CPD (Nerve Indicator and Applicators)	3	2017	3	2017
DFOS - CIDAS MS C/LRIP	4	2017	4	2017
DFOS - CIDAS LRIP Delivery (Nerve Indicator and Applicators)	1	2018	1	2019
DFOS - CIDAS OT (Nerve Indicator and Applicators)	4	2018	4	2018
DFOS - CIDAS DT (Blister Indicator)	3	2018	3	2019
DFOS - CIDAS CPD (Blister Indicator)	4	2019	4	2019
DFOS - CIDAS MS C/LRIP (Blister Indicator)	4	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / DECONTAMINATION SYSTEMS (ACD&P)
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Events	Start		End	
	Quarter	Year	Quarter	Year
DFOS - CIDAS LRIP Delivery (Blister Indicator)	1	2020	1	2021
DFOS - CIDAS OT (Blister Indicator)	2	2021	2	2021
DFOS - CIDAS FRP (Nerve Indicator and Applicators)	3	2019	4	2021
DFOS - CIDAS FPR (Blister Indicator)	4	2021	4	2021
JBADS - TRA	3	2015	3	2015
JBADS - Engineering Trade Analysis/Design Modifications	4	2015	4	2015
JBADS - Biothermal Decontamination Characterization Testing (Phase One)	3	2015	1	2016
JBADS - Fabricate Aircraft Enclosure (Phase One)	1	2016	2	2016
JBADS - Design Verification Testing (Phase One)	3	2016	3	2016
JBADS - Capability Production Document (CPD) (Phase One)	1	2017	1	2017
JBADS - MS C/LRIP (Phase One)	2	2017	2	2017
JBADS - LRIP Contract Award (Phase One)	2	2017	2	2017
JBADS - LRIP Production (Phase One)	2	2017	3	2017
JBADS - Production Qualification Testing (Phase One)	3	2017	4	2017
JBADS - Initial Operational Test and Evaluation (IOT&E) (Phase One)	1	2018	2	2018
JBADS - FRP (Phase One)	3	2018	3	2018
JBADS - Hot Air Dry Testing (Phase Two)	1	2016	3	2016
JBADS - MS B (Phase Two)	3	2017	3	2017
JBADS - EMD Contract Award (Phase Two)	3	2017	3	2017
JBADS - Design Verification Testing (Phase Two)	1	2018	3	2019
JBADS - MS C/LRIP (Phase Two)	2	2020	2	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) IP4 / INDIVIDUAL PROTECTION (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IP4: INDIVIDUAL PROTECTION (ACD&P)	-	6.253	4.217	3.235	-	3.235	0.000	0.000	0.500	3.500	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for Advanced Component Development and Prototypes (ACD&P). Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

The Joint Service General Purpose Mask (JSGPM) Advanced Respiratory Protection Initiative (ARPI) will address improved mask protection, filter protection against Toxic Industrial Chemicals (TIC)/Toxic Industrial Materials (TIM) and improved profile and breathing resistance; and wearability compatibility/integration. This will be accomplished through class-based analysis, Filtration Advanced Screening Test (FAST), desorption study, and advanced CBRN filtration efforts. Several technologies are being pursued by the Joint Science and Technology Office (JSTO), with two specific technologies being pursued in the FY16-17 timeframe. The JSGPM ARPI effort will investigate alternative designs and modifications to Zirconium hydroxide, Zinc, Argentum (Silver), Triethylene di-amine (TEDA)) (ZZAT) to further increase filtration of TICs and Chemical Warfare Agents (CWA). ZZAT is a zirconium hydroxide based filtration media that can potentially be layered with carbon. The first technology, known as Cobalt-Zinc ZZAT (CoZZAT), uses a layered bed of carbon concept to improve TIC and CWA protection capabilities, while the second technology known as Metal Organic Framework (MOF), is an engineered media that is a porous crystalline compound made up of metal ions and organic bridging molecules (ligands) for targeted removal of chemicals. The JSGPM ARPI effort will also investigate various applications of nanofiber particulate media. This effort transitions to BA7 in FY16.

The Uniform Integrated Protection Ensemble (UIPE) is a Chemical, Biological, Radiological, Nuclear (CBRN) protective system offering the capability to select a tailored material solution based on the expected threat level commensurate with operational mission requirements. Where appropriate, a family of systems approach that meets the scope of UIPE individual protection capability needs will be utilized. The objective of UIPE is to fully integrate CBRN and toxic industrial material (TIM) protections into an ensemble, identical in fit and form to the combat uniform (including mask - helmet integration and protective boots and gloves), thus negating the need for separate protective ensemble components. This integrated protection approach will result in increased warfighter operational performance in a CBRN environment. The UIPE program will develop, integrate, test, procure and field incremental capability solutions that are modular in function and offer improvements in form and fit over current systems; the program will explore trade-space in areas such as protection level, heat stress, durability, antimicrobial properties, flame resistance, launderability, self-detoxification, and protection time in order to provide capabilities that afford maximum utility to the warfighter. Where appropriate modeling and simulation tools will be used to lower UIPE program risks, reduce costs, and ensure a high confidence in selected technologies. UIPE is aimed specifically at providing enhanced individual protection capabilities to the warfighter through reduction of physiological and psychological effects associated with CBRN protective garment thermal burden, weight, and bulk. The UIPE program will consider modernization in order to ensure that the warfighter retains access to state of the art capability to support future operational mission requirements. UIPE Increment 2 will leverage the approved UIPE CBRN Initial Capabilities Document (ICD) to build on and enhance capabilities attained in UIPE Increment 1 by continuing to provide integrated individual protective equipment that enables the Warfighter to operate in a contaminated environment with no or minimal degradation to performance. The UIPE Increment 2 will seek to provide reduced thermal burden and weight compared to current protective ensembles. It will develop, integrate, test, procure, and field incremental capability solutions that are modular in function and offer improvements over current systems. The program will

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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explore trade-space in areas such as protection level, heat stress, durability, antimicrobial properties, flame resistance, launderability, self-detoxification, and protection time in order to provide capabilities that afford maximum utility to the Warfighter. Where appropriate, modeling and simulation tools will be used to lower UIPE Increment 2 program risks, reduce costs, and ensure a high confidence in selected technologies.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Title: 1) JSGPM Description: Advanced Respiratory Protection Initiative (ARPI) - M61 Filter Media Maturation FY 2015 Accomplishments: Completed Bed Design Analysis for second technology to be transitioned from Tech Base. Effort transitions to BA7 in FY16.		3.401	-	-
Title: 2) UIPE - Increment 2 Description: Concept Design Evaluation/Technology Maturation and Risk Reduction FY 2015 Accomplishments: Released a Request for Information (RFI) seeking information on mature technology that can be used in the design of the UIPE Increment 2 focusing on a system that provides percutaneous protection to the Warfighter from chemical and biological warfare agents and other hazardous materials. Began baseline ensemble testing and risk reduction activities (based off results from the RFI) as part of the Trade Space Analysis and will feed the requirements development process. FY 2016 Plans: Complete trade space analysis. Initiate Technology Maturation and Risk Reduction activities based off trade space analysis results to down select viable material and closure candidates. Initiate developmental testing on material and closures to include physical properties testing, thermal burden testing, flame resistance testing, and aerosol and chemical swatch testing. Initiate garment design concept activities to include system level prototype testing such as Fluorescent Aerosol Swatch Testing (FAST), Thermal Manikin and Modeling, and Man In Simulant Testing (MIST). Award contract to purchase 200 ensembles for system level testing at a unit cost of \$2,000.00 each. Conduct Manufacturing Readiness Assessment (MRA) and Joint Integrated Logistics Assessment (JILA). FY 2017 Plans: Begin concept development and design in coordination with a manufacturing partner and continue system-level prototype testing. Conduct Preliminary Design Review (PDR), Systems Requirements Review (SRR), and JILA Self Assessment.		2.852	4.137	3.235
Title: 3) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.		-	0.080	-
Accomplishments/Planned Programs Subtotals		6.253	4.217	3.235

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IP4 / INDIVIDUAL PROTECTION (ACD&P)

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• IP5: INDIVIDUAL PROTECTION (EMD)	16.961	19.439	11.427	-	11.427	11.206	11.610	3.799	6.419	Continuing	Continuing
• JI0002: JS AIRCREW MASK (JSAM)	11.526	24.630	52.284	-	52.284	54.558	55.136	50.374	50.062	Continuing	Continuing
• JI0003: JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)	63.346	60.777	55.118	-	55.118	48.982	0.000	0.000	0.000	0	228.223
• MA0401: CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)	8.222	11.101	13.525	-	13.525	11.101	13.200	14.000	14.600	Continuing	Continuing

Remarks

D. Acquisition Strategy

JS GENERAL PURPOSE MASK (JSGPM)

The JSGPM Advanced Respiratory Protection Initiative (ARPI) effort is using the two M61 filter contracts awarded to 3M and Avon to develop improved filters for the JSGPM. There is a continual technology refreshment CLIN on both contracts that allow for filter development tasks to be awarded. The tasks can be competed between the two awardees or awarded to both to ensure competition on future spares and delivery orders. As filter technologies transition from the Defense Threat Reduction Agency (DTRA) and Joint Science and Technology Office (JSTO), the technologies will be matured from system/subsystem prototyping demonstration technologies at Technology Readiness Level (TRL) 6 to actual system "mission proven" through successful mission operations in a mission environment at TRL 9. In addition to the maturing of the technology, the Manufacturing Readiness Level (MRL) of the media and the layered bed design requires maturing to an MRL level 9. The complexity of maturing all these different items requires an evolutionary approach with one prototype iteration governing the approach on the next iteration. With the criticality of the filter, the production transition to the new improved filter has to be done with a high degree of confidence with risks mitigated to a low level.

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)

The UIPE Increment 2 supports an evolutionary acquisition strategy with the intent of protecting the Warfighter from operationally relevant and non-traditional chemical, biological, radiological, and nuclear (CBRN)/toxic industrial hazards during Joint Force operations. UIPE Increment 2 will leverage the approved UIPE CBRN Initial Capabilities Document (ICD) to build on and enhance capabilities attained in UIPE Increment 1 by continuing to provide integrated individual protective equipment that enables the Warfighter to operate in a contaminated environment with no or minimal degradation to performance. UIPE Increment 2 will perform trade space analysis using Requests for Information for materials, closures, and designs, the issuance of a Challenge, and a concept demonstration event to provide a baseline assessment

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 4	PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	IP4 / <i>INDIVIDUAL PROTECTION (ACD&P)</i>

and feed the requirements development process. A manufacturing and development contract will be awarded prior to Milestone A to build prototypes/development samples, produce test articles, and provide manufacturability, development and documentation support. The final UIPE Increment 2 garment design will be Government owned in order to control interfaces and insert future technologies. UIPE Increment 2 is exploring the use of a Government issued Challenge to attract innovative ideas from Government, Industry, and Academia for inclusion into the final solutions. Strategies for obtaining various capability solutions will be developed as those solutions are identified. If Commercial-of-the-Shelf (COTS) or Non-Developmental Item (NDI) solutions are identified, appropriate contracting methods will be pursued. Where possible, rights and data will be requested to allow competitive procurement.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IP4 / INDIVIDUAL PROTECTION (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - HW S - Filter Prototyping	MIPR	Various : TBD	0.000	1.515	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - HW S - Design Concept Development	MIPR	TBD : TBD	0.000	0.000		1.000	Apr 2016	0.500	Nov 2016	-		0.500	Continuing	Continuing	0.000
Subtotal			0.000	1.515		1.000		0.500		-		0.500	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - ES S - Engineering Design Services	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.206	0.600	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSGPM - ES S - Engineering Support	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.016	0.200	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - TD/D S - Integrated Product Team (IPT), Program, Engineering, and Technical Support	MIPR	Various : TBD	0.000	0.626	Apr 2015	0.983	Nov 2015	0.813	Nov 2016	-		0.813	Continuing	Continuing	0.000
UIPE - ES S - Systems Engineering (SRR/PDR)	MIPR	Various : TBD	0.000	0.000		0.000		0.250	Jan 2017	-		0.250	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.080	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.222	1.426		1.063		1.063		-		1.063	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IP4 / INDIVIDUAL PROTECTION (ACD&P)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - DTE S - Prototype Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.214	0.800	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - DTE S - Design Concept/System Level Testing - FAST, MIST, Thermal Manikin and Modeling	MIPR	Various : TBD	0.000	1.638	May 2015	1.300	May 2016	1.017	Nov 2016	-		1.017	Continuing	Continuing	0.000
Subtotal			0.214	2.438		1.300		1.017		-		1.017	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - PM/MS S - Program Management and Technical Support	Various	Various : TBD	0.702	0.286	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - PM/MS S - Program Management Support	MIPR	Various : TBD	0.000	0.588	May 2015	0.854	Jan 2016	0.655	Nov 2016	-		0.655	Continuing	Continuing	0.000
Subtotal			0.702	0.874		0.854		0.655		-		0.655	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		1.138	6.253	4.217	3.235	3.235	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSGPM - Bed Design Analysis (CoZZAT)	██████																											
JSGPM - TD Contract Award (CoZZAT)	██████																											
JSGPM - Prototype Development (CoZZAT)	████████████████████																											
JSGPM - Product Qualification Testing (CoZZAT)													██████															
JSGPM - ECP Production (CoZZAT)													██████															
JSGPM - Bed Design Analysis (MOF)									██████																			
JSGPM - Prototype Development (MOF)									████████																			
JSGPM - Prototype Testing (MOF)													████████████████															
JSGPM - M53A1 NIOSH Certification					████																							
UIPE Increment 2 - Baseline Ensemble Testing	██████████████																											
UIPE Increment 2 - Material Development/ Tradespace Analysis					████																							
UIPE Increment 2 - Milestone A					████																							
UIPE Increment 2 - Manufacturing Readiness Review (MRA) / Technology Readiness Assessment (TRA)					████																							
UIPE Increment 2 - Design Concept/System Level Risk Reduction Testing					██████																							
UIPE Increment 2 - System Level Design Concept Testing									████████																			
UIPE Increment 2 - Preliminary Design Review (PDR)									████																			
UIPE Increment 2 - Capability Development Document (CDD)									████																			
UIPE Increment 2 - Milestone B									████																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IP4 / <i>INDIVIDUAL PROTECTION (ACD&P)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JSGPM - Bed Design Analysis (CoZZAT)	1	2015	2	2015
JSGPM - TD Contract Award (CoZZAT)	2	2015	3	2015
JSGPM - Prototype Development (CoZZAT)	2	2015	2	2017
JSGPM - Product Qualification Testing (CoZZAT)	1	2018	2	2018
JSGPM - ECP Production (CoZZAT)	3	2018	4	2018
JSGPM - Bed Design Analysis (MOF)	2	2017	4	2017
JSGPM - Prototype Development (MOF)	3	2017	1	2018
JSGPM - Prototype Testing (MOF)	2	2018	1	2019
JSGPM - M53A1 NIOSH Certification	1	2016	1	2016
UIPE Increment 2 - Baseline Ensemble Testing	2	2015	1	2016
UIPE Increment 2 - Material Development/Tradespace Analysis	3	2016	3	2016
UIPE Increment 2 - Milestone A	3	2016	3	2016
UIPE Increment 2 - Manufacturing Readiness Review (MRA) / Technology Readiness Assessment (TRA)	3	2016	3	2016
UIPE Increment 2 - Design Concept/System Level Risk Reduction Testing	1	2016	2	2016
UIPE Increment 2 - System Level Design Concept Testing	4	2016	2	2017
UIPE Increment 2 - Preliminary Design Review (PDR)	3	2017	3	2017
UIPE Increment 2 - Capability Development Document (CDD)	3	2017	3	2017
UIPE Increment 2 - Milestone B	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IS4: INFORMATION SYSTEMS (ACD&P)	-	7.585	7.464	5.928	-	5.928	6.187	1.451	0.870	0.783	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for Advanced Component Development and Prototypes (ACD&P). Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

Efforts included in this project are: (1) Joint Effects Model (JEM); (2) the Joint Warning and Reporting Network (JWARN); (3) the Biosurveillance Portal (BSP) and (4) Software Support Activity (SSA).

The Joint Effects Model (JEM) is a web-based software application that supplies the Department of Defense (DoD) with the one and only accredited tool to effectively model and simulate the effects of Chemical, Biological, Radiological and Nuclear (CBRN) weapon strikes and incidents. JEM is capable of providing all Warfighters with the ability to accurately model and predict the time-phased impact of CBRN and Toxic Industrial Chemical/Material (TIC/TIM) events and effects. JEM supports planning to mitigate the effects of Weapons of Mass Destruction (WMD) and to provide rapid estimates of hazards and effects into the Common Operational Picture (COP).

Follow-on increments of JEM will refine and display hazard areas in near real time to reflect inputs such as meteorological, oceanographic, or actual agent concentration data. JEM will automatically receive input data from the Command, Control, Communications, Computers and Intelligence (C4I) system on which it resides such as historical climatology, local observations, weather forecasts, natural environmental threats (i.e.: pandemic influenza, etc.), terrain data, intelligence information, or population data. Increment 2 will allow manual user input for factors such as concentrations of chemical warfare agents or actual exposure measurements and forecast sheltering stay-times and provide for modeling sheltering time through user-defined scenarios.

The Joint Warning and Reporting Network (JWARN) is an accredited Department of Defense (DOD) warning and reporting system that provides a standardized warning and reporting capability for Chemical, Biological, Radiological and Nuclear (CBRN) and Toxic Industrial Materials (TIM) incidents.

JWARN supports the Joint Force Commander (JFC) by improving force protection capabilities for units operating in chemical, biological, radiological and nuclear environments. JWARN provides a digital display of CBRN 1-6 reports on the Common Operational Picture, displayed through Service provided C4I systems resident at all echelons of command. JWARN will be operated by CBRN and non-CBRN trained personnel operating in the operations center at various command nodes. This provides commanders with situational awareness to inform decision making for force protection criteria, unmasking operations, decontamination, and continuity of operations in a contaminated environment. Future sensor configurations will forward sensor inputs directly to JWARN via established communication lanes, removing the man-in-the-loop requirement with the current system configuration. JWARN will be information system classification agnostic and must be able to operate on unclassified, secret, top secret, and mission partner IT Systems without increasing system operator requirement, i.e.: sensor to COP via one communication loop. As a result, sensors will then be able to communicate with JWARN on the same network, regardless of classification.

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JEM and JWARN utilize the Joint Capabilities Integration and Development System (JCIDS) Manual prescribed Information Technology Box (IT Box) construct for managing requirements for the follow-on increments of capability development. The "IT Box" is an acquisition approach and methodology regarding how software systems should be developed and fielded. It is a process that differs from the way DoD acquires hardware systems. The acquisition approach uses the Information Systems Initial Capabilities Document (IS ICD) to describe the required operational capabilities for the entire development effort. These overarching requirements are further broken out into Requirements Definition Packages (RDPs) released over the life of the product instead of a single Capability Development Document released early in the program. "Agile Software Development", a term used frequently throughout the JPM IS R forms, is a set of industry standard software development methods used in conjunction with the IT Box framework. Agile Software Development promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change. The Agile methodology is an alternative to traditional program management, typically used in software development. It helps teams respond to unpredictability through incremental, iterative work cadences, known as sprints. Agile methodologies are an alternative to waterfall, or traditional sequential development.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 Interim to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MSB) decision by the Milestone Decision Authority that covers the entire program. MS B is followed by a series of supporting Build Decisions (BDs) associated with each RDP as they are released. The supporting BDs will ensure incorporation of mature technology and development efforts culminating in incremental deliveries of capability to Joint and Service Command and Control (C2) architectures. Instead of a single Milestone C decision and fielding event for one increment, the program will return to the MDA for more frequent fielding decisions, as often as annually, as portions of capability are determined suitable and operationally effective. These multiple fielding efforts are based on providing capabilities with the most value to the operators based on Warfighter priorities/needs, maturation of the technology being incorporated and available resources supporting the effort.

The Biosurveillance Portal (BSP) is an FY 2016 new start program to address USSOCOM requirements contained in an approved Information Systems Capability Development Document (IS CDD). BSP is a web-based enterprise environment that will facilitate collaboration, communication, and information sharing in support of the detection, management, and mitigation of man-made and naturally occurring biological events. BSP bridges the communication gaps in the biosurveillance domain to provide a central access point for biosurveillance information and situational awareness for DoD, interagency and allied partners supporting the early identification and response to biological events.

BSP provides an integrated suite of web-based components designed to support public health officers, environmental officers, clinicians, physicians, and CBRN personnel as they maintain their situational awareness of local, regional, and global biological threats to the force. BSP does not duplicate existing DoD capabilities, but rather leverages existing tools and technologies to provide users across multiple organizations and disciplines with a centralized "one-stop shop" for all of their biosurveillance resources.

The Software Support Activity (SSA) is a Chem-Bio Defense user developmental support and service organization to facilitate net-centric interoperability of systems in acquisition for the Warfighter. The SSA provides the CBRN Warfighter with Joint Service solutions for Cybersecurity/Information Assurance (IA), Integrated Architectures, Data Management/Modeling, Interoperability Certifications, Verification, Validation and Accreditation (VV&A) to support interoperable and integrated net-centric, service-oriented solutions for CBRN systems. The SSA emphasizes development of reference implementations to guide Government and industry system and

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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software developers to ensure that their products meet common interoperability standards. The latest technologies/products include the definition of a Common CBRN Sensor Integration Standard (CCSI) and the CBRN Data Model. These technologies and direct enablers for the development of CBRN integrated sensor networks and the dissemination of CBRN information across all users. The SSA directly supports Chemical and Biological Defense Program (CBDP) initiatives by providing common service oriented architectures and frameworks for the collection and dissemination of Bio-Surveillance and other critical CBRN information.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: 1) BSP Program Management</p> <p>FY 2016 Plans: Management and oversight of technology development and transition efforts for new technologies and capabilities designed to satisfy BSP requirements.</p> <p>FY 2017 Plans: Continue management and oversight of technology development and transition efforts for new technologies and capabilities designed to satisfy BSP requirements.</p>	-	0.373	0.379
<p>Title: 2) BSP Product Development</p> <p>FY 2016 Plans: Prototyping, developing, and evaluating new technologies, models, and tools from both internal and external developers for transition into BSP.</p> <p>FY 2017 Plans: Continue prototyping, developing, and evaluating new technologies, models, and tools from both internal and external developers for transition into BSP.</p>	-	0.687	0.721
<p>Title: 3) JEM Prototyping and Development</p> <p>FY 2015 Accomplishments: Developed and integrated additional capabilities into JEM Increment 2 software as defined in Requirements Definition Package 1. Began integration into Command and Control (C2) systems as defined in Requirements Definition Package 2.</p> <p>FY 2016 Plans: Continue JEM Increment 2 software development of capabilities defined in Requirements Definition Package 1 and perform integration into C2 systems as defined in Requirements Definition Package 3. Begin software development of capabilities defined in Requirements Definition Package 3 that support Science and Technology community use of JEM Increment 2 software.</p> <p>FY 2017 Plans: Complete development and integration of capability JEM Increment 2 software development of capabilities defined in Requirements Definition Package 1. Continue integration into C2 systems as defined in Requirements Definition Package 2. Continue development of capabilities defined in Requirements Definition Package 3 that support Science and Technology</p>	1.195	1.184	0.592

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
community use of JEM Increment 2 software. Begin integration of emerging science and technology capabilities received from Advanced Technical Development (ATD) phase and defined in Requirements Definition Package 3.				
<p>Title: 4) JEM Test & Evaluation (T&E)</p> <p>FY 2015 Accomplishments: Designed and configured and equipped Government test lab environment to support Government developmental test and operational assessment of JEM Increment 2 software. Performed Government development test of the JEM Increment 2 software. Conducted warfighter events to evaluate JEM software by operational users.</p> <p>FY 2016 Plans: Continue lab based OT and limited scope service specific IOT&E to support fielding of software with additional capability in 1QTR FY17. Conduct Service C2 Follow-on Test and Evaluation (FOT&E) which will allow for IOC of JEM Increment 2 on service C2 systems in 1QTR FY17.</p> <p>FY 2017 Plans: Continue Government development test on newly integrated models received from JSTO. Continue lab based warfighter events to assess usability and suitability of implementation of new models.</p>		1.551	1.201	0.246
<p>Title: 5) JEM Management Support</p> <p>FY 2015 Accomplishments: Performed program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continued development and execution of Build Decisions (BD) for JEM Increment 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in order to deploy JEM Increment 2 to the services. Completed development of Requirements Definition Package 3 (RDP-3), which defines requirements for C2 systems integration of the JEM software. Completed Build Decision 2 (BD2) for JEM Increment 2.</p> <p>FY 2016 Plans: Complete Fielding Decision and IOC of Stand Alone capabilities of JEM Increment 2 in 1QTR FY16. Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continue development and execution of Build Decision 4 (BD4) for JEM Increment 2 while working within the agile development process, to include performing a JILA and LOG DEMO in order to deploy JEM Increment 2 to the services. Complete development of RDP-3. Complete fielding decision and IOC of C2 systems capabilities of JEM Increment 2 in 4QTR FY16.</p> <p>FY 2017 Plans: Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continue to manage transition of mature science and technology from JSTO into the JEM increment 2 program.</p>		0.257	0.323	0.242

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue development and execution of Build Decision 3 (BD3) for JEM Increment 2 while working within the agile development process. Complete development of Requirements Definition Package 4 (RDP-4), which defines requirements for C2 systems integration of the JEM software.			
<p>Title: 6) JEM Technical Support</p> <p>FY 2015 Accomplishments: Developed Verification, Validation, and Accreditation (VV&A) package for JEM Increment 2.</p> <p>FY 2016 Plans: Continue VV&A package development for JEM Increment 2.</p> <p>FY 2017 Plans: As new models are transitioned from JSTO, update VV&A plans and perform V&V to ensure models are mature enough to be integrated into the JEM Increment 2 baseline.</p>	0.368	0.553	0.257
<p>Title: 7) JWARN Prototyping</p> <p>FY 2015 Accomplishments: Performed software prototyping efforts supporting JWARN baseline development.</p> <p>FY 2016 Plans: Continue software prototyping efforts supporting JWARN baseline development.</p> <p>FY 2017 Plans: Continue software prototyping efforts supporting JWARN development for all three Requirements Definition Packages (RDPs).</p>	1.403	0.855	0.918
<p>Title: 8) JWARN Product Development</p> <p>FY 2015 Accomplishments: Performed JWARN Technology Demonstrations and User Assessments to evaluate and prove component and subsystem maturity of critical science and technology, system performance, and validate requirements within the IT BOX construct and Agile Process developed software prototype(s).</p> <p>FY 2016 Plans: Continue JWARN Technology Demonstrations and User Assessments to evaluate and prove component and subsystem maturity of critical science and technology, system performance, and validate requirements within the IT BOX construct and Agile Process developed software prototype(s).</p> <p>FY 2017 Plans:</p>	1.588	0.334	0.420

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue JWARN Technology Demonstrations and User Assessments to evaluate and prove component and subsystem maturity of critical science and technology, system performance, and validate requirements within the IT BOX construct and Agile Process developed software prototype(s).				
Title: 9) JWARN Test and Evaluation (T&E)		0.337	0.443	0.556
FY 2015 Accomplishments: Provided Government developmental testing and analysis of component and subsystem maturity, to include including Technology Readiness Assessment(s), of software submitted for evaluation during prototyping. Continued the DoD Information Assurance Certification and Accreditation and Joint Interoperability Certification process. Completed development of the Test and Evaluation Master Plan (TEMP).				
FY 2016 Plans: Continue Government developmental testing and analysis of component and subsystem maturity, to include Technology Readiness Assessment(s), of software submitted for evaluation during prototyping. Continue the DoD Information Assurance Certification and Accreditation and Joint Interoperability Certification process. Conduct Initial Operational Test and Evaluation (IOT&E) of Capability Drops 1.1 and 1.2 for the USA, USMC and USAF.				
FY 2017 Plans: Continue Government developmental testing and analysis of component and subsystem maturity, to include Technology Readiness Assessment(s), of software submitted for evaluation during prototyping. Continue the DoD Information Assurance Certification and Accreditation and Joint Interoperability Certification process. Conduct Initial Operational Test and Evaluation (IOT&E) of Capability Drops 1.3 for USA, USMC, USAF and 2.1 for USA, USMC, USAF, and USN.				
Title: 10) JWARN Program Management Support		0.443	0.494	0.620
FY 2015 Accomplishments: Provided strategic, tactical planning, program/financial management, costing, contracting, scheduling, acquisition oversight, and milestone documentation for the program within IT BOX construct and Agile Software development process.				
FY 2016 Plans: Will provide strategic, tactical planning, program/financial management, costing, contracting, scheduling, acquisition oversight, and milestone documentation for the program within IT BOX construct and Agile Software development process.				
FY 2017 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Will provide strategic, tactical planning, program/financial management, costing, contracting, scheduling, acquisition oversight, and milestone documentation for the program within IT BOX construct and Agile Software development process. Re-compete contract for prime developer.				
Title: 11) JWARN Technical Support		0.344	0.778	0.877
FY 2015 Accomplishments: Provided engineering and technical support for JWARN development under the IT BOX construct and Agile Software development processes. Continued independent system (Allied Tactical Publication-45D & E) verification, validation, and class type accreditation.				
FY 2016 Plans: Continue providing engineering and technical support for JWARN development under the IT BOX construct and Agile Software development processes. Continue independent system verification, validation, and class type accreditation as required.				
FY 2017 Plans: Continue to provide engineering and technical support for JWARN development under the IT BOX construct and Agile Software development processes. Continue independent system verification, validation, and class type accreditation as required.				
Title: 12) SSA Integrated Architecture		0.099	0.099	0.100
FY 2015 Accomplishments: Continued required modifications to the integrated Architecture on host platforms and document the infrastructure and technical standards, developing an acquisition Cybersecurity/IA strategy.				
FY 2016 Plans: Continue required modifications to the integrated Architecture on host platforms and document the infrastructure and technical standards, developing an acquisition IA strategy.				
FY 2017 Plans: Continue required modifications to the integrated Architecture on host platforms and document the infrastructure and technical standards, developing an acquisition Cybersecurity/IA strategy.				
Title: 13) SBIR/STTR		-	0.140	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.				
Accomplishments/Planned Programs Subtotals		7.585	7.464	5.928

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• IS5: INFORMATION SYSTEMS (EMD)	12.277	19.960	27.323	-	27.323	24.676	25.853	26.236	28.806	Continuing	Continuing
• IS7: INFORMATION SYSTEMS (OP SYS DEV)	4.703	7.703	10.357	-	10.357	12.707	13.219	13.967	13.590	Continuing	Continuing
• G47101: JOINT WARNING & REPORTING NETWORK (JWARN)	0.766	0.000	3.889	-	3.889	1.022	0.533	0.479	0.431	Continuing	Continuing
• JC0208: JOINT EFFECTS MODEL (JEM)	1.141	3.316	3.069	-	3.069	3.086	3.031	2.728	2.455	Continuing	Continuing
• JS5230: SOFTWARE SUPPORT ACTIVITY (SSA)	0.000	0.100	0.300	-	0.300	0.100	0.100	0.090	0.081	Continuing	Continuing
• JX0301: BIOSURVEILLANCE PORTAL (BSP)	0.000	1.620	1.220	-	1.220	1.220	1.220	1.220	1.098	Continuing	Continuing

Remarks

D. Acquisition Strategy

BIOSURVEILLANCE PORTAL (BSP)

The Biosurveillance Portal (BSP) program will meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. BSP is a new start program in FY16. The BSP program will utilize the JROC's "IT Box" construct for program requirements, management, and development. The intent is to provide the next generation of capability with current and future technologies in less time and fielding products to the DoD utilizing an incremental delivery approach. IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 Interim to conduct multiple, more frequent fielding events in lieu of a single fielding event. Capabilities will be developed and delivered in a series of Capability Drops (CDs) identified in Requirement Definition Packages (RDPs). Intent is to deliver CDs every three months. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD and an operational assessment (OA) will be conducted to verify capabilities for each RDP. User Feedback Events (UFEs) will be conducted with identified Users to illicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) is targeted for 3QFY16 with Final Operational Capability to be delivered in 3QFY20.

JOINT EFFECTS MODEL (JEM)

JEM Increment 2 acquisition will utilize the JROC's "IT Box" construct for software development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and fielding products to the service more frequently than an incremental delivery approach.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IS4 / <i>INFORMATION SYSTEMS (ACD&P)</i>
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As part of this strategy, JEM program office developed and issued a competitive prototyping contract in April 2013 where two offerers were given the same Technical Data Package (TDP), performance Work Statement (PWS), and software requirements and were tasked to deliver a JEM prototype that implements the CCMI architecture. This competitive prototyping strategy was successful and a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in December 2013.

The current contractor for JEM 2.0 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) document. The JRO will release RDPs-2, 3, and 4 over the next three years prior to contract completion. It is anticipated when the contract is re-competed in FY17 that there will be four of five capability drops not yet developed under RDP-2 and two of five under RDP-3. The follow-on contract in FY17 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JEM follow-on contract will utilize full and open competition and will be referred to as the JEM development, modernization and sustainment contract.

The JEM IS ICD describes the notional implementation plan for fielding of future JEM capabilities among five separate JEM Requirement Definition Packages (RDPs). RDP-1 contains the baseline capabilities for software and was approved in June of 2014. Since last report, the numbering scheme for RDPs was rearranged to account for the sequence of approval for each RDP. RDP-2 now defines requirements to integrate baseline capabilities into a version that can be fielded on service C2 systems will be released in RDP-2. RDP-2 will be released following RDP-1 to rapidly allow baseline capabilities to be incorporated into C2 systems. RDP-3 is a notional package that allows the Science and Technology community a venue to use the JEM program to develop a version of the product for S&T and analytical use. Capabilities that are only required for the Science and Technology and analytical communities and not for operational users would be implemented in RDP-3. Capabilities in RDP-3 would not be required to go to Operational Test, as they would not be fielded to operational users. RDP-4 will be released after the completion of RDP-1. This RDP will incorporate emerging capabilities that have reached a sufficient maturity for incorporation into the operationally fielded JEM system, such as ability to model new agents. RDP-5 was added as a mechanism to define requirements for JEM 2.0 through the remainder of its life cycle.

- RDP 1 - Baseline Capabilities: There are 5 planned Capability Drops (CD) within RDP 1.
- RDP 2 - C2 Integration: There are 8 planned Capability Drops (CD) within RDP 2 tied to all the various Strategic and Service C2 Systems
- RDP 3 - Analytical Support: There are 2 planned Capability Drops (CD) within RDP 3.
- RDP 4 - Emerging Capabilities: There are 5 planned Capability Drops (CD) within RDP 4.
- RDP 5 - Modernization and Sustainment: There are 2 Capability Drops (CD) planned per year through the life of the program.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in September 2014. Each subsequent RDP will have an associated Build Decision. Each CD will have an associated fielding decision.

JOINT WARNING & REPORTING NETWORK (JWARN)

JWARN Increment 2 utilizes the JROC's "IT Box" construct for software requirements management and development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and away from an incremental delivery approach. This effort is being executed under a Cost-Plus-Award Term Incentive structure to gain maximum benefit to the Government in maintaining the fielded baseline and future software capability development and was awarded under a full and open competition Request for Proposal (RFP). The JWARN Program will procure a Sensor Connectivity Capability (SCC) (hardware

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 4	PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	IS4 / <i>INFORMATION SYSTEMS (ACD&P)</i>

materiel solution) in order to facilitate the transfer of CBRN sensor information from legacy CBRN sensors to DoD networks. This solution will be external to the CBRN Sensors and Service-identified network transmission device(s).

SOFTWARE SUPPORT ACTIVITY (SSA)

The SSA provides enterprise-wide services and coordination across all CBDP programs that contain data or software, or are capable of linking to the Global Information Grid (GIG). The SSA facilitates interoperability, integration, and supportability of existing and developing IT and National Security Systems (NSS). This will be followed by coordination to facilitate the concepts of interoperability, integration and supportability of enterprise-wide services. Next follows work with user communities to develop and demonstrate enterprise-wide common architectures, products and services. The SSA will support the application of the enterprise-wide architectures, products and services into the programs, with verification of compliance with the defined products and services.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSP - SW S - Software Development	FFRDC	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.000		0.687	Dec 2015	0.721	Mar 2017	-		0.721	Continuing	Continuing	0.000
JEM - Increment 2 - SW SB - Prototype development	C/CPFF	General Dynamics Information Technologies : Fairfax, VA	3.708	1.249	Apr 2015	1.184	Apr 2016	0.592	Apr 2017	-		0.592	Continuing	Continuing	0.000
JWARN - SW S - Increment 2 - Prototype Development	C/CPFF	Northrop Grumman Corp. : Winter Park, FL	4.659	2.991	Dec 2014	1.189	Dec 2015	1.338	Dec 2016	-		1.338	Continuing	Continuing	0.000
Subtotal			8.367	4.240		3.060		2.651		-		2.651	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JEM - Increment 2 - TD/D SB - Engineering support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.144	0.368	Nov 2014	0.553	Nov 2015	0.257	Nov 2016	-		0.257	Continuing	Continuing	0.000
JWARN - ES S - Increment 2 - Engineering Support	MIPR	Various : TBD	6.291	0.344	Dec 2014	0.778	Dec 2015	0.877	Dec 2016	-		0.877	Continuing	Continuing	0.000
SSA - TD/D C - Engineering Support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	0.092	0.099	Dec 2014	0.099	Nov 2015	0.100	Dec 2016	-		0.100	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.140	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			8.527	0.811		1.570		1.234		-		1.234	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JEM - Increment 2 - OTE S - OT&E	MIPR	Various : TBD	0.000	1.497	Dec 2014	1.201	Nov 2015	0.246	Dec 2016	-		0.246	Continuing	Continuing	0.000
JWARN - Increment 2 - OTHT SB - Gov't developmental testing	MIPR	Various : TBD	2.005	0.337	Mar 2015	0.443	Nov 2015	0.556	Nov 2016	-		0.556	Continuing	Continuing	0.000
Subtotal			2.005	1.834		1.644		0.802		-		0.802	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSP - PM/MS S - Program Management Support	Various	Various : TBD	0.000	0.000		0.373	Dec 2015	0.379	Dec 2016	-		0.379	Continuing	Continuing	0.000
JEM - Increment 2 - PM/MS C - Program Management	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.648	0.257	Apr 2015	0.323	Apr 2016	0.242	Jun 2017	-		0.242	Continuing	Continuing	0.000
JWARN - Increment 2 - PM/MS SB - Program management	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.566	0.443	Dec 2014	0.494	Nov 2015	0.620	Dec 2016	-		0.620	Continuing	Continuing	0.000
Subtotal			5.214	0.700		1.190		1.241		-		1.241	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	Project Cost Totals		24.113	7.585	7.464	5.928	5.928	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BSP - MS B	■																											
BSP - TEMP			■	■	■	■																						
BSP - RDP-1			■	■	■	■																						
BSP - Operational Test and Evaluation - RDP 1					■	■																						
BSP - IOC						■																						
BSP - RDP-2					■	■	■	■																				
BSP - RDP-3									■	■	■	■																
BSP - RDP-4													■	■	■	■												
BSP - RDP-5																■	■	■	■									
JEM Increment 2 - Prototype and Baseline Capability Developmental Testing	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
JEM Increment 2 - BD 1	■																											
JEM Increment 2 - RDP 2 / Build Decision 2			■																									
JEM Increment 2 - BD 2			■																									
JEM Increment 2 - FD 1				■																								
JEM Increment 2 - RDP 3				■																								
JEM Increment 2 - IOC Standalone				■																								
JEM Increment 2 - BD 3					■																							
JEM Increment 2 - FD 2						■																						
JEM Increment 2 - RDP 4							■																					
JEM Increment 2 - FD 3								■																				
JEM Increment 2 - FD 4										■																		
JEM Increment 2 - C2 Integration Development Test				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
JEM Increment 2 - Govt DT / OT / V&V	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program				Date: February 2016						
Appropriation/Budget Activity 0400 / 4			R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>				Project (Number/Name) IS4 / <i>INFORMATION SYSTEMS (ACD&P)</i>			

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JWARN Increment 2 - RDP 1 Approval	████																											
JWARN Increment 2 - MS B	████																											
JWARN Increment 2 - RDP 1 Build Decision	████																											
JWARN Increment 2 - Baseline Critical Design Review (Software)	████																											
JWARN Increment 2 - RDP 2 Approval & Build Decision	████																											
JWARN Increment 2 - TEMP (Software)	████																											
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	██																											
JWARN Increment 2 - RDP 3 Approval & Build Decision	████																											
JWARN Increment 2 - RDP 1 Fielding Decision & IOC Standalone Web	████████████████████																											
JWARN Increment 2 - RDP 2 Fielding Decision & IOC	██████████████████																											
JWARN Increment 2 - RDP 3 Fielding Decision & IOC	██████████████████																											
SSA - Demonstrate Technology Transition Capabilities	██																											
SSA - Provide CM Services for Common User Products and Services	██																											
SSA - Provide Data Model Implementation Guidance	██																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IS4 / <i>INFORMATION SYSTEMS (ACD&P)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BSP - MS B	1	2015	1	2015
BSP - TEMP	3	2015	1	2016
BSP - RDP-1	3	2015	3	2016
BSP - Operational Test and Evaluation - RDP 1	2	2016	3	2016
BSP - IOC	3	2016	3	2016
BSP - RDP-2	3	2016	3	2017
BSP - RDP-3	3	2017	3	2018
BSP - RDP-4	3	2018	3	2019
BSP - RDP-5	3	2019	3	2020
JEM Increment 2 - Prototype and Baseline Capability Developmental Testing	1	2015	3	2017
JEM Increment 2 - BD 1	1	2015	1	2015
JEM Increment 2 - RDP 2 / Build Decision 2	4	2015	4	2015
JEM Increment 2 - BD 2	4	2015	4	2015
JEM Increment 2 - FD 1	1	2016	1	2016
JEM Increment 2 - RDP 3	1	2016	1	2016
JEM Increment 2 - IOC Standalone	1	2016	1	2016
JEM Increment 2 - BD 3	2	2016	2	2016
JEM Increment 2 - FD 2	4	2016	4	2016
JEM Increment 2 - RDP 4	1	2017	1	2017
JEM Increment 2 - FD 3	4	2017	4	2017
JEM Increment 2 - FD 4	4	2018	4	2018
JEM Increment 2 - C2 Integration Development Test	1	2016	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) IS4 / INFORMATION SYSTEMS (ACD&P)
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Events	Start		End	
	Quarter	Year	Quarter	Year
JEM Increment 2 - Govt DT / OT / V&V	1	2015	4	2020
JWARN Increment 2 - RDP 1 Approval	1	2015	1	2015
JWARN Increment 2 - MS B	3	2015	3	2015
JWARN Increment 2 - RDP 1 Build Decision	3	2015	3	2015
JWARN Increment 2 - Baseline Critical Design Review (Software)	4	2015	4	2015
JWARN Increment 2 - RDP 2 Approval & Build Decision	4	2015	4	2015
JWARN Increment 2 - TEMP (Software)	4	2015	4	2015
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	4	2015	4	2020
JWARN Increment 2 - RDP 3 Approval & Build Decision	3	2016	3	2016
JWARN Increment 2 - RDP 1 Fielding Decision & IOC Standalone Web	3	2016	1	2017
JWARN Increment 2 - RDP 2 Fielding Decision & IOC	3	2017	1	2018
JWARN Increment 2 - RDP 3 Fielding Decision & IOC	3	2018	2	2019
SSA - Demonstrate Technology Transition Capabilities	1	2015	4	2021
SSA - Provide CM Services for Common User Products and Services	1	2015	4	2021
SSA - Provide Data Model Implementation Guidance	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) MB4 / MEDICAL BIOLOGICAL DEFENSE (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MB4: MEDICAL BIOLOGICAL DEFENSE (ACD&P)	-	114.230	79.516	65.648	-	65.648	61.660	41.306	29.440	50.001	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project includes medical countermeasures, development of reagents, assays, diagnostic equipment, biosurveillance and supporting efforts.

This Advanced Component Development and Prototypes (ACD&P) Project supports:

The Antiviral Therapeutics Program will combine the efforts of the Emerging Infectious Diseases Therapeutics Program and the Hemorrhagic Fever Virus Program into a consolidated effort to develop and deliver FDA approved antiviral therapeutics for the warfighter, beginning in FY17. Drug products will be developed targeting the pathogens on the biological warfare threat lists, such as Ebola. This includes viruses of interest from the following families: Filoviridae, Alphaviridae, Arenaviridae, Bunyaviridae, and Flaviviridae. The program will conduct human clinical safety studies, pilot and pivotal animal efficacy, and toxicology studies, required for FDA approval. The performers will submit New Drug Applications/Biologic License Agreements for the therapeutics during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, they will be conducted during Production and Deployment.

The Medical Countermeasure Test and Evaluation (MCM T&E) Capability performs T&E and provides the essential data packages to support US Food and Drug Administration approval of leading biodefense medical countermeasure candidates to protect the Warfighter and the Nation. This capability provides dedicated capacity for DoD to conduct biosafety level-4 (BSL-4) Good Laboratory Practice (cGLP) T&E studies to meet programmatic needs following all applicable regulatory, biosurety, and safety standards.

Biosurveillance (BSV) actively gathers, analyzes, and interprets collected information that includes biosphere data that relate to disease activity and threats to human or animal health in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity. BSV will align the biosurveillance efforts across DoD and national strategies. BSV will scope and influence BSV capabilities as products to meet Warfighter requirements through innovative management of key BSV initiatives. BSV requirements address medical and physical CBRN mission needs spanned in over 11 requirements documents and through Combatant Commander (COCOM) identified needs. BSV funds will support Joint US Forces Korea (USFK) Portal and Integrated Threat recognition (JUPITR) ATD/BSV ATD which will find, demonstrate, transition, and transfer the best operational concepts and technology solutions in support of a holistic approach to countering biological threats from the laboratory to operational use and theater confirmation of a Biological Event. JUPITR ATD will consist of four legs; Early Warning (EW), Biological Identification Capabilities Sets (BICS), Assessment of Environmental Detectors (AED), and Biosurveillance Portal (BSP). The JUPITR ATD will provide the USFK with a holistic biosurveillance capability to provide early warning, detection, collection, identification, and theater confirmation of a Biological event. The JUPITR ATD consists of filling capability gaps through information sharing and communication systems and detection/diagnostic systems for the USFK. Outputs will focus on proving component, CONOPS, and subsystem transition into programs of record (PORs) and/or integration into existing PORs. Excursion for whole system live

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agent test (WSLAT) of AED units will support the CA Mission for Point Biological Detection. The Biosurveillance (BSV) program will transfer from the Medical Biological Defense (MB) Project to the Contamination Avoidance (CA) Project effective FY 2016.

The Countermeasures for Multi-Drug Resistance-Bacterial (CMDR-B) program develops medical countermeasures (MCMs) for Service members for protection against multi-drug resistant (MDR) bacteria, including Biological Warfare Agents (BWAs) and organisms that are genetically modified to be MDR. The resulting product(s) will be US Food and Drug Administration (FDA)-approved to prevent or minimize effects of MDR bacterial exposures. Leveraging collaborative Department of Defense (DoD), United States Government, and industry efforts will reduce program risk, lower program cost, and accelerate the delivery of therapeutics to the Warfighter. The program has established a translational team with the Joint Science and Technology Office for animal model work and pipeline candidates that could transition to CMDR-B for Advanced Development.

The Emerging Infectious Diseases Therapeutics (EID Tx) program is developing and will deliver a Food and Drug Administration (FDA) approved, broad-spectrum medical countermeasure to the Warfighter for protection against naturally occurring or biologically engineered viruses. The first indication being pursued is influenza due to a clear and established FDA regulatory approval pathway. The drug in development is highly efficacious against multiple influenza viruses, including the 2009 H1N1 pandemic virus, H5N1 avian influenza virus, the most recently identified H7N9 virus from the outbreak in China, and drug resistant strains of influenza viruses. It has also demonstrated efficacy against other viruses of concern to the DoD's biodefense program. FDA approval for an influenza treatment is anticipated following completion of the EMD phase. EID Tx will leverage on going filovirus countermeasure development to demonstrate additional broad-spectrum MCM's against naturally occurring and/or engineered biowarfare threats. To meet the mission need of "one drug, many bugs" EID Tx is testing product efficacy on BWA threats. This will allow the military to leverage a product that will be FDA approved for influenza against other viruses. This work will be funded by the Antiviral Therapeutic programs.

The NGDS is an evolutionary acquisition for a family of systems to provide increments of capability over time across many echelons of the Combat Health Support System. The mission of the NGDS is to provide Chemical, Biological and Radiological (CBR) threat and infectious disease identification and U.S. Food and Drug Administration (FDA)-cleared diagnostics to inform individual patient treatment as defined in the approved NGDS Capabilities Development Document (CDD) and CBR situational awareness and disease surveillance as defined in the Common Analytical Laboratory (CALs) CDD. NGDS Increment 1 will significantly improve diagnostic capability for deployable combat health support units (Role 2/3) while also improving operational suitability and affordability by developing FDA cleared biological warfare agent (BWA) and infectious disease in vitro diagnostic (IVD) assays on existing commercial diagnostic device with a well established FDA regulatory history and pipeline of commercial non-BWA infectious disease diagnostic tests. The NGDS Increment 1 program has a streamlined MS A to MS C acquisition strategy. BA4 supports the NGDS Increment 1 program through the Technology Maturation and Risk Reduction phase to complete competitive prototyping activities, initiate development of six BWA IVDs (Anthrax, Ebola, Marburg, Plague, Tularemia and Q-Fever), initiate the development of BWA environmental surveillance assays, multiservice operational test assessment, and Urgent Material Release of systems and Ebola emergency use diagnostic test in support of the DoD's Ebola Response and Preparedness initiative under Title X. NGDS Increment 2 will complement NGDS Increment 1 by developing diagnostics for unmet biological pathogen and toxin threats, chemical and radiological exposures, and to provide capability to lower echelons of care. NGDS Increment 2 will also conduct collaborative work with the Defense Advanced Research Project Agency to accelerate development of a ruggedized Ebola detection and diagnostic system for use in austere environments in support of the DoD's Ebola Response and Preparedness initiative under Title X.

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The Department of Defense (DoD) supports the Technology Maturation and Risk Reduction (TMRR) phase for vaccines that are directed against validated biological warfare (BW) weapons to include bacteria, viruses, and toxins of biological origin. Effective medical countermeasures are urgently needed to negate the threat of these biological warfare (BW) agents. Vaccines have been identified as the most efficient countermeasure against the validated threat of BW weapons.

The Trivalent Filovirus Vaccine (VAC FILO) Program will offer protection against the threat of Ebola and Marburg viruses. The current budget supports development of trivalent prototypes to meet the BW threat through TMRR phase and acceleration of multiple prototypes in response to the Ebola outbreak to provide an interim fielding capability. The DoD anticipates that the Food Drug Administration (FDA) will approve this vaccine using the 'Animal Rule', which allows for the demonstration of efficacy on relevant animal model(s). During this phase a scalable manufacturing process is developed. This process will be used to develop current Good Manufacturing Practices (cGMP) lots suitable for a Phase 1 clinical trial. In addition, animal safety and efficacy studies will be conducted to support an Investigational New Drug (IND) submission to the FDA and conduct Phase 1 clinical trials. These efforts will support a Milestone B (MS B) decision and entry into the Engineering, Manufacturing, and Development (EMD) phase.

The Ricin toxin is a validated bioweapon threat that is lethal, available and easily produced. The program support one DoD vaccine candidate including manufacturing cGMP lots; and the continuation of animal model and assay development studies. These efforts also include clinical trials, regulatory integration, and a manufacturing technology transfer to the ADM capability. The DoD is the Public Health Emergency Medical Countermeasures lead for the advanced development of the Ricin Vaccine.

The Western, Eastern, and Venezuelan Equine Encephalitis (VAC WEVEE) Vaccine program initiated competitive prototypes in FY13 to reduce program risk, and is developing multiple prototypes through the Technology Development Phase. The efforts to be conducted during this period include: develop pilot scale manufacturing processes and manufacture of cGMP lots to support nonclinical and clinical studies; develop vaccine formulation that meets the logistical requirements of the DoD; conduct non-clinical GLP safety studies; submit Investigational New Drug (IND) applications; and conduct Phase 1 clinical human safety studies. The DoD anticipates that the FDA will approve these products using the 'Animal Rule', which allows for the demonstration of efficacy in relevant animal model(s). These efforts will support a Milestone B decision and entry into the EMD phase. The Western, Eastern, and Venezuelan Equine Encephalitis (VAC WEVEE) Vaccine will protect the Warfighter against aerosolized exposure to three strains of alphaviruses; western, eastern and Venezuelan equine encephalitis viruses. VAC WEVEE Program is developing competitive prototypes. The early advanced development efforts include: develop pilot scale manufacturing processes and manufacture of cGMP lots to support nonclinical and clinical studies; develop vaccine formulation that meets the logistical requirements of the DoD; conduct non-clinical GLP safety studies; submit Investigational New Drug (IND) applications; and conduct Phase 1 clinical human safety studies. The DoD anticipates that the FDA will approve these products using the 'Animal Rule', which allows for the demonstration of efficacy in relevant animal model(s).

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

	FY 2015	FY 2016	FY 2017
Title: 1) AV TX - Candidate 2 (Filovirus TRL 4)	-	-	33.751
FY 2017 Plans: Conduct source selection activities and award contract for antiviral therapeutic countermeasure. Conduct pilot aerosol efficacy studies in a BSL 4. Conduct Phase 1 clinical safety trials and relevant toxicity studies. Initiate manufacturing process optimization			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
activities for scale-up to meet DoD production requirements. Initiate Non-Human Primate (NHP) model enhancement to support approval under the FDA Animal Rule.				
Title: 2) BSL-4 GLP T&E FY 2015 Accomplishments: Achieved IOC; continued to provide strategic planning, program management, and scheduling; broadened and expanded contract support plans to meet increased customer demand; conducted GLP BSL-4 T&E medical countermeasure studies in a safe and secure environment. FY 2016 Plans: Continue to provide strategic planning, program management, and scheduling for GLP BSL-4 T&E capability, conduct secondary capability assessments, develop and implement CONOPS and plans for transition to new facility, conduct GLP BSL-4 T&E medical countermeasure studies in a safe and secure environment. FY 2017 Plans: Continue to provide strategic planning, program management, and scheduling for GLP BSL-4 T&E capability, conduct secondary capability assessments, develop and implement CONOPS and plans for transition to new facility, conduct GLP BSL-4 T&E medical countermeasure studies in a safe and secure environment.		5.806	6.118	6.454
Title: 3) BSV FY 2015 Accomplishments: Finalized fusion and integration development for the Early Warning leg.		9.681	-	-
Title: 4) BSV FY 2015 Accomplishments: Released Biosurveillance Portal Software version 3.0 and initiated CENTCOM and National Capital Region Biosurveillance Portal efforts.		25.686	-	-
Title: 5) BSV FY 2015 Accomplishments: Transitioned BICS items to programs of record.		5.616	-	-
Title: 6) BSV FY 2015 Accomplishments:		3.141	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Executed special studies and initiatives to address biosurveillance capability needs across the CBRNE program in alignment with DoD and National Strategies. Effort will support technology transitions to G-BSP, CALS, JBTDS and NGDS.				
Title: 7) BSV		2.127	-	-
FY 2015 Accomplishments: Funding supports labor and travel for key functional areas of program management, systems engineering, test and evaluation planning and acquisition strategy development.				
Title: 8) CMDR-B		3.250	7.846	3.135
FY 2015 Accomplishments: Initiated anti-bacterial MCM development efforts for a US FDA-approved therapeutic that prevents or minimizes the effects of MDR (Multi-Drug Resistant) bacterial exposures (e.g., Bacillus anthracis, Yersinia pestis, Brucella spp., Burkholderia mallei, Francisella tularensis, and Burkholderia pseudomallei). Development efforts included supporting Pharmacokinetic studies of two compounds against a pathogen of interest and pivotal animal efficacy studies in non-human primates. Initiated Technology Maturation and Risk Reduction (TMRR) Phase activities.				
FY 2016 Plans: Continue development of anti-bacterial MCM development efforts leveraging whole of Government anti-microbial resistant investments. Funded efforts will include pivotal animal studies to determine drug efficacy.				
FY 2017 Plans: Continue the development of one or more MCM against MDR bacteria against one or more of the bacterial BWA (e.g., Bacillus anthracis, Yersinia pestis, Brucella spp., Burkholderia mallei, Francisella tularensis, and Burkholderia pseudomallei). Efforts will include IND Filing and Pilot Animal Studies.				
Title: 9) EID Tx		1.300	-	-
FY 2015 Accomplishments: Conducted enhancement of the alphavirus NHP animal model in conjunction with Medical Countermeasures - Joint Vaccine Acquisition Program (MCS-JVAP).				
Title: 10) NGDS - Increment 1		6.191	-	-
FY 2015 Accomplishments: Conducted development of Anthrax, Ebola, Marburg, IVD assays and initiated development of Plague, Q-Fever, Tularemia IVD assays. Conducted pre-submission meeting with the FDA. Future development will be funded with BA7.				
Title: 11) NGDS - Increment 1		5.002	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Description: Title X - Ebola Response				
FY 2015 Accomplishments: Completed emergency fielding of NGDS Increment 1 systems and Ebola emergency use assays.				
Title: 12) NGDS - Increment 2		3.598	-	-
FY 2015 Accomplishments: Initiated new CBR diagnostic assay development and optimization efforts on DoD-fielded medical devices. Evaluated interagency-developed handheld systems/assays for competitive prototyping and early operational testing.				
Title: 13) NGDS - Increment 2		2.452	-	-
Description: Title X - Ebola Response				
FY 2015 Accomplishments: Continued collaborative development with DARPA to accelerate development through contract award for evaluations of three ruggedized Ebola detection and commercial diagnostic system capable for use in austere environments.				
Title: 14) VAC FILO		4.000	7.237	2.700
FY 2015 Accomplishments: Continued non-clinical efficacy studies and initiated non-clinical safety studies for competitive prototypes and acceleration of efforts in response to Ebola outbreak.				
FY 2016 Plans: Continue and complete non-clinical efficacy and safety studies for competitive multiple candidates.				
FY 2017 Plans: Complete toxicology safety studies for multiple prototypes. Analyze clinical and nonclinical immunological data to establish a correlate of protection for each vaccine prototype.				
Title: 15) VAC FILO		3.117	11.050	3.518
FY 2015 Accomplishments: Completed the small scale manufacturing process development of individual filovirus vaccine components (Ebola, Sudan, Marburg). Initiated the cGMP production of bulk drug substance for one of the vaccine components, Ebola. Continued formulation development of the multi component vaccine for multiple vaccine prototypes. Continued qualification efforts for				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
immunological assays and initiated the validation of one of the critical immunological assay (Ebola ELISA). Accelerated development efforts for the Ebola manufacturing and assays in response to Ebola outbreak. FY 2016 Plans: Complete formulation development, assay qualification and cGMP pilot scale production of competitive candidates. Initiate stability testing. FY 2017 Plans: Complete assay qualification efforts in support of clinical trials. Continue stability testing.				
Title: 16) VAC FILO FY 2015 Accomplishments: Conducted pre-IND meeting with the FDA on first Ebola prototype. Submitted IND for the Ebola vaccine. Conducted pre-IND meeting with the FDA for the multi component filovirus vaccine (Ebola, Sudan, and Marburg). Submitted Ebola ELISA validation protocol to the FDA. FY 2016 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. FY 2017 Plans: Finalize phase 1 clinical study reports for each clinical trial conducted by 1QFY17 in support of Milestone B in 2QFY17. Conduct End of Phase 1 meetings with the FDA.		3.200	4.859	2.500
Title: 17) VAC FILO FY 2015 Accomplishments: Continued to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. FY 2016 Plans: Conduct pre-IND meeting with FDA on second prototype. Finalize and submit IND to the FDA for competitive prototypes. Initiate Phase 1 clinical trials for competitive prototypes. Initiate and complete trivalent Phase 1 clinical trial. FY 2017 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support.		1.000	13.126	1.000
Title: 18) VAC FILO		9.513	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Title X - Ebola Response</p> <p>FY 2015 Accomplishments: rVSVDG ZEBOV is one of the three Ebola vaccine candidates identified for expedited development. Supported GLP toxicology studies (Battelle); Nonhuman primate efficacy studies (USAMRIID); Immunological testing of Phase 1 samples (Battelle/USAMRIID); qualification and validation of Human ELISA (Battelle/Focus Diagnostics). These efforts were needed to support the Phase II/III clinical trials and interim fielding capability of this candidate in FY15. This vaccine candidate will only address EBOLA not the core trivalent effort, however, data from these studies will support development and acceleration of the trivalent vaccine. The ELISA efforts were critical for detecting dose selection for the vaccine used throughout Western Africa and other outbreak countries to establish a standardized assay for measuring the immune response across multiple vaccine platforms.</p>			
<p>Title: 19) VAC RIC</p> <p>FY 2016 Plans: Initiate manufacturing technology transfer to the ADM capability.</p> <p>FY 2017 Plans: Continue manufacturing technology transfer to the ADM capability. Continue Phase 1b clinical study. Continue animal model and assay development.</p>	-	2.590	1.173
<p>Title: 20) VAC WEVEE</p> <p>FY 2015 Accomplishments: Continued non-clinical safety and efficacy studies for competitive prototypes. Pre-IND filed with the FDA for the VLP vaccine prototype developed through the Interagency Agreement (IAA) with the National Institute of Allergy and Infectious Diseases (NIAID) VRC. Received FDA feedback and concurrence on Animal Model Strain Selection document and purchased Intellectual Property for the VRP WEVEE vaccine.</p> <p>FY 2016 Plans: Continue non-clinical safety, efficacy and IND-enabling studies for competitive candidates.</p> <p>FY 2017 Plans: Complete non-clinical safety, efficacy and IND-enabling studies for competitive prototypes. Continue Phase 1 Clinical Trial for the VLP vaccine prototype.</p>	7.855	8.716	3.117
<p>Title: 21) VAC WEVEE</p> <p>FY 2015 Accomplishments:</p>	8.463	11.525	3.800

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Completed manufacturing process development, and cGMP production of VLP prototype. Continued manufacturing process development of other competitive prototypes, including VRP prototype. Initiated assay development to characterize the immune response on both animals and humans and to characterize the drug substance. FY 2016 Plans: Continue small-scale manufacturing process development, and initiate GMP manufacturing for VRP prototype. FY 2017 Plans: Complete cGMP production of bulk drug substance and formulation efforts. Initiate cGMP production of final drug product for competitive prototypes to support Phase 1 clinical trials. Complete assay development and initiate assay qualification efforts.				
Title: 22) VAC WEVEE FY 2015 Accomplishments: Prepared for submission of IND for one prototype. FY 2016 Plans: Submit IND for prototype one and initiate clinical trial. FY 2017 Plans: Submit IND for additional prototypes and continue Phase 1 Clinical Trial.		2.100	3.748	2.000
Title: 23) VAC WEVEE FY 2015 Accomplishments: Continued strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. FY 2016 Plans: Continued strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. FY 2017 Plans: Continue strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support.		1.132	1.123	2.500
Title: 24) SBIR/STTR FY 2016 Plans:		-	1.578	-

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B. Accomplishments/Planned Programs (\$ in Millions) SBIR/STTR - FY16 - Small Business Innovative Research.	FY 2015	FY 2016	FY 2017
Accomplishments/Planned Programs Subtotals	114.230	79.516	65.648

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MB5: MEDICAL BIOLOGICAL DEFENSE (EMD)	169.400	107.883	106.223	-	106.223	170.667	190.756	188.537	181.318	Continuing	Continuing
• MB7: MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing
• JM2222: BIOSCAVENGER (BSCAV)	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	4.000	Continuing	Continuing
• JM6677: ADVANCED ANTICONVULSANT SYSTEM (AAS)	0.000	11.133	0.000	-	0.000	7.215	0.000	0.000	0.000	0	18.348
• JM8788: NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)	12.518	5.300	7.395	-	7.395	10.618	13.493	10.465	13.618	Continuing	Continuing
• JX0005: DOD BIOLOGICAL VACCINE PROCUREMENT (VACCINES)	0.185	0.185	0.185	-	0.185	0.185	0.185	13.048	0.185	Continuing	Continuing
• JX0210: CRITICAL REAGENTS PROGRAM (CRP)	1.553	1.005	1.005	-	1.005	1.005	1.005	1.005	0.905	Continuing	Continuing
• JX0300: BIOSURVEILLANCE (BSV)	1.311	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	1.311

Remarks

D. Acquisition Strategy

ANTI-VIRAL THERAPEUTICS (AV TX)

The acquisition strategy combines the HFV and EID TX Program efforts beginning in FY17, into a single funding line to develop and deliver FDA approved antiviral countermeasures. Independent market research conducted in FY15 identified multiple candidates appropriate for advanced development at varying stages of maturity. A source selection will be conducted targeting award in FY16. Candidates selected for entry into the EMD phase of development will be initiated in FY16 as part of the HFV program, and continued under the Antiviral Therapeutic program in FY17. Candidates selected which are appropriate for entry into the TMRR phase will be

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deferred for award until FY17 when BA4 funding is available to the program. The overall regulatory approach of the program remains to pursue development of products to FDA approval under the Animal Rule. The program will conduct human clinical safety studies, pilot and pivotal animal efficacy, and toxicology studies, required for FDA approval. The performers will submit New Drug Applications/Biologic License Agreements for the therapeutics during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, they will be conducted during Production and Deployment.

BSL4 GOOD LABORATORY PRACTICES TEST & EVALUATION (BSL4 GLP T&E)

The MCM T&E Capability is being implemented in three phases. Phase 1 (completed in FY13) established support contracts, agreements, and developed a capability implementation plan to utilize and maintain the existing and planned new US Army Medical Research Institute of Infectious Diseases (USAMRIID) facility and staff. Phase 2 executes the implementation plan, bringing the facility, equipment, personnel, and technical and business processes into a state of readiness to conduct BSL-4 studies under full GLP compliance. In FY14, the capability established a new Program Management Office and organizational structure, implemented information technology tools for secure management of data, trained and integrated GLP-qualified staff, and validated supporting technology for conduct of T&E studies. In FY15 conducted secondary capability assessments and refinements, broadening and adapting contract support plans to meet increased customer demand, updating the Life-Cycle Sustainment Plan, and conducting multiple T&E studies. MCM T&E support costs during Phase 2 and beyond will be offset by costs from specific MCM development programs where possible. The period of FY16 to FY19 will continue secondary capability assessments and refinements and will focus on transition of the capability to the new USAMRIID facility, after which Full Operational Capability (FOC) will be reached.

BIOSURVEILLANCE (BSV)

BSV is a set of capabilities that acquire, integrate, and analyze medical, environmental, and incident management data using existing and next generation systems, medical and non-medical sample collection tools and identifiers/diagnostics; and transition hardware/software tools and devices as residuals from the Biosurveillance Joint United States Force Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD). Prototype family of systems will be released to Busan Pier 8 and Camp Humphreys with a two year paid sustainment. Lessons learned, technologies, concepts of employment from the ATD will be transitioned to the programs of record associated with the CDBP (such as G-BSP, NGDS, JBTDS & CALS). The acquisition strategy will address the materiel solutions identified out of the multiple Biosurveillance (BSV) related Analysis of Alternatives (AoA's).

COUNTERMEASURES FOR DRUG RESISTANT BACTERIA (CMDR-B)

The CMDR-B program develops MCMs for MDR (multi-drug resistant) bacteria, including BWAs and organisms that are genetically modified to be MDR. The resulting product(s) will be US FDA-approved to prevent or minimize effects of MDR bacterial exposures. CMDR-B will follow an integrated acquisition and regulatory pathway to achieve FDA approval for drug candidates. The CMDR-B Program intends to fund one or more candidates to address competitive prototyping and mitigate drug development risk. In FY13, a Market Survey and RFI were completed assessing current anti-bacterial countermeasure technologies. Results confirmed technologies exist that are of sufficient maturity to enter advanced development. CMDR-B is establishing collaborative relationships with DoD, other USG entities and international partners to reduce program risk, lower program cost, and accelerate delivery of MCMs to the Warfighter. Milestone A obtained in 3QFY15.

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EMERGING INFECTIOUS DISEASES - THERAPUTIC (EID TX)

The goal of the EID Tx program is to develop a safe and effective MCM against biothreats of interest to the DoD. The first step of the acquisition strategy is to develop an MCM for influenza due to a clear and established FDA regulatory approval pathway. The Phase 2 clinical trial is complete, demonstrating both safety and efficacy in humans. Program was authorized by FDA to move forward at End of Phase 2 meeting on 3 SEP 13. Phase 3 clinical trials for EID Tx against influenza began during 1QFY14. NDA submission is expected in 4QFY16 with approval in FY17, and all remaining FY16/17 funds will support the influenza effort. In 3QFY16, the EID program will continue its strategy of leveraging broad spectrum therapeutics against new BW viral indications. The program will leverage on-going development to demonstrate additional broad-spectrum MCM's against naturally occurring and/or engineered biowarfare threats. The program will conduct human clinical safety studies, definitive animal efficacy, toxicology studies, and manufacturing scale up and optimization, as required for FDA approval. The performer will submit New Drug Applications/ Biologic License Agreements for the therapeutic during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, it will be conducted during Production and Deployment. This work will be funded by the Antiviral Therapeutic programs.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS Increment 1 program has a streamlined MS A to MS C - Limited Deployment acquisition strategy. The NGDS Increment 1 is intended to replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17. NGDS Increment 2 will complement NGDS Increment 1 by developing diagnostic capabilities for biological pathogens and toxins and address diagnostics for chemical and radiological exposures, and to provide capability to lower echelons of care.

NGDS Increment 2 will conduct technology development FY14-FY16 prior to MS B. The acquisition strategy and capability to be developed will be informed by the results of the Analysis of Alternatives to be completed 4QFY14. NGDS Increment 2 is intended to be complementary to NGDS Increment 1 to expand the breadth and depth of diagnostics to CBR threats, pre-symptomatic diagnostics, and far forward echelons of care.

The MB7 program will support development, testing, and FDA approval of additional assays after system fielding.

FILOVIRUS (VAC FILO)

The acquisition strategy supports the development of multiple filovirus vaccine prototypes through the Technology Maturation and Risk Reduction (TMRR) Phase. At Milestone B (MS B), the best prototype will be selected through a full and open competition to transition to the Engineering and Manufacturing Development (EMD) Phase with the delivery of an FDA licensed filovirus vaccine that will protect against multiple filoviruses. It is anticipated that the development contracts will be a mix of Cost Plus and Fixed Price. In addition, the program office may leverage the Advanced Development and Manufacturing capability, and other DOD agencies and laboratories to include U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). Following a successful MS B, the program will conduct manufacturing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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scale up, expanded clinical and nonclinical testing, and assay qualification and validation efforts. These efforts will support Biological Licensure Application (BLA) submission to the FDA and licensure of a filovirus vaccine.

RICIN VACCINE (VAC RIC)

A ricin vaccine will protect against exposure to the ricin toxin, an identified BW threat. The Government will serve as the integrator during this phase by managing and coordinating the various vaccine development efforts. Additionally, the Program Office will partner with DoD agencies and laboratories to include U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). Due to an issue discovered in vaccine manufacturing in FY15, the planned Phase 1b clinical study is delayed 9-12 months. FY16 and FY17 funding will fund manufacturing technology transfer and pilot lot production at the ADM capability.

WESTERN EASTERN VENEZUELAN EQUINE ENCEPH VACCINE (VAC WEVEE)

The WEVEE acquisition strategy uses a parallel evaluation of Virus Replicon Particle (VRP) and Virus Like Particle (VLP) vaccine prototypes through a Phase 1 clinical trials to achieve competitive prototyping in the Technology Development phase. The lead prototype is more mature than the second prototype. Several potential decision points will be used to assess the prototypes for possible down select. The schedule is based on a down select to one prototype. The Government will serve as the integrator during this phase by managing and coordinating the various vaccine development efforts. At MS B, the best prototype will be selected through a full and open competition to transition to the Engineering and Manufacturing Development (EMD) phase, with delivery of a FDA-licensed WEVEE vaccine. The development efforts will be a Cost Plus and Firm Fixed Price CLINs. Additionally, the Program Office will partner Health and Human Services/National Institute of Allergies and Infectious Diseases (HHS/NIAID), DoD agencies, and laboratories to include U.S. Army Medical Research Institute of Infectious Diseases (USMRIID). This DoD program is the Public Health Emergency Medical Countermeasures lead for the advanced development of this vaccine and is leveraging expertise across the Federal and International sectors to ensure programmatic success.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AV TX - Candidate 2 - Pilot Aerosol Animal Efficacy Studies	C/CPIF	TBD : TBD	0.000	0.000		0.000		8.229	Mar 2017	-		8.229	Continuing	Continuing	0.000
AV TX - Candidate 2 - Manufacturing process optimization and scale up	C/CPIF	TBD : TBD	0.000	0.000		0.000		10.084	Dec 2016	-		10.084	Continuing	Continuing	0.000
AV TX - Candidate 2 - Phase 1 Safety Trials	C/CPIF	TBD : TBD	0.000	0.000		0.000		8.055	Mar 2017	-		8.055	Continuing	Continuing	0.000
AV TX - Candidate 2 - Non Human Primate Animal Model Enhancement	C/CPIF	TBD : TBD	0.000	0.000		0.000		3.118	Mar 2017	-		3.118	Continuing	Continuing	0.000
BSV - SW GFPR - Portal SW Design & Integration	MIPR	Various : TBD	25.257	25.686	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - SW SB - BICS Portal Hardware Component and consumables	MIPR	Various : TBD	10.375	5.616	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - HW SB - Early Warning Hardware & Integration	MIPR	Various : TBD	12.521	9.681	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CMDR-B - SW GFPR - CMDR-B MCM Advanced Development - Contract 1	C/CPIF	Various : TBD	0.000	0.000		6.037	May 2016	2.221	May 2017	-		2.221	Continuing	Continuing	0.000
NGDS - HW C - Network Integration	MIPR	JPM Information Systems (JPM IS) : San Diego, CA	0.631	0.110	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - HW C - Begin and continue diagnostic assay optimization for Plague, Q-Fever and Tularemia IVD.	C/CPFF	BioFire Dx : Salt Lake City, UT	2.000	6.191	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - Increment 2 - HW C - Hardware/Assay Development	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	3.443	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGDS - HW C - Imitate and complete emergency fielding of systems and Ebola EUA assays	Various	BioFire Dx : Salt Lake City, UT	0.000	3.610	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - SW GFPR - Complete development of a ruggedized Ebola detection and diagnostic system capability	Various	Various : TBD	0.000	2.334	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - HW S - Non Clinical Studies	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	13.686	1.457	Dec 2014	2.500	Dec 2015	2.700	Dec 2016	-		2.700	Continuing	Continuing	0.000
VAC FILO - SW GFPR - Manufacturing Pilot Scale Prototype 1	C/CPIF	Various : TBD	3.790	2.376	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - SW GFPR - Manufacturing Pilot Scale Multiple Prototypes	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	1.545	2.624	Mar 2015	9.485	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
VAC RIC - SW GFPR - Manufacturing Tech Transfer, animal model & assay development	Various	Various : TBD	1.700	0.000		0.000		0.280	Mar 2017	-		0.280	Continuing	Continuing	0.000
VAC WEVEE - HW S - Manufacturing and Process Development	MIPR	National Institute of Allergy & Infectious Diseases : Bethesda, MD	12.773	3.786	Dec 2014	3.398	Dec 2015	3.300	Dec 2016	-		3.300	Continuing	Continuing	0.000
VAC WEVEE - HW S - Manufacturing and Process Development #2	MIPR	Battelle Memorial Institute : Columbus, OH	0.000	0.560	Dec 2014	6.130	Dec 2015	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
VAC WEVEE - SW GFPR - Intellectual Property	C/FFP	Various : TBD	3.000	3.100	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			87.278	70.574		27.550		38.987		-		38.987	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSV - ES S - JUPITR System Engineer & System Support	Various	Various : TBD	5.325	1.900	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - ES S - Special studies and support	PO	Various : TBD	0.000	1.088	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - TD/D C - NGDS IN 1 and 2 Studies and WIPT Support	MIPR	Various : TBD	3.395	0.855	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - ES S - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	2.478	0.250	Dec 2014	0.300	Dec 2015	0.350	Dec 2016	-		0.350	Continuing	Continuing	0.000
VAC RIC - ES S - Regulatory Integration	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	0.282	0.000		0.160	Dec 2015	0.090	Dec 2016	-		0.090	Continuing	Continuing	0.000
VAC WEVEE - ES S - Regulatory Integration	MIPR	National Institute of Allergy & Infectious Diseases : Bethesda, MD	2.778	0.100	Dec 2014	0.100	Dec 2015	0.150	Dec 2016	-		0.150	Continuing	Continuing	0.000
VAC WEVEE - ES S - Regulatory Integration #2	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	0.047	0.123	Dec 2014	0.123	Dec 2015	0.150	Dec 2016	-		0.150	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		1.578	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			14.305	4.316		2.261		0.740		-		0.740	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSL4 GLP T&E - DTE SB - T&E Facility	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	5.825	5.806	Dec 2014	6.118	Dec 2015	6.454	Dec 2016	-		6.454	Continuing	Continuing	0.000
BSV - OTHT C - JUPITR Operational Demos OTC	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.420	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CMDR-B - DTE S - Pharmacokinetic studies of pathogens of interest and animal efficacy studies.	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	2.776	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EID TX - OTHT C - Developmental Testing	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	1.300	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - OTHT SB - Testing, Evaluation, and Clinical Trials	MIPR	Battelle Memorial Institute : Columbus, OH	22.586	7.001	Dec 2014	7.730	Dec 2015	3.300	Dec 2016	-		3.300	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
VAC FILO - OTE C - Assay Development Prototype 1	C/CPIF	Various : TBD	5.792	0.000		4.857	Dec 2015	2.000	Dec 2016	-		2.000	Continuing	Continuing	0.000
VAC FILO - OTE C - Assay Development Prototype 2	C/CPIF	TBD : TBD	5.500	0.356	Dec 2014	4.500	Dec 2015	0.368	Mar 2017	-		0.368	Continuing	Continuing	0.000
VAC FILO - OTHT SB - Testing, Evaluation, and Clinical Trials #2	C/CPIF	Texas BioMedical Research Institute : San Antonio, TX	0.000	0.000		1.650	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
VAC RIC - OTHT C - Phase 1b Clinical Study	MIPR	TBD : TBD	1.450	0.000		0.000		0.803	Dec 2016	-		0.803	Continuing	Continuing	0.000
VAC RIC - DTE C - Manufacturing Tech Transfer	Various	Various : TBD	0.000	0.000		2.430	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - OTE C - Test and Evaluation Assay Development	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	6.491	2.218	Dec 2014	5.453	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - OTE C - Test and Evaluation Assay Development #2	MIPR	Battelle Memorial Institute : Columbus, OH	1.311	5.216	Dec 2014	5.260	Dec 2015	4.500	Dec 2016	-		4.500	Continuing	Continuing	0.000
VAC WEVEE - OTE C - Clinical Trial (Prototype)	MIPR	Various : TBD	0.000	2.170	Sep 2015	0.900	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			48.955	27.263		38.898		17.425		-		17.425	-	-	0.000

Remarks
CMDR-B -

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AV TX - Candidate 2 - PM/MS - SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.330	Jan 2017	-		1.330	Continuing	Continuing	0.000
AV TX - Candidate 2 - PM/MS - SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		1.013	Jan 2017	-		1.013	Continuing	Continuing	0.000
AV TX - Candidate 2 - PM/MS - SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.000		0.585	Jan 2017	-		0.585	Continuing	Continuing	0.000
AV TX - Candidate 2 - PM/MS - SB Management Support	C/FP	Various : TBD	0.000	0.000		0.000		1.337	Jan 2017	-		1.337	Continuing	Continuing	0.000
BSV - PM/MS S - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.261	0.401	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - PM/MS S - Management Support #2	MIPR	Various : TBD	2.252	1.459	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.215	Sep 2015	0.422	Sep 2016	0.223	Jan 2017	-		0.223	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.177	Jan 2015	0.610	Jan 2016	0.140	Jan 2017	-		0.140	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support #3	Allot	JPM Medical Countermeasure	0.000	0.082	Sep 2015	0.161	Sep 2016	0.170	Jan 2017	-		0.170	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
		Systems (JPM MCS) : Fort Detrick, MD													
CMDR-B - PM/MS C - Contractor Systems Engineering/ Program Management Support	C/FP	Various : TBD	0.000	0.000		0.616	Aug 2016	0.381	Aug 2017	-		0.381	Continuing	Continuing	0.000
NGDS - PM/MS SB - Product Management Systems Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.950	0.700	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - PM/MS S - Contractor Support	C/FFP	Various : TBD	1.200	2.066	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - PM/MS - Joint Vaccine Acquisition Program Management	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.440	0.700	Dec 2014	0.250	Dec 2015	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
VAC FILO - PM/MS S - Program Management/ Program Manager Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	1.993	4.000	Dec 2014	5.000	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - PM/MS S - Program Manager Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.040	1.277	Dec 2014	1.344	Dec 2015	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
VAC WEVEE - PM/MS C - Contractor Systems Engineering Program Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.432	1.000	Dec 2014	1.405	Mar 2016	1.317	Dec 2016	-		1.317	Continuing	Continuing	0.000
VAC WEVEE - PM/MS S - Joint Vaccine Acquisition Program Management	Allot	JPM Medical Countermeasure Systems (JPM	0.455	0.000		0.999	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AV TX - Candidate 2 - Contract Award																												
AV TX - Candidate 2 - Pilot Aerosol Animal Efficacy Studies																												
AV TX - Candidate 2 - Phase 1 Clinical Safety Trials																												
AV TX - Candidate 2 - Manufacturing Process Optimization and Scale Up																												
AV TX - Candidate 2 - Non Human Primate Animal Model Development																												
BSL4 GLP T&E - BSL-4 GLP T&E - Maintain Bio-Safety Level BSL-4 Test and Evaluation Capability																												
BSV - JUPITR ATD																												
BSV - JUPITR ATD Op Demo																												
BSV - JUPITR ATD Residuals																												
BSV - Biological Identification Capability Sets (BICS) Exercises																												
BSV - Biosurveillance (BSP) Portal Software 3.0																												
BSV - Early Warning Fusion and Integration																												
BSV - Assessment of Environmental Detectors (AED) Down-Select																												
BSV - Residual Purchase - Additional Systems																												
BSV - Transition of purchase of residual end items																												
CMDR-B - Initiate anti-bacterial MCM development efforts																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MB4 / MEDICAL BIOLOGICAL DEFENSE (ACD&P)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CMDR-B - Milestone A Decision			■																									
CMDR-B - TMRR Activities			■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CMDR-B - TMRR Contract Awards							■																					
CMDR-B - Milestone B Decision																■												
EID TX - Expand the EID Tx effort to include an additional high priority DOD biothreat viral agent	■	■	■	■																								
EID TX - LE Initiate and Complete Proof of Concept Studies		■	■																									
EID TX - LE Milestone B				■																								
EID TX - NI Animal Model Enhancement				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
NGDS - Anthrax/Viral Hemorrhagic Fever IVD Development and clearance	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
NGDS - MS C							■	■																				
NGDS - IOC								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
NGDS - FOC																■												
NGDS - Environmental Assay Development							■	■																				
NGDS - Multi Service Operational Test							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
NGDS - Air Force, Army, and Navy IOC											■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
NGDS - MS A/IPR		■																										
NGDS - IPR							■																					
NGDS - Contract Award & Early Operational Assessment								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
VAC FILO - Manufacturing Pilot Scale	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
VAC FILO - Assay Development and Qualification Competitive Prototypes	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>MEDICAL BIOLOGICAL DEFENSE (ACD&P)</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
VAC FILO - Non-clinical efficacy and safety studies	█																											
VAC FILO - Conduct Final Drug Product Formulation	█																											
VAC FILO - Manufacturing process development/assay and formulation development; cGMP Manufacturing	█																											
VAC FILO - Phase 1 Clinical Trials Competitive Prototypes					█																							
VAC FILO - Pre-IND meeting with FDA (first prototype)			█																									
VAC FILO - Pre-IND meeting with FDA (second prototype)						█																						
VAC FILO - IND Submission (first prototype)							█																					
VAC FILO - Second IND Submission							█																					
VAC FILO - Milestone B												█																
VAC RIC - Assay Development	█				█				█				█				█				█							
VAC RIC - Animal Model Efficacy Studies	█				█				█				█				█				█							
VAC RIC - Manufacturing Technology Transfer to the ADM Capability					█				█				█				█				█							
VAC RIC - Phase 1b Human Clinical Trial					█				█				█				█				█							
VAC WEVEE - VLP - Non-Clinical Studies	█																											
VAC WEVEE - VLP - Manufacturing Assay Development	█																											
VAC WEVEE - VLP - Manufacturing Process Development and Pilot Lots	█																											
VAC WEVEE - VLP - Pre-IND			█																									
VAC WEVEE - VLP - IND Submission												█																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MB4 / MEDICAL BIOLOGICAL DEFENSE (ACD&P)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
VAC WEVEE - VLP - Phase 1 Clinical Trial																												
VAC WEVEE - VRP - Non-Clinical Studies																												
VAC WEVEE - VRP - Manufacturing Assay Development																												
VAC WEVEE - VRP - Manufacturing Process Development and Pilot Lots																												
VAC WEVEE - VRP - Pre-IND																												
VAC WEVEE - VRP - IND Submission																												
VAC WEVEE - VRP - Phase 1 Clinical Trial																												
VAC WEVEE - Milestone B																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MB4 / MEDICAL BIOLOGICAL DEFENSE (ACD&P)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AV TX - Candidate 2 - Contract Award	1	2017	1	2017
AV TX - Candidate 2 - Pilot Aerosol Animal Efficacy Studies	2	2017	1	2018
AV TX - Candidate 2 - Phase 1 Clinical Safety Trials	3	2017	4	2018
AV TX - Candidate 2 - Manufacturing Process Optimization and Scale Up	1	2017	4	2018
AV TX - Candidate 2 - Non Human Primate Animal Model Development	2	2017	2	2019
BSL4 GLP T&E - BSL-4 GLP T&E - Maintain Bio-Safety Level BSL-4 Test and Evaluation Capability	1	2015	4	2021
BSV - JUPITR ATD	1	2015	3	2016
BSV - JUPITR ATD Op Demo	3	2015	4	2015
BSV - JUPITR ATD Residuals	1	2016	4	2018
BSV - Biological Identification Capability Sets (BICS) Exercises	1	2015	1	2016
BSV - Biosurveillance (BSP) Portal Software 3.0	4	2015	4	2015
BSV - Early Warning Fusion and Integration	1	2015	3	2015
BSV - Assessment of Environmental Detectors (AED) Down-Select	2	2015	2	2015
BSV - Residual Purchase - Additional Systems	2	2016	3	2018
BSV - Transition of purchase of residual end items	4	2015	3	2018
CMDR-B - Initiate anti-bacterial MCM development efforts	1	2015	4	2015
CMDR-B - Milestone A Decision	3	2015	3	2015
CMDR-B - TMRR Activities	3	2015	1	2019
CMDR-B - TMRR Contract Awards	3	2016	3	2016
CMDR-B - Milestone B Decision	1	2019	1	2019
EID TX - Expand the EID Tx effort to include an additional high priority DOD biothreat viral agent	1	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MB4 / MEDICAL BIOLOGICAL DEFENSE (ACD&P)
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Events	Start		End	
	Quarter	Year	Quarter	Year
EID TX - LE Initiate and Complete Proof of Concept Studies	2	2015	3	2015
EID TX - LE Milestone B	4	2015	4	2015
EID TX - NI Animal Model Enhancement	4	2015	4	2016
NGDS - Anthrax/Viral Hemorrhagic Fever IVD Development and clearance	1	2015	3	2016
NGDS - MS C	2	2016	4	2016
NGDS - IOC	4	2016	2	2017
NGDS - FOC	2	2019	2	2019
NGDS - Environmental Assay Development	1	2016	3	2016
NGDS - Multi Service Operational Test	1	2016	4	2017
NGDS - Air Force, Army, and Navy IOC	2	2017	2	2018
NGDS - MS A/IPR	2	2015	2	2015
NGDS - IPR	1	2016	1	2016
NGDS - Contract Award & Early Operational Assessment	3	2016	4	2017
VAC FILO - Manufacturing Pilot Scale	1	2015	4	2016
VAC FILO - Assay Development and Qualification Competitive Prototypes	1	2015	4	2016
VAC FILO - Non-clinical efficacy and safety studies	1	2015	4	2016
VAC FILO - Conduct Final Drug Product Formulation	1	2015	1	2017
VAC FILO - Manufacturing process development/assay and formulation development; cGMP Manufacturing	1	2015	4	2016
VAC FILO - Phase 1 Clinical Trials Competitive Prototypes	3	2015	3	2017
VAC FILO - Pre-IND meeting with FDA (first prototype)	3	2015	3	2015
VAC FILO - Pre-IND meeting with FDA (second prototype)	1	2016	1	2016
VAC FILO - IND Submission (first prototype)	2	2016	2	2016
VAC FILO - Second IND Submission	2	2016	2	2016
VAC FILO - Milestone B	2	2017	2	2017
VAC RIC - Assay Development	1	2015	4	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>MEDICAL BIOLOGICAL DEFENSE (ACD&P)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
VAC RIC - Animal Model Efficacy Studies	1	2015	4	2021
VAC RIC - Manufacturing Technology Transfer to the ADM Capability	1	2016	4	2021
VAC RIC - Phase 1b Human Clinical Trial	2	2016	2	2018
VAC WEVEE - VLP - Non-Clinical Studies	1	2015	4	2016
VAC WEVEE - VLP - Manufacturing Assay Development	1	2015	4	2016
VAC WEVEE - VLP - Manufacturing Process Development and Pilot Lots	1	2015	2	2016
VAC WEVEE - VLP - Pre-IND	2	2015	2	2015
VAC WEVEE - VLP - IND Submission	4	2016	4	2016
VAC WEVEE - VLP - Phase 1 Clinical Trial	4	2016	4	2018
VAC WEVEE - VRP - Non-Clinical Studies	1	2015	1	2017
VAC WEVEE - VRP - Manufacturing Assay Development	1	2015	3	2016
VAC WEVEE - VRP - Manufacturing Process Development and Pilot Lots	1	2015	4	2017
VAC WEVEE - VRP - Pre-IND	1	2018	1	2018
VAC WEVEE - VRP - IND Submission	4	2018	4	2018
VAC WEVEE - VRP - Phase 1 Clinical Trial	1	2019	4	2019
VAC WEVEE - Milestone B	2	2019	2	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) MC4 / MEDICAL CHEMICAL DEFENSE (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MC4: MEDICAL CHEMICAL DEFENSE (ACD&P)	-	0.000	0.000	5.681	-	5.681	0.000	0.000	0.000	0.000	0	5.681
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for the development of medical materiel and other medical equipment items necessary for the Technology Development phase of the acquisition life cycle for the advanced development of medical countermeasures (MCMs) for chemical warfare agents including diagnostic equipment, prophylactic, pre-treatment, and therapeutic drugs, and individual/casualty decontamination compounds. A family-of-systems approach for medical defense against chemical warfare agents is required to provide protection, to sustain performance in a chemical environment, and to provide for self-aid/buddy-aid and medical treatment of chemical casualties. Fielding of prophylactic, pre-treatment, and therapeutic drugs and medical devices requires Food and Drug Administration (FDA) approval. Given the family-of-systems approach for development of chemical MCMs for the treatment of nerve agent intoxication, multiple long-term studies are required to obtain FDA approval to deliver products that effectively integrate with current and projected therapeutic regimens. Efficacy testing of most candidate drugs against chemical warfare agents cannot be conducted in humans; therefore, animal surrogate models must be developed and employed. The program currently includes: Improved Nerve Agent Treatment System (INATS) an enhanced nerve agent treatment regimen consisting of an improved oxime to replace the current fielded oxime 2-pralidoxime chloride (2-PAM).

The Improved Nerve Agent Treatment System (INATS) advanced development provides an enhanced capability treatment regimen offering greater protection over a broader spectrum of toxic nerve agent threats. Components of the development include (1) a new and improved oxime (replacing 2-pralidoxime chloride (2-PAM)) to provide protection across current and emerging threats, (2) expanded nerve agent indications for a fielded, single indication, pyridostigmine bromide (PB) product, and (3) insertion of a centrally-acting (CA) anticholinergic agent to the treatment regimen to increase survivability and decrease morbidity. The INATS treatment regimen both improves the performance of, and eventually replaces the Antidote Treatment Nerve Agent Auto-injector (ATNAA), while expanding warfighter pretreatment options.

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

	FY 2015	FY 2016	FY 2017
Title: 1) INATS	-	-	2.100
FY 2017 Plans: Initiate and complete oxime non-clinical studies.			
Title: 2) INATS	-	-	1.781
FY 2017 Plans: Complete oxime phase 1 clinical trial.			
Title: 3) INATS	-	-	1.800
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MC4 / MEDICAL CHEMICAL DEFENSE (ACD&P)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Develop bulk drug substance (BDS) and final drug product (FDP) for non-clinical testing of the oxime.			
Accomplishments/Planned Programs Subtotals	-	-	5.681

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MC5: MEDICAL CHEMICAL DEFENSE (EMD)	25.966	42.911	39.504	-	39.504	44.656	25.358	11.155	4.855	Continuing	Continuing
• JM6677: ADVANCED ANTICONVULSANT SYSTEM (AAS)	0.000	11.133	0.000	-	0.000	7.215	0.000	0.000	0.000	0	18.348

Remarks

D. Acquisition Strategy

IMPROVED NERVE AGENT TREATMENT SYSTEM (INATS)

INATS' evolutionary Acquisition Strategy was recently expanded to (1) align all Department of Defense nerve agent therapeutics under it, and to (2) insert a centrally-acting (CA) anticholinergic agent, employs an incremental approach to provide independent, and more rapid deliveries of oxime, expanded PB indications, and CA capabilities than in a combined treatment regimen delivery. To accomplish this, separate Milestones B and C reviews were originally scheduled for the oxime and CA development efforts. However after decision briefings to the Milestone Decision Authority and discussions with the Joint Services, MCS-CDP will conduct combined Milestone B and C reviews for the oxime and CA development efforts and decision reviews for PB expansion beyond the combined-development Technology Maturation and Risk Reduction (TM&RR) Phase. In the TM&RR phase, close collaborations will occur between the Joint Program Manager - Medical Countermeasure Systems (JPM-MCS)), and the science/ technology, and user communities to assess technical viability, capability delivery options, and to refine operational concepts; the Government will be the systems integrator overseeing the conduct of oxime and centrally acting formulation development efforts, nonclinical toxicology and efficacy studies, clinical safety studies, and efficacy studies addressing the PB indication. In the Engineering and Manufacturing Development (EMD) phase for the oxime and CA each capability, the Government will engage with commercial partners to ensure that INATS development and manufacture is in accordance with Food and Drug Administration (FDA) regulations and guidelines; the commercial partner(s) will perform a Phase 2 human clinical safety study, nonclinical toxicology studies and definitive animal efficacy studies; the system integrator will also oversee the manufacture of improved oxime and CA formulations and delivery system that is stable under operationally relevant temperatures. The system integrator will submit a New Drug Application and seek FDA approval for the INATS product. In the Production and Deployment (P&D) Phase, the Government will pursue full-rate and stockpile production, conduct any FDA mandated post-marketing surveillance studies, and will transfer contracting/logistical responsibilities to the Defense Logistics Agency (DLA) while remaining to monitor program performance through disposal as the life-cycle manager.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MC4 / <i>MEDICAL CHEMICAL DEFENSE (ACD&P)</i>

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) MC4 / MEDICAL CHEMICAL DEFENSE (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
INATS - Develop bulk drug substance	PO	TBD : TBD	0.000	0.000		0.000		1.600	Jan 2017	-		1.600	0.000	1.600	0.000
Subtotal			0.000	0.000		0.000		1.600		-		1.600	0.000	1.600	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
INATS - ES S -Regulatory Integration, IND, and NDA Support Efforts	PO	Battelle Memorial Institute : Columbus, OH	1.501	0.000		0.000		0.150	Apr 2017	-		0.150	0.000	1.651	0.000
Subtotal			1.501	0.000		0.000		0.150		-		0.150	0.000	1.651	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
INATS - DTE S - Oxime Non-clinical Studies	PO	Battelle Memorial Institute : Columbus, OH	1.924	0.000		0.000		1.850	Jan 2017	-		1.850	0.000	3.774	0.000
INATS - DTE C - Oxime Phase 1 Clinical Trial	PO	Battelle Memorial Institute : Columbus, OH	2.585	0.000		0.000		1.661	Jan 2017	-		1.661	0.000	4.246	0.000
Subtotal			4.509	0.000		0.000		3.511		-		3.511	0.000	8.020	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MC4 / <i>MEDICAL CHEMICAL DEFENSE (ACD&P)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
INATS - Nonclinical Studies - Oxime																												
INATS - Phase 1 Clinical Safety Studies																												
INATS - Milestone B - Oxime																												
INATS - Development of BDS/FDP - Oxime																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MC4 / <i>MEDICAL CHEMICAL DEFENSE (ACD&P)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
INATS - Nonclinical Studies - Oxime	1	2017	4	2017
INATS - Phase 1 Clinical Safety Studies	1	2015	3	2017
INATS - Milestone B - Oxime	3	2017	3	2017
INATS - Development of BDS/FDP - Oxime	2	2017	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TE4: TEST & EVALUATION (ACD&P)	-	10.913	17.371	14.887	-	14.887	14.823	23.458	14.017	14.991	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports the Chemical Biological Defense Portfolio (CBDP) Test Equipment, Strategy, and Support (TESS) efforts TESS provides test infrastructure products for testing and evaluating chemical and biological defense systems throughout the life cycle acquisition process. TESS test infrastructure products are aligned in three groups to include: (1) Analysis and Requirements; (2) Laboratory; (3) Field.

(1) Analysis and Requirements: The products for this area are the analyses of requirements and justification of needs for test infrastructure to support acquisition efforts (e.g. Programs of Record (PORs), Advanced Technology Demonstrations (ATDs), and Accelerated Acquisition). The result is a verified need for component upgrades to existing test infrastructure, dynamic laboratory upgrades to existing test infrastructure, or initiation of new test infrastructure.

(2) Laboratory: The products for this area are the Non-Traditional Agent Defense Test System (NTADTS) and improvements to the Dynamic Test Chamber (DTC). The NTADTS provides a new capability to conduct chemical defense testing against current and emerging threat agents. The NTADTS supports testing of decontamination, collective protection, individual protection, and contamination avoidance products. The DTC provides a new capability for testing chemical point detection systems against chemical warfare agents in various environmental conditions. The CBD acquisition programs supported are Dismounted Reconnaissance Sets Kits and Outfits (DR SKO), Next Generation Chemical Detector (NGCD), Joint Sensitive Equipment Wipes (JSEW), and Common Analytical Laboratory System (CALs). Future efforts will include the development of test methods and methodologies for additional classes of agents.

(3) Field: The products for this area are the Test Grid, the Mobile Test Infrastructure (MTI), the Joint Ambient Breeze Tunnel (JABT) and the Active Standoff Chamber (ASC). The Test Grid effort provides a fully instrumented grid for chemical and biological simulant field test capabilities that integrate referee systems; dissemination equipment; real-time cloud tracking capability; meteorological equipment; a wireless network; and a Data Management System (DMS) software to track and display the cloud health and status of all of the equipment in the network anywhere in Dugway Proving Ground (DPG). The MTI is an all-inclusive mobile management service functioning wirelessly. MTI is capable of integrating, controlling, commanding and managing all assets required to conduct transportable testing. It provides algorithms and graphical user interfaces for automating real-time visualization, raw data, computation, hosts data collection and indefinite storage that can go to any Major Range Test Facility Base (MRTFB) for CB Testing. The JABT and ASC improvements will provide a tech refresh to existing infrastructure and allow for test results to be integrated into the Test Grid Data Management System (DMS). The CBD acquisition programs supported are the Joint Expeditionary Collective Protection (JECp), Next Generation Chemical Detector (NGCD), Joint Biological Tactical Detection System (JBTDs), and the Joint USFK Point and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD).

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

	FY 2015	FY 2016	FY 2017
Title: 1) PD TESS - Non-Traditional Agent Defense Test System (NTADTS)	2.272	5.562	6.267

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Initiated methodology development for additional classes of agent.</p> <p><i>FY 2016 Plans:</i> Continue methodology development for additional classes of agent.</p> <p><i>FY 2017 Plans:</i> Continue methodology development and continue test fixture design for additional classes of agent.</p>			
<p><i>Title:</i> 2) PD TESS - Joint Ambient Breeze Tunnel (JABT)</p> <p><i>FY 2016 Plans:</i> Continue component upgrades to JABT for integration into the DMS.</p> <p><i>FY 2017 Plans:</i> Complete implementation of design. Conduct risk reduction testing.</p>	-	1.702	1.388
<p><i>Title:</i> 3) PD TESS - Active Standoff Chamber (ASC)</p> <p><i>FY 2016 Plans:</i> Continue component upgrades to ASC for integration into the DMS.</p>	-	1.988	-
<p><i>Title:</i> 4) PD TESS - Materials Test Capability (MTC)</p> <p><i>FY 2016 Plans:</i> Finalize test fixture design modifications and integrate into laboratory. Verify and validate test fixture.</p>	-	2.063	-
<p><i>Title:</i> 5) PD TESS - Test Grid</p> <p><i>FY 2015 Accomplishments:</i> Completed transition plan and training manuals. Completed methodology development for system use. Conducted risk reduction testing. Conducted Pre-validation testing activities.</p> <p><i>FY 2016 Plans:</i> Characterize and integrate biological and chemical and dissemination systems.</p>	6.937	3.544	-
<p><i>Title:</i> 6) PD TESS - Dynamic Test Chamber (DTC)</p> <p><i>FY 2016 Plans:</i> Initiate methodology development for upgrades to support Next Generation Chemical Detector test and evaluation.</p> <p><i>FY 2017 Plans:</i></p>	-	2.174	1.388

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Complete methodology development for upgrades and implement into chamber.			
Title: 7) PD TESS - Test Infrastructure Analysis & Requirements (TIA&R)	1.704	-	2.082
FY 2015 Accomplishments: Continued to characterize current capabilities for the Chemical and Biological Defense Program (CBDP) to support decisions for new test infrastructure. Continued to document CBDP test infrastructure gaps. Initiated requirements development for the Mobile Test Infrastructure (MTI) and developed a preliminary design.			
FY 2017 Plans: Continue to characterize current capabilities for the CBDP to support decisions for new test infrastructure. Continue to analyze upcoming test infrastructure needs and requirements and initiate planning for studies. Analyses supporting Dynamic Test Chamber upgrades, Joint Ambient Breeze Tunnel and Active Standoff Chamber upgrades, and manage the CBDP database for all test capabilities. Initiate requirements development for new test infrastructure such as decontamination test fixtures, mobile test infrastructure, NTA Facility for PORs and acquisition support.			
Title: 8) PD TESS - Mobile Test Infrastructure (MTI)	-	-	3.762
FY 2017 Plans: Conduct full end-to-end network requirements analysis. Begin regression testing.			
Title: 9) SBIR/STTR	-	0.338	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	10.913	17.371	14.887

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017			FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• TE5: TEST & EVALUATION (EMD)	9.901	6.053	6.119	-	6.119	6.385	6.341	6.310	6.436	Continuing	Continuing
• TE7: TEST & EVALUATION (OP SYS DEV)	5.940	4.091	2.594	-	2.594	6.605	6.318	5.416	5.733	Continuing	Continuing

Remarks

D. Acquisition Strategy

TEST EQUIPMENT, STRATEGY & SUPPORT (PD TESS)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) TE4 / <i>TEST & EVALUATION (ACD&P)</i>

TESS efforts are supported through competitive contract actions, academia, and other Government agencies. Infrastructure solutions will leverage commercially available systems to provide state-of-the-art capabilities that address current and future CBDP test and evaluation needs.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - Test Infrastructure - HW S - NTA Defense Test System Design/Fabrication/Installation	C/CPFF	TBD : TBD	34.918	0.000		0.250	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - NTA Defense Test System Design/Fabrication/Installation #2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	14.226	3.441	Dec 2014	3.662	Mar 2016	4.517	Dec 2016	-		4.517	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid	C/CPFF	ITT Corporation : Alexandria, VA	1.200	2.555	Jun 2015	1.297	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Joint Ambient Breeze Tunnel Component Upgrade	MIPR	Various : TBD	0.000	0.000		1.010	Mar 2016	0.300	Dec 2016	-		0.300	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Joint Ambient Breeze Tunnel Component Upgrades	C/CPFF	Various : TBD	0.000	0.000		0.360	Mar 2016	0.700	Dec 2016	-		0.700	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Active Stand-off Chamber Component Upgrades	MIPR	Various : TBD	0.000	0.000		1.675	Mar 2016	0.935	Dec 2016	-		0.935	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Active Stand-off Chamber Component Upgrades #2	C/CPFF	Various : TBD	0.000	0.000		0.425	Mar 2016	0.700	Dec 2016	-		0.700	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Materials Test Capability Design and Modifications	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.525	0.000		0.661	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - Test Infrastructure - HW S - Materials Test Capability Design and Modifications #2	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.475	0.000		1.000	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid Design and Upgrade	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	1.401	Mar 2015	0.895	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid Design and Upgrade #2	C/CPFF	Various : TBD	0.000	0.365	Mar 2015	0.661	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Dynamic Test Chamber Design and Upgrade	MIPR	Various : TBD	0.000	0.000		1.750	Mar 2016	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid #2	MIPR	Various : TBD	0.000	0.564	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Mobile Test Infrastructure	MIPR	Various : TBD	0.000	0.000		0.000		1.361	Mar 2017	-		1.361	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Mobile Test Infrastructure #2	C/CPFF	Various : TBD	0.000	0.000		0.000		1.350	Mar 2017	-		1.350	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - TI Analysis & Requirements	MIPR	Various : TBD	0.000	1.200	Jun 2015	2.337	Mar 2016	2.082	Mar 2017	-		2.082	Continuing	Continuing	0.000
Subtotal			51.344	9.526		15.983		12.945		-		12.945	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.338	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.338		0.000		-		0.000	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - PM/MS S - PD TESS Test Infrastructure	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	5.201	1.387	Dec 2014	1.050	Dec 2015	1.942	Dec 2016	-		1.942	Continuing	Continuing	0.000
Subtotal			5.201	1.387		1.050		1.942		-		1.942	-	-	0.000

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	56.545	10.913		17.371		14.887	-	-	0.000

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) TE4 / TEST & EVALUATION (ACD&P)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PD TESS - NTA Defense Test System (NTADTS) laboratory revitalization and test chamber design	1	2015	2	2015
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents	3	2015	4	2020
PD TESS - Joint Ambient Breeze Tunnel (JABT) - Initiate/Design Component Upgrades	1	2016	4	2017
PD TESS - Active Standoff Chamber (ASC) - Initiate/Design Component Upgrades	1	2016	4	2017
PD TESS - Materials Test Capability - Fixture Initiation/Design	1	2015	2	2015
PD TESS - Materials Test Capability - Initiate and Complete Design Mods	2	2015	1	2018
PD TESS - Test Grid - Validate and Transition Initial Capability/Conduct Upgrades	1	2015	4	2016
PD TESS - Test Grid - Transition activities	1	2015	4	2016
PD TESS - DTC Methodology Development for Upgrades	1	2016	4	2017
PD TESS - Mobile Test Infrastructure (MTI) Design and Development	1	2016	4	2017
PD TESS - Test Grid IOC	4	2016	4	2016
PD TESS - Test Infrastructure Analysis & Requirements	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	330.326	282.147	266.231	-	266.231	412.287	341.133	305.710	261.715	Continuing	Continuing
CA5: <i>CONTAMINATION AVOIDANCE (EMD)</i>	-	48.333	56.104	50.203	-	50.203	127.558	62.229	50.951	11.200	Continuing	Continuing
CM5: <i>HOMELAND DEFENSE (EMD)</i>	-	30.975	7.192	11.224	-	11.224	5.323	2.536	0.000	0.000	0	57.250
CO5: <i>COLLECTIVE PROTECTION (EMD)</i>	-	7.482	7.361	4.224	-	4.224	5.652	6.034	4.513	5.000	Continuing	Continuing
DE5: <i>DECONTAMINATION SYSTEMS (EMD)</i>	-	9.031	15.244	9.984	-	9.984	16.164	10.416	14.209	17.681	Continuing	Continuing
IP5: <i>INDIVIDUAL PROTECTION (EMD)</i>	-	16.961	19.439	11.427	-	11.427	11.206	11.610	3.799	6.419	Continuing	Continuing
IS5: <i>INFORMATION SYSTEMS (EMD)</i>	-	12.277	19.960	27.323	-	27.323	24.676	25.853	26.236	28.806	Continuing	Continuing
MB5: <i>MEDICAL BIOLOGICAL DEFENSE (EMD)</i>	-	169.400	107.883	106.223	-	106.223	170.667	190.756	188.537	181.318	Continuing	Continuing
MC5: <i>MEDICAL CHEMICAL DEFENSE (EMD)</i>	-	25.966	42.911	39.504	-	39.504	44.656	25.358	11.155	4.855	Continuing	Continuing
TE5: <i>TEST & EVALUATION (EMD)</i>	-	9.901	6.053	6.119	-	6.119	6.385	6.341	6.310	6.436	Continuing	Continuing

A. Mission Description and Budget Item Justification

Operational forces have an immediate need to survive, safely operate, and sustain operations in a Chemical and Biological (CB) threat environment across the continuum of global, contingency, special operations/low intensity conflict, counternarcotics, and other high-risk missions. Operating forces have a critical need for defense against worldwide proliferation of CB warfare capabilities and for medical treatment of CB casualties. Congress directed centralized management of Department of Defense (DoD) CB Defense initiatives, both medical and non-medical. This program element supports the Engineering and Manufacturing Development (EMD) of medical and physical CB defensive equipment and materiel. Projects within BA5 are structured to consolidate Joint and Service-unique tasks within four commodity areas: contamination avoidance, individual and collective force protection, decontamination, and medical countermeasures. This consolidation provides for development and operational testing of equipment for Joint Service use and for Service-unique requirements.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program Date: February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>
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Contamination avoidance efforts under this system development program will provide U.S. forces with real-time hazard assessment capabilities. They include multi-agent point and remote chemical detection for ground, aircraft, and shipboard applications; automated warning and reporting systems; integrated radiation detection and monitoring equipment; and enhanced battlefield reconnaissance capabilities. Force protection efforts will increase protection levels while decreasing physical and psychological burdens imposed by protective equipment.

The Secretary of Defense is responsible for research, development, acquisition, and deployment of medical countermeasure equipment and materiel to prevent or mitigate the health effects of CB threats to the Armed Forces and directs strategic planning for and oversight of programs to support medical countermeasures development and acquisition for our Armed Forces personnel. The CB medical threat to the Armed Forces, in contrast with public health threats to U.S. citizens, encompasses all potential or continuing enemy actions that can render a Service Member combat ineffective. CB medical threats, because they apply as a whole to military units deployed on a specific mission and/or operations, may result in the unit being unable to complete its mission. CB medical countermeasures developed by DoD, unlike those developed to support the U.S. population, must support military commanders practical operational requirements and deployment strategies and must emphasize prevention of injury and illness and protection of the force. Preventive measures in this EMD, such as vaccines and chemical prophylaxis, conserves fighting strength, decreases the logistics burden by reducing the need for larger deployed hospital footprint and greater demand for tactical and strategic medical evacuation, and satisfy the need for greater flexibility in military planning and operations. When vaccines and other prophylactic medical countermeasures are not available, efforts on this EMD support pre-hospitalization treatment, en-route care, hospital care, and long-term clinical outcomes. Specific items in this category include CB diagnostics, and therapeutics to mitigate the consequences of biologic threats and exposure to ionizing radiation due to nuclear or radiological attacks.

The Department of Defense coordinates its efforts with the Departments of Health and Human Services to promote synergy and minimize redundancy. The Department of Defense ensures coordination by participating in the Public Health Emergency Medical Countermeasures Enterprise interagency strategic planning process ("One Portfolio"). The Department of Defense's longstanding experience and success in CB medical countermeasure research, development, acquisition, and deployment not only ensures protection of the Armed Forces, it also accelerates and improves the overall national efforts in CB medical countermeasure research, development, and acquisition because of its unique facilities, testing capabilities, and trained and experienced personnel.

The projects in this program element support efforts in the engineering and manufacturing phase of the acquisition strategy and are therefore correctly placed in Budget Activity 5.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	345.883	303.647	363.435	-	363.435
Current President's Budget	330.326	282.147	266.231	-	266.231
Total Adjustments	-15.557	-21.500	-97.204	-	-97.204
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	0.000	-21.500			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-21.771	-			
• SBIR/STTR Transfer	-4.782	-			
• Other Adjustments	10.996	-	-97.204	-	-97.204

Change Summary Explanation

Funding: FY17 - Adjustments due to underexecution and fact-of-life changes (\$37M). Other Departmental adjustments (\$12M). Combined efforts of Emerging Infectious Diseases Therapeutic program and the Hemorrhagic Fever Virus program to develop and deliver FDA approved antiviral countermeasures (\$39M).

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CA5: CONTAMINATION AVOIDANCE (EMD)	-	48.333	56.104	50.203	-	50.203	127.558	62.229	50.951	11.200	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP) of an array of reconnaissance, detection and identification equipment, and warning systems. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs. Efforts included in this project are: (1) Enhanced Maritime Biological Detection (EMBD); (2) Joint Biological Tactical Detection System (JBTDTS); (3) Next Generation Chemical Detector (NGCD); (4) Non-Traditional Agent (NTA) Defense Support; and (5) the Global Biosurveillance Technology Initiatives (GBTI).

The Enhanced Maritime Biological Detection (EMBD) program as a FY17 new start will transition a technology from the Assessment of Environmental Detection (AED) leg of the Joint USFK Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD) to a program of record for the US Navy (USN). The EMBD will address Navy detection and identification capability gaps and replace the 135 Joint Biological Point Detection Systems (JBPDs) currently fielded to the Navy. The EMBD program will complete development and testing, integration and production of a lower cost biological point detection system that will detect, collect and identify biological warfare agent aerosols. The EMBD will provide automated warning and provide a reduced sustainment cost while protecting the shipboard personnel.

The Joint Biological Tactical Detection System (JBTDTS) program will develop, integrate, test, and produce the first lightweight, low cost biological surveillance system that will detect, collect, and identify biological warfare agent aerosols. JBTDTS will provide warning through the Joint Warning And Reporting Network (JWARN) and archive sample for follow-on analyses. JBTDTS, providing near real-time local audio and visual alarm, may be employed by any Military User. JBTDTS components will be man-portable, battery-operable, and easy to employ. JBTDTS will develop a tactical common identifier using technology from the Next Generation Diagnostic System. Identifier testing will take place during EMD to evaluate technologies against requirements and find the best solution(s) for the warfighter. JBTDTS will provide notification of a hazard and enhance battle space awareness to protect and preserve the force. When networked, JBTDTS will augment existing biological detection systems to provide a theater-wide seamless array capable of biological detection, identification and warning to support time sensitive force protection decisions. The JBTDTS will develop lightweight, handheld identifiers specifically designed for environmental identification missions conducted by Special Purpose Units (SPU) for the screening and confirmation of unknown sample in the field. JBTDTS will initiate engineering and redesign studies to support the integration of components onto Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV).

The Next Generation Chemical Detector (NGCD) is several detection systems for multi phase of matter sampling, location of liquid and solids on surfaces, and vapor and aerosol monitoring. NGCD will detect and identify non-traditional agents, chemical warfare agents (CWAs), toxic industrial chemicals (TICs) in the air and on surfaces. The NGCD will provide improved NTA/CWA/TIC selectivity and sensitivity on multiple platforms as well as multiple environments. There are four capability areas, of which three; NGCD 1, NGCD 2 and NGCD 3 were awarded contracts in the Technical Maturation and Risk Reduction Phase. The fourth capability - personal chemical detection is still in technology development. These sensors will improve detection, consequence management and reconnaissance, and weapons of mass

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)
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destruction (WMD) interdiction capabilities. The scope of the project includes detection of chemical a few feet away from the detector as well as the sampling point of the detector.

The Non-Traditional Agent (NTA) Defense program supports the on-going chemical and biological (CB) defense efforts as acquisition programs address emerging threat requirements across the full spectrum of commodities. Dedicated initiatives and projects will develop and transition information, technologies, and capabilities into acquisition options and efforts (e.g. Programs of Record, Advanced Technology Demonstrations (ATD), and Accelerated Acquisition) that account for the breadth and depth of advanced, emerging, and unknown CB threats and span the full range of defense missions. The NTA Defense program will provide essential enablers such as threat understanding; operational impacts of performance trades; and comprehensive, integrated, and layered defense concepts against advanced, emerging, and unknown CB threats. The program will support a balanced portfolio which will target capabilities to reduce operational and tactical risk from technology gaps inherent from emerging threats. Additional efforts in conducting systems engineering analysis will occur in order to identify and consolidate capability knowledge gaps and prioritize required investments.

The Global Biosurveillance Technology Initiatives (GBTI) is developing a globally-distributed, fully integrated and networked, state-of-the-art analytical capability for biological threats that will enable the compression of the discovery-to-decision timeframe and provide awareness and understanding of the baseline biological threat footprint. For the first time, capabilities such as advanced characterization and genomic sequencing are being located in forward locations, bringing faster pathogen detection, improved multiplex assays and medical countermeasures to the Warfighter.

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

	FY 2015	FY 2016	FY 2017
Title: 1) EMBD FY 2017 Plans: Provide Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, and technical support for USN variant.	-	-	2.205
Title: 2) EMBD FY 2017 Plans: Initiate combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during Engineering and Manufacturing Development (EMD) Phase for USN variant.	-	-	1.123
Title: 3) EMBD FY 2017 Plans: Initiate development of Logistics Management Information (LMI) for USN variant.	-	-	0.671
Title: 4) JBTDS FY 2015 Accomplishments:	5.937	9.715	3.599

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Completed Milestone B and initiated the Engineering and Manufacturing Development (EMD) Contract (including 48 test articles at \$70,342 each, 1866 consumables at \$134 each). FY 2016 Plans: Continue the EMD Contract (including 62 test articles at approximately \$70,000 each). FY 2017 Plans: Complete the EMD Contract (including 45 test articles at \$70,342 each, 1050 consumables at \$134 each).				
Title: 5) JBTD FY 2015 Accomplishments: Initiated development and design of a tactical identifier using the BioFire Film Array identification system from Next Generation Diagnostic System (NGDS) Increment 1 program. FY 2016 Plans: Continue development and design of a tactical common identifier using the identification system down-selected from Next Generation Diagnostic System (NGDS) Increment 1 program. FY 2017 Plans: Continue and complete development and design of a tactical identifier using the BioFire Film Array identification system from NGDS Increment 1 program.		7.118	7.189	5.300
Title: 6) JBTD FY 2015 Accomplishments: Continued Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support. FY 2016 Plans: Continue Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support. FY 2017 Plans: Continue Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support.		9.723	9.794	6.032
Title: 7) JBTD FY 2015 Accomplishments:		1.520	3.080	2.140

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continued combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during Engineering and Manufacturing Development (EMD) Phase. FY 2016 Plans: Continue combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups)during Engineering and Manufacturing Development Phase. FY 2017 Plans: Continue and complete combat developer, test community and Service representation (i.e. IPT and working groups) during EMD Phase.				
Title: 8) JBTDS FY 2015 Accomplishments: Initiated developmental planning and testing to include live agent, environmental false alarm, outdoor interferent and military standard testing. FY 2016 Plans: Continue developmental planning and testing to include live agent, environmental false alarm, shipboard operations, outdoor interferent and military standard testing. FY 2017 Plans: Continue and complete developmental planning and testing to include live agent, environmental false alarm, outdoor interferent and military standard testing.		0.499	2.651	4.218
Title: 9) JBTDS FY 2015 Accomplishments: Continued sensor calibration standards effort for routine maintenance, metrology and calibration capability for detection systems. FY 2016 Plans: Continue sensor calibration standards effort for routine maintenance, metrology and calibration capability for detection systems.		1.200	0.600	-
Title: 10) JBTDS FY 2016 Plans: Initiate reliability growth model for EMD phase testing. FY 2017 Plans: Complete reliability growth model for EMD phase testing.		-	0.043	0.075
Title: 11) JBTDS		0.240	0.100	-

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Continued the verification and validation of military utility model.</p> <p>FY 2016 Plans: Complete the verification and validation of military utility model.</p>			
<p>Title: 12) JBTDS</p> <p>FY 2016 Plans: Initiate combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) for USN variant.</p>	-	0.983	-
<p>Title: 13) JBTDS</p> <p>FY 2016 Plans: Initiate developmental testing to include live agent, environmental false alarm, shipboard operations, outdoor interferent and military standard testing for USN variant.</p>	-	1.031	-
<p>Title: 14) JBTDS</p> <p>FY 2016 Plans: Initiate the Contract action (including test articles) for USN variant.</p>	-	4.972	-
<p>Title: 15) JBTDS</p> <p>FY 2016 Plans: Provide Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, and technical support for USN Variant.</p>	-	2.814	-
<p>Title: 16) JBTDS</p> <p>FY 2016 Plans: Initiate and complete testing of a surface sampler solution to meet the JBTDS requirements.</p>	-	0.350	-
<p>Title: 17) JBTDS</p> <p>FY 2015 Accomplishments: Initiate Rapid Agent Aerosol Detector (RAAD) software development and presumptive identification development in support of the JBTDS platform requirement.</p>	1.348	-	-
<p>Title: 18) JBTDS</p> <p>FY 2016 Plans:</p>	-	0.500	2.670

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Initiate engineering redesign study on the JBTDS system to meet Nuclear Biological Reconnaissance Vehicle (NBCRV) platform requirements. FY 2017 Plans: Continue engineering redesign study on the JBTDS system to meet NBCRV platform requirements.				
Title: 19) JBTDS FY 2015 Accomplishments: Conducted development of three lightweight, handheld bio-identification systems with screening assays to meet the needs of Special Purpose Units (SPUs).		6.188	-	-
Title: 20) JBTDS FY 2015 Accomplishments: Conducted engineering support of three lightweight, handheld bio-identification systems with screening assays to meet the needs of SPUs.		0.840	-	-
Title: 21) JBTDS FY 2015 Accomplishments: Conducted Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support for SPUs.		0.404	-	-
Title: 22) Next Generation Chemical Detector (NGCD) FY 2015 Accomplishments: Purchased mockups for acquisition acceleration. Awarded contract. FY 2016 Plans: Award contract FY 2017 Plans: Award a minimum of three EMD contracts. (including 20 NGCD 3 systems at \$150K each, 20 NGCD 2 systems at \$50K each and 37 NGCD 1 systems at \$15K each).		0.453	1.482	13.132
Title: 23) Next Generation Chemical Detector (NGCD) FY 2015 Accomplishments: Initiated and completed acquisition acceleration test support.		0.170	-	-
Title: 24) Next Generation Chemical Detector (NGCD)		1.625	0.462	3.695

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Continued Government Program Management and systems engineering support</p> <p>FY 2016 Plans: Continue Government Program Management and system engineering support.</p> <p>FY 2017 Plans: Continue Government Program Management. Finalize and conduct milestone B for NGCD 1, NGCD 2, and NGCD 3. Initiate EMD.</p>				
<p>Title: 25) NTA Defense - Threat Understanding/Military Utility and Supportability</p> <p>FY 2015 Accomplishments: Expanded analysis of threat understanding to additional threat classes and provided information to combat developers to ascertain technology and capability gaps in multiple mission areas. Leveraged previous work to fully characterize outputs of threat and operational phenomenology. Centralized the analysis outputs and provide enhanced understanding of CB threat presentation. Initiated planning of a front end analysis to support future Multi-Threat Multi-Commodity (MTMC) ATDs.</p> <p>FY 2016 Plans: Initiate planning for expanded threat space characterization. Continue analysis of threat understanding for further emerging classes to enable refinement of technology and capability gaps identified during mission analysis. Utilize mission analysis outputs to develop initial Military Utility Assessments (MUAs) and Table Top Exercises (TTXs) that inform requirement development.</p>		2.059	1.904	-
<p>Title: 26) NTA Defense - Systems Engineering</p> <p>FY 2015 Accomplishments: Validated baseline model for use in identifying system performance trade space prior to technology evaluation, system design or final requirements definition. Enhanced capability through expanded mission space to support detector program trade-off analyses.</p> <p>FY 2016 Plans: Execute mission modeling to identify enterprise (multi-commodity) NTA solutions to support accelerated and enduring materiel solution development.</p>		0.300	1.504	-
<p>Title: 27) NTA Defense - Test and Evaluation</p> <p>FY 2015 Accomplishments: Initiated planning for Military Utility Assessments (MUAs) and Table Top Exercises (TTXs) to inform execution of equipment field trials. Continued to utilize advanced and emerging threat test bed facilities and methodologies to assess component technologies</p>		6.689	2.123	1.174

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>(detectors, decontaminants, individual protection ensembles, etc.) for the enterprise to inform technology development strategies and support competitive prototypes and technology insertions in acquisition options and efforts (PORs, ATDs, and Accelerated Acquisition) against advanced and emerging CB threats. Supported assessments of fielded capabilities and emerging technologies against new CB threats and assists risk assessments.</p> <p>FY 2016 Plans: Continue to utilize emerging threat test bed for system/component technology evaluation against emerging and unforeseen threats, preparing inputs into Systems Engineering processes that conduct solution set analyses.</p> <p>FY 2017 Plans: Continue to utilize advanced and emerging CB threat test bed facilities and methodologies to evaluate new and emerging component technologies for the enterprise to inform and refine technology development strategies. Initiate planning for MUAs and TTXs to inform lab and field trials evaluating new and emerging component technologies.</p>				
<p>Title: 28) NTA Defense - Technology Assessments</p> <p>FY 2015 Accomplishments: Completed assessments and utilized fielded equipment characterization to identify potential NTA capabilities or respond to emerging requirements.</p>		1.268	-	-
<p>Title: 29) NTA Defense - Strategic Coordination (NTA Library)</p> <p>FY 2015 Accomplishments: Utilized DoD/CBDP guidance to synchronize acquisition strategies across interagency and international advanced and emerging threat initiatives. Expanded capabilities of the NTA Library to accommodate emerging information and upgrade for use by whole of Government. Initiated concept of Integrated Acquisition Portal (IAP) to provide critical enabling data to Systems Engineering for trade off analyses.</p> <p>FY 2016 Plans: Continue to synchronize acquisition strategies across interagency and international NTA initiatives according to DoD/CBDP guidance. Continue to update and maintain NTA Library. Initiate transition to effects manual.</p>		0.752	0.892	-
<p>Title: 30) Global Biosurveillance Technology Initiative (GBTI)</p> <p>FY 2016 Plans: Continue ongoing efforts to procure additional assays for biological warfare agents and emerging infectious diseases to support the GBTI labs previously funded under the Next Generation Diagnostic System (NGDS) within Project MB - Medical Biological Defense.</p> <p>FY 2017 Plans:</p>		-	1.277	0.834

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Continue ongoing efforts to optimize and procure additional assays for biological warfare agents and emerging infectious diseases to support the GBTI labs for demonstration and method validation purposes at GBTI stakeholder labs. These activities leverage the efforts of other partner OGAs to include DTRA JSTO and CDC to ensure that all aspects of the CBD portfolio are captured. These assays, now multi-plexed, allow lab staff to test one sample against many targets, compresses discovery to decision timeline for decision makers, and, for the first time, put advanced characterization and genomic sequencing tools in labs at or near the sample collection site, as opposed to relying solely on reach back support in the United States.</p>			
<p>Title: 31) GBTI</p> <p>FY 2016 Plans: Continue ongoing efforts for bioinformatics integration for Global Biosurveillance Technology Initiative (GBTI) previously funded under the Next Generation Diagnostic System (NGDS) within Project MB - Medical Biological Defense.</p> <p>FY 2017 Plans: Continue ongoing efforts for bioinformatics integration and demonstration for Global Biosurveillance Technology Initiative (GBTI). The Bioinformatics effort, in conjunction with whole genomic sequencing, provides a robust and unique capability to the Warfighter, especially is OCONUS and geographically disparate areas. The next generation sequencing provides for a screening capability for pathogens for which there are no assays, provides a mechanism to determine when pathogens are no longer detected by assays, and provides analytical tools that are rapidly changing with regard to analysis capabilities. The utilization of whole genomic sequencing will assist in determining existing network limitations and capabilities for data sharing.</p>	-	0.688	0.667
<p>Title: 32) GBTI</p> <p>FY 2016 Plans: Continue ongoing efforts for three open architecture analytical platforms to be fielded and technology insertion of additional capabilities in support the GBTI labs previously funded under the Next Generation Diagnostic System (NGDS) within Project MB - Medical Biological Defense.</p> <p>FY 2017 Plans: Continue ongoing efforts for three open architecture analytical platforms for sustainment and demonstration of standardized equipment suite and procedures in support the GBTI labs. Operational assessment projects are the GBTI laboratories include metagenomic pathogen discovery, evaluation of GBTI optimized multi-plex assay panels, and high throughput surveillance projects with potential for regional or global impact within context of local health issues. The information gleaned from the operational assessments will assess the baseline of each laboratory, identify and address the gaps, and determining the impact of standardized equipment and operating procedures between laboratories. The Warfighter has a well-trained laboratory staff at 25</p>	-	0.939	2.668

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
locations worldwide that can assist in conducting high throughput sample assessments and providing vital information to decision makers in a more concise timeframe, than previously when CONUS reachback support was required.			
Title: 33) SBIR/STTR	-	1.011	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	48.333	56.104	50.203

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA4: CONTAMINATION AVOIDANCE (ACD&P)	39.930	60.192	42.308	-	42.308	8.238	9.679	12.802	17.381	Continuing	Continuing
• JF0100: JOINT CHEMICAL AGENT DETECTOR (JCAD)	36.924	24.834	7.547	-	7.547	0.000	0.000	0.000	0.000	0	69.305
• JF0104: NEXT GEN CHEMICAL DETECTOR (NGCD)	0.000	1.000	2.378	-	2.378	1.000	17.208	17.204	44.155	Continuing	Continuing
• MC0100: JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)	3.600	3.600	1.956	-	1.956	0.000	0.000	10.000	35.000	Continuing	Continuing
• MC0101: CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)	132.121	108.704	90.094	-	90.094	80.633	94.074	60.425	41.977	Continuing	Continuing
• MX0001: JOINT BIO TACTICAL DETECTION SYSTEM (JBTD)	0.000	0.000	0.000	-	0.000	5.000	61.559	108.751	98.248	Continuing	Continuing

Remarks

D. Acquisition Strategy

ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)

The Enhanced Maritime Biological Detection (EMBD) program will use a streamlined acquisition strategy. This approach is based on the mature technology that will transition from the Assessment of Environmental Detection (AED) leg of the Joint USFK Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD) to a program of record for the US Navy. The EMBD program is expected to transition to a pre-MS C upon selection from AED and will make

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maximum use of the testing that has been done to field the replacement for the 135 Joint Biological Point Detection Systems (JBPDS) in the Navy. The EMBD program will coordinate with the JBTDS, Next Generation Diagnostic System (NGDS) and Common Analytical Laboratory System (CALs) to share information and leverage potential collector and identification technologies. A Sole Source contract is anticipated to be necessary to obtain the selected technology and meet expected fielding schedule.

JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)

The JBTDS program will use an evolutionary acquisition strategy. Under this approach, capability is developed based on current technologies, recognizing up front the need for potential technology insertion as technology advances to provide better and more cost effective capabilities. Technology insertions will provide militarily useful and supportable operational capabilities that can be developed, produced, deployed, and sustained. JBTDS will make maximum use of commercial off-the-shelf (COTS) and Government off-the-shelf (GOTS) technology. The JBTDS program is coordinating with Common Analytical Laboratory System and Next Generation Diagnostic System (NGDS) to share information and leverage potential common identification technology solutions. JBTDS utilized NGDS contract vehicle to research and develop a JBTDS tactical variant identifier. Full and open competition was utilized at MS B for the Engineering and Manufacturing Development (EMD) contract with options for Low Rate Initial Production and Full Rate Production. Chemring Detection Systems was awarded the EMD contract on 2 April 2015. The JBTDS will address legacy SPU requirements gaps/deficiencies where they exist through the streamlined development and optimization of COTS/GOTS systems; awarded 3 sole-source contracts in July 2015 under the National Security exemption to full and open competition.

NEXT GENERATION CHEMICAL DETECTOR (NGCD)

System Engineering and market survey results suggested the most effective way to develop NGCD was to divide the program into four unique capabilities to detect and identify the full spectrum of chemical compounds in all phases of matter. The Government awarded ten (10) contracts in June 2014 to support Technology Maturation Risk Reduction (TMRR) acquisition phase activities in three of the four capability areas: three (3) contracts for the NGCD 1 capability, four (4) contracts for the NGCD 2 capability, and three (3) contracts for the NGCD 3 capability. Full and Open competition will be used to award Engineering and Manufacturing Development (EMD) contracts with production options for each capability at Milestone B.

NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)

The Non-Traditional Agent (NTA) Defense program supports the Chemical Biological Defense Program (CBDP) to develop countermeasures for all emerging threats across all commodities. The NTA Defense program consists of a number of projects and initiatives through full and open competition contract actions that enhance the CBDP's portfolio and mission and feed directly into Programs of Record, Advanced Technology Demonstrations, and Acquisition Programs. NTA Defense efforts: (1) evaluate COTS and GOTS technologies and systems, (2) conduct demonstrations and experiments, (3) integrates Intelligence Community threat analysis, operational risk analysis with systems technical performance to identify technologies or systems that can be rapidly developed, and deployed, and/or transitioned to an Acquisition Program for technology insertion or derive an Engineering Change Proposal (ECP) to a fielded system, and (4) provides coordination of DoD, interagency, international NTA projects. These initiatives allow the CBDP to mitigate risk against emerging threats and better prepare the warfighter to deal with technological surprise across the full range of military missions.

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GLOBAL BIO TECH INITIATIVE (GBTI)

Global Biosurveillance Technology Initiative (GBTI) will use an evolutionary acquisition strategy. Under this approach capability is developed and fielded based on current technologies and user needs. Technology insertions will provide state-of-the art analytical capability for biological threats. GBTI will make maximum use of Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) technology.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - JBTDS - HW S - EMD Contract Award	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	0.000	5.937	Mar 2015	9.714	Dec 2015	3.599		-		3.599	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - Tactical Common Identifier	C/CPFF	BioFire Dx : Salt Lake City, UT	0.000	7.118	Mar 2015	7.189	Mar 2016	5.300	Mar 2017	-		5.300	Continuing	Continuing	0.000
JBTDS - HW C - USN Variant Contract Action	Various	TBD : TBD	0.000	0.000		4.972	Jun 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - RAAD Development	FFRDC	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.000	1.348	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - NBCRV Platform Integration	MIPR	TBD : TBD	0.000	0.000		0.500	Mar 2016	2.670	Mar 2017	-		2.670	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - SPU Candidate 1	SS/FP	Biomeme : Philadelphia, PA	0.000	1.660	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - SPU Candidate 2	SS/CPFF	Ibis : Carlsbad, CA	0.000	2.533	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - HW C - SPU Candidate 3	SS/FFP	TBD : TBD	0.000	1.995	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype Build	C/CPFF	Smiths Detection : Edgewood, MD	0.000	0.453	Dec 2014	1.482	Dec 2015	13.132	Dec 2016	-		13.132	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Fielded Equipment Characterization	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.376	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Fielded Equipment Characterization #2	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.931	0.832	Jun 2015	0.525	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Systems Engineering	C/CPFF	Various : TBD	0.000	0.000		0.950	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Strategic Coordination	MIPR	Various : TBD	0.899	0.415	Jun 2015	0.400	Mar 2015	0.000		-		0.000	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTA DEFENSE - HW S - Accelerated Acquisition	FFRDC	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.000	2.360	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Fielded Equipment Characterization #3	C/CPFF	Defense Logistics Agency : Philadelphia, PA	0.000	1.128	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Accelerated Acquisition #2	C/CPFF	Northrop Grumman Corp : Reston, VA	0.000	2.323	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Fielded Equipment Characterization #4	MIPR	Various : TBD	0.000	0.002	Jun 2015	0.000		0.645	Mar 2017	-		0.645	Continuing	Continuing	0.000
GBTI - HW S - GBTI - CRP Assay Optimization	MIPR	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		1.277	Dec 2015	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
Subtotal			1.830	28.104		27.385		26.346		-		26.346	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMBD - ES S - OTA/OGA Service Representation USN Variant	MIPR	Various : TBD	0.000	0.000		0.000		1.123	Mar 2017	-		1.123	Continuing	Continuing	0.000
EMBD - ILS S - OTA/OGA Service Representation USN Variant	MIPR	Various : TBD	0.000	0.000		0.000		0.671	Mar 2017	-		0.671	Continuing	Continuing	0.000
JBTDS - JBTDS - ES S - OTA/OGA Service Representation	MIPR	Various : TBD	1.553	1.520	Mar 2015	3.081	Mar 2016	2.140	Mar 2017	-		2.140	Continuing	Continuing	0.000

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBTDS - JBTDS - ES S - Biosensor Calibration Effort	MIPR	Naval Research Lab (NRL) : Washington, DC	0.475	1.200	Mar 2015	0.600	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - ES S - OTA/ OGA Representation USN Variant	MIPR	Various : TBD	0.000	0.000		0.983	Jun 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - ES C - SPU System Integration	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.500	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - ES C - SPU Biological warfare support	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.340	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - ES S - Analysis and Evaluation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.054	0.129	Mar 2015	0.054	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - TD/D C - Integrated Product Team (IPT) Support	MIPR	Various : TBD	1.108	0.900	Mar 2015	1.008	Mar 2016	0.124	Mar 2017	-		0.124	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		1.011	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			3.190	4.589		6.737		4.058		-		4.058	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBTDS - JBTDS - DTE S - Developmental Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.499	Mar 2015	1.493	Mar 2016	4.118	Mar 2017	-		4.118	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBTDS - JBTDS - DTE S - V&V of JBTDS Military Utility Model	FFRDC	Institute for Defense Analysis (IDA) : Alexandria, VA	0.224	0.240	Jun 2015	0.100	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - JBTDS - OTHT S - Reliability growth model	MIPR	United States Army Materiel Systems Analysis Activity(AMSAA) : Aberdeen Proving Ground, MD	0.000	0.000		0.043	Mar 2016	0.075	Mar 2017	-		0.075	Continuing	Continuing	0.000
JBTDS - JBTDS - DTE S - Development Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.858	Mar 2016	0.100	Jun 2017	-		0.100	Continuing	Continuing	0.000
JBTDS - JBTDS - DTE S - Development Testing #2	C/FP	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.000	0.000		0.300	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE S - Development Testing USN Variant	MIPR	Various : TBD	0.000	0.000		1.031	Jun 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - OTHT SB - Surface Sampling	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.350	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - DTE S - Production Qualification Test	MIPR	Various : TBD	0.000	0.170	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Developmental Test and Evaluation	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.728	0.000	Mar 2015	0.714	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Developmental Test and Evaluation #2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.280	Mar 2015	0.536	Mar 2016	0.300	Dec 2016	-		0.300	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NTA DEFENSE - DTE S - Analysis and Evaluation	FFRDC	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	1.545	0.000	Mar 2015	0.950	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Analysis and Evaluation #2	C/CPFF	Defense Logistics Agency : Philadelphia, PA	0.000	0.919	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Analysis and Evaluation #3	MIPR	Various : TBD	0.000	0.049		0.000		0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			3.497	2.157		6.375		4.593		-		4.593	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMBD - PM/MS S - PM/ System Engineering Support USN Variant	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		2.205	Dec 2016	-		2.205	Continuing	Continuing	0.000
JBTDS - JBTDS - PM/ MS SB - Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	2.996	9.723	Dec 2014	9.794	Dec 2015	6.032	Dec 2016	-		6.032	Continuing	Continuing	0.000
JBTDS - PM/MS C - Program Management and System Engineering Support USN Variant	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		2.814	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBTDS - JBTDS - PM/MS SB - Program Management and System Engineering Support SPU	MIPR	Fort Belvoir Garrison : Fort Belvoir, VA	0.000	0.404	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS C - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	1.625	Mar 2015	0.462	Dec 2015	3.695	Dec 2016	-		3.695	Continuing	Continuing	0.000
NTA DEFENSE - PM/MS S - Program Management Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	2.627	1.731	Mar 2015	0.910	Mar 2016	0.105	Dec 2016	-		0.105	Continuing	Continuing	0.000
GBTI - PM/MS C - GBTI - Laboratory Operational Demonstrations	MIPR	Various : TBD	0.000	0.000		0.939	Dec 2015	2.369	Dec 2016	-		2.369	Continuing	Continuing	0.000
GBTI - PM/MS C - Bioinformatics	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.688	Jan 2016	0.800	Dec 2016	-		0.800	Continuing	Continuing	0.000
Subtotal			5.623	13.483		15.607		15.206		-		15.206	-	-	0.000

Remarks
Also includes the Government Integrated Product Development Team

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	14.140	48.333	56.104	50.203	-	50.203	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMBD - JUPITR Live Agent Testing																												
EMBD - DRAFT CPD																												
EMBD - COA Decision Point																												
EMBD - LMI Development																												
EMBD - Contract Award																												
EMBD - TEMP																												
EMBD - Operational Assessment																												
EMBD - MS C																												
EMBD - IOT&E																												
EMBD - Contract Option Award																												
EMBD - FRP Decision																												
JBTDS - MS B Decision																												
JBTDS - USN Variant Development																												
JBTDS - EMD Contract Award																												
JBTDS - PDR																												
JBTDS - CDR																												
JBTDS - DT																												
JBTDS - Operational Assessment																												
JBTDS - Milestone C																												
JBTDS - PVT																												
JBTDS - OT																												
JBTDS - FRP Decision																												
JBTDS - IOC																												
NGCD - Acceleration																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NGCD - Milestone B																												
NGCD - EMD Contract																												
NGCD - Milestone C																												
NGCD - LRIP																												
NGCD - FRP																												
NTA DEFENSE - Threat Understanding																												
NTA DEFENSE - Systems Engineering																												
NTA DEFENSE - Test and Evaluation																												
NTA DEFENSE - Technology Assessments GOTS																												
NTA DEFENSE - Strategic Coordination (NTA Library)																												
GBTI - Equipment Sets Installation																												
GBTI - Assays and reagents																												
GBTI - Training/On-Site Support																												
GBTI - Sustainment																												
GBTI - Integration with Web-Based Enterprise Environments																												
GBTI - Evaluate Transition Options																												
GBTI - Complete Full System Assessment																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMBD - JUPITR Live Agent Testing	1	2016	2	2016
EMBD - DRAFT CPD	3	2016	3	2016
EMBD - COA Decision Point	4	2016	4	2016
EMBD - LMI Development	1	2017	1	2018
EMBD - Contract Award	2	2017	2	2017
EMBD - TEMP	2	2017	2	2017
EMBD - Operational Assessment	3	2017	4	2017
EMBD - MS C	2	2018	2	2018
EMBD - IOT&E	3	2018	1	2019
EMBD - Contract Option Award	2	2019	2	2019
EMBD - FRP Decision	2	2019	2	2019
JBTDS - MS B Decision	1	2015	1	2015
JBTDS - USN Variant Development	1	2015	4	2015
JBTDS - EMD Contract Award	3	2015	3	2015
JBTDS - PDR	3	2015	3	2015
JBTDS - CDR	3	2016	3	2016
JBTDS - DT	1	2016	2	2017
JBTDS - Operational Assessment	4	2017	4	2017
JBTDS - Milestone C	2	2018	2	2018
JBTDS - PVT	3	2018	1	2019
JBTDS - OT	2	2019	3	2019
JBTDS - FRP Decision	2	2020	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / CONTAMINATION AVOIDANCE (EMD)
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Events	Start		End	
	Quarter	Year	Quarter	Year
JBTDS - IOC	4	2020	4	2020
NGCD - Acceleration	2	2015	4	2017
NGCD - Milestone B	3	2017	3	2017
NGCD - EMD Contract	3	2017	3	2019
NGCD - Milestone C	3	2019	3	2019
NGCD - LRIP	3	2019	1	2021
NGCD - FRP	1	2021	1	2021
NTA DEFENSE - Threat Understanding	1	2015	2	2016
NTA DEFENSE - Systems Engineering	1	2015	4	2016
NTA DEFENSE - Test and Evaluation	1	2015	4	2021
NTA DEFENSE - Technology Assessments GOTS	1	2015	4	2021
NTA DEFENSE - Strategic Coordination (NTA Library)	1	2015	4	2016
GBTI - Equipment Sets Installation	1	2015	1	2016
GBTI - Assays and reagents	1	2015	3	2017
GBTI - Training/On-Site Support	1	2015	4	2018
GBTI - Sustainment	1	2015	4	2020
GBTI - Integration with Web-Based Enterprise Environments	3	2015	2	2018
GBTI - Evaluate Transition Options	1	2019	2	2019
GBTI - Complete Full System Assessment	1	2019	1	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CM5: HOMELAND DEFENSE (EMD)	-	30.975	7.192	11.224	-	11.224	5.323	2.536	0.000	0.000	0	57.250
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Analytical Laboratory System capability (CALs) will be modular, scalable and adaptable to a variety of concept of operations (CONOPS) and environmental conditions. Currently, fielded systems have been designed and fielded independently by the services with the intent of meeting a specific unit requirement. As a result, multiple mobile lab configurations exist with differing sustainment tails and lacking in commonality. The CALs will provide common analytical capabilities packaged to meet the specific CONOPS and mission of the gaining unit. The analytical capabilities will detect and identify Chemical Warfare Agents (CWAs), Toxic Industrial Chemicals (TICs), Toxic Industrial Materials (TIMs) and Biological Warfare Agents (BWAs). Users of the system will include the National Guard Bureau Civil Support Teams, the Army 20th Support Command, the Army Medical Laboratory, the Air Force, the Marine Corps, and the Navy.

There are three variants of CALs:

Field Confirmatory Integrated System (FC-IS) - NGB and Marine Corp

-Integrates CBR systems into a common make / model 20-foot International Standard Organization (ISO) container. The container will be integrated onto the International Durastar vehicle to support employment.

Theater Validation Integrated System (TV-IS) - Army

-Similar to the FC-IS but provides a higher level of confidence in analytical results through the use of orthogonal (complimentary) technologies and an expanded analytical suite. This system employs multiple standardized ISO containers, which will be integrated onto two Family of Medium Tactical Vehicles (FMTV) and one trailer, to support the needed additional laboratory space.

Field Confirmatory Analytical Capability Sets (FC-ACS) - All Services including NGB

-A palletized / transportable equipment subsets that allows them to be loaded into transport cases and palletized. Enables the users to receive the Chemical, Biological and Radiological (CBR) subsystems that meet their specific mission profiles.

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

	FY 2015	FY 2016	FY 2017
Title: 1) CALS - Subsystem Component Test and Evaluation	6.127	2.930	-
FY 2015 Accomplishments: Initiated EMD sub-system DT/OT.			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Complete EMD sub-system DT/OT in preparation for Milestone C.			
<p>Title: 2) CALS - System Level Prototype Variant Development and Manufacturing</p> <p>FY 2015 Accomplishments: Initiated the procurement of System Level variant prototypes ensuring integration and connectivity between modules as a general system layout. Purchased parts materials, fabrication, processing, subassembly, final assembly, reworking modification, and installation of parts and equipment, power plants, electronic equipment, other items (including Government-Furnished Equipment [GFE]), and the proving of such equipment and instruments for the specified system prototype (Module).</p> <p>FY 2017 Plans: Complete engineering changes and refurbishment of variant prototypes ensuring integration and connectivity between modules as a general system layout.</p>	20.028	-	3.648
<p>Title: 3) CALS - System Level Test and Evaluation</p> <p>FY 2016 Plans: Conduct System Level Developmental Test (DT), Logistics Demonstration and contract verification testing for field confirmatory and theater validation variants.</p> <p>FY 2017 Plans: Continue System Level Developmental Test (DT), Logistics Demonstration and contract verification testing for field confirmatory and theater validation variants.</p>	-	0.150	3.182
<p>Title: 4) CALS - System Integration Laboratory</p> <p>FY 2015 Accomplishments: Continued system integration laboratory analysis risk reduction and initiated activities to incorporate analysis of variant system configurations, capabilities, engineering controls.</p> <p>FY 2017 Plans: Continue system integration laboratory analysis risk reduction and activities to incorporate analysis of variant system configurations, capabilities, engineering controls, information assurance and DIACAP requirements.</p>	0.561	-	0.400
<p>Title: 5) CALS - Safety Release Internal Review Board</p> <p>FY 2016 Plans: Initiate the process for obtaining safety release for all CALS variants in preparation for Logistics Demonstration. Safety release for all equipment is required prior to utilizing active duty personnel for testing activities.</p> <p>FY 2017 Plans:</p>	-	0.000	0.182

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue the process for obtaining safety release for all CALS variants in preparation for Logistics Demonstration. Safety release for all equipment is required prior to utilizing active duty personnel for testing activities.			
Title: 6) CALS - System Engineering and Program Management	4.259	3.800	3.812
FY 2015 Accomplishments: Continued System and Program Management Support to provide management and engineering, quality assurance and design support in preparation of Critical Design Review, manufacture of prototypes, and testing.			
FY 2016 Plans: Continue System and Program Management Support to provide management and engineering, quality assurance and design support in preparation of Critical Design Review, manufacture of prototypes, and testing.			
FY 2017 Plans: Continue System and Program Management Support to provide management and engineering, quality assurance and design support in preparation of Critical Design Review, manufacture of prototypes, and testing.			
Title: 7) SBIR/STTR	-	0.312	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	30.975	7.192	11.224

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• JS0004: WMD - CIVIL SUPPORT TEAMS (WMD CST)	13.292	5.069	0.000	-	0.000	0.000	0.000	0.000	0.000	0	18.361
• JS0005: COMMON ANALYTICAL LABORATORY SYSTEM (CALS)	0.000	0.000	23.100	-	23.100	50.801	70.139	70.898	66.417	Continuing	Continuing

Remarks

D. Acquisition Strategy

COMMON ANALYTICAL LABORATORY SYSTEM (CALS)

The Common Analytical Laboratory System (CALS) will be developed using an Incremental approach, leveraging both Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) analytical components to support the identification of Chemical, Biological, Radiological and Non-traditional agent materials in

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 5	PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	CM5 / <i>HOMELAND DEFENSE (EMD)</i>

environmental samples technology. The (CALs) program is designed to provide an affordable, modular, scalable and sustainable field analytic capability that can be readily transported to meet the mission profile and requirements of the gaining organization. Increment 1 will consist of (3) variants which will be fielded, in accordance with mission need, to components of the Air Force, Army, Marines, Navy and National Guard Bureau requiring CBRN field confirmatory analytical detection capability. Post Milestone B (FY15), a hybrid contract (CPIF / FPI / FFP) was awarded to develop, design and build these system variant prototypes in order to conduct developmental test (DT) and evaluation. The Field Confirmatory Analytical Capability Set (FC ACS) will enter DT first and is expected to reach an early Milestone C - Low Rate Initial Production (LRIP) (FY17) followed by a Full Rate Production (FRP) Decision prior to the Milestone C (LRIP) (FY18) and (FRP) Decision for the FC and TV Integrated Systems. After each Milestone C, contracts will be awarded to produce the (3) variants of the Common Analytical Laboratory System using Fixed Price (FP) Contract vehicles.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CALS - HW S Engineering and Planning	Various	Various : TBD	0.000	0.540	Mar 2015	0.000		0.000		-		0.000	0.000	0.540	0.000
CALS - HW S Prototype System Manufacturing	C/CPIF	Battelle Memorial Institute : Columbus, OH	4.568	20.028	Apr 2015	0.000		3.648	Jan 2017	-		3.648	0.000	28.244	0.000
CALS - HW S - NGDS Tactical Variant Alpha Prototype	C/CPFF	BioFire Dx : Salt Lake City, UT	0.000	1.501	Sep 2015	0.000		0.000		-		0.000	0.000	1.501	0.000
Subtotal			4.568	22.069		0.000		3.648		-		3.648	0.000	30.285	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CALS - ES S - CALS - Engineering Support System	C/FFP	Various : TBD	2.574	2.269	Mar 2015	2.930	Feb 2016	2.377	Feb 2017	-		2.377	0.000	10.150	0.000
CALS - ES S - System Integration Laboratory Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.375	0.561	Mar 2015	0.000		0.400	Jan 2017	-		0.400	0.000	1.336	0.000
CALS - TD/D S - CALS - Safety Internal Review Board	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.182	Mar 2017	-		0.182	0.000	0.182	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.312	Dec 2016	0.000		-		0.000	0.000	0.312	0.000
Subtotal			2.949	2.830		3.242		2.959		-		2.959	0.000	11.980	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CALS - DTE SB - Subsystem Prototype/ Subsystem DT/OT	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	4.626	Mar 2015	0.000		0.000		-		0.000	0.000	4.626	0.000
CALS - DTE S - System DT and LOGDEMO	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.000		3.182	Feb 2017	-		3.182	0.000	3.182	0.000
CALS - OTHT C - Operation Test Agencies	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.150	Jan 2016	0.000		-		0.000	0.000	0.150	0.000
Subtotal			0.000	4.626		0.150		3.182		-		3.182	0.000	7.958	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CALS - PM/MS HW - Program Office - Planning and Programming	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.203	1.450	Mar 2015	3.800	Mar 2016	1.435	Mar 2017	-		1.435	0.000	7.888	0.000
Subtotal			1.203	1.450		3.800		1.435		-		1.435	0.000	7.888	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.720	30.975	7.192	11.224	-	11.224	0.000	58.111	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CALS - Milestone B	■																											
CALS - Critical Design Review - (FC ACS, FC IS, TV IS)		■	■	■	■	■	■	■																				
CALS - Developmental Test - (FC ACS)				■	■	■	■	■																				
CALS - System Verification Review - (FC ACS)					■	■	■	■																				
CALS - Functional Configuration Audit (FC ACS)					■	■	■	■																				
CALS - Log Demo - (FC ACS)						■	■	■																				
CALS - Milestone C - (FC ACS)								■	■	■	■	■																
CALS - LRIP - (FC ACS)										■	■	■																
CALS - Operation Test - (FC ACS)										■	■	■																
CALS - Full Rate Production - (FC ACS)													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
CALS - Developmental Test - (FC IS)									■	■	■	■																
CALS - System Verification Review - (FC IS)													■	■	■	■												
CALS - Functional Configuration Audit - (FC IS)													■	■	■	■												
CALS - Log Demo - (FC IS)													■	■	■	■												
CALS - Milestone C - (FC IS)																■	■	■	■	■								
CALS - LRIP - (FC IS)																	■	■	■	■								
CALS - Operational Test - (FC IS)																	■	■	■	■								
CALS - Full Rate Production - (FC IS)																					■	■	■	■	■	■	■	■
CALS - Developmental Test - (TV IS)									■	■	■	■																
CALS - System Verification Review - (TV IS)													■	■	■	■												
CALS - Functional Configuration Audit - (TV IS)													■	■	■	■												
CALS - Log Demo - (TV IS)													■	■	■	■												
CALS - Milestone C - (TV IS)																■	■	■	■	■								

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CALS - LRIP - (TV IS)																												
CALS - Operational Test - (TV IS)																												
CALS - Full Rate Production - (TV IS)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CM5 / HOMELAND DEFENSE (EMD)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CALS - Milestone B	2	2015	2	2015
CALS - Critical Design Review - (FC ACS, FC IS, TV IS)	3	2015	2	2016
CALS - Developmental Test - (FC ACS)	1	2016	2	2016
CALS - System Verification Review - (FC ACS)	2	2016	2	2016
CALS - Functional Configuration Audit (FC ACS)	2	2016	2	2016
CALS - Log Demo - (FC ACS)	3	2016	3	2016
CALS - Milestone C - (FC ACS)	1	2017	1	2017
CALS - LRIP - (FC ACS)	3	2017	3	2017
CALS - Operation Test - (FC ACS)	3	2017	4	2017
CALS - Full Rate Production - (FC ACS)	2	2018	4	2020
CALS - Developmental Test - (FC IS)	1	2017	1	2018
CALS - System Verification Review - (FC IS)	2	2018	2	2018
CALS - Functional Configuration Audit - (FC IS)	2	2018	2	2018
CALS - Log Demo - (FC IS)	2	2018	3	2018
CALS - Milestone C - (FC IS)	4	2018	4	2018
CALS - LRIP - (FC IS)	2	2019	2	2019
CALS - Operational Test - (FC IS)	2	2019	3	2019
CALS - Full Rate Production - (FC IS)	4	2019	4	2021
CALS - Developmental Test - (TV IS)	2	2017	1	2018
CALS - System Verification Review - (TV IS)	2	2018	2	2018
CALS - Functional Configuration Audit - (TV IS)	2	2018	2	2018
CALS - Log Demo - (TV IS)	2	2018	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CM5 / <i>HOMELAND DEFENSE (EMD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
CALS - Milestone C - (TV IS)	4	2018	4	2018
CALS - LRIP - (TV IS)	2	2019	2	2019
CALS - Operational Test - (TV IS)	2	2019	3	2019
CALS - Full Rate Production - (TV IS)	4	2019	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CO5: COLLECTIVE PROTECTION (EMD)	-	7.482	7.361	4.224	-	4.224	5.652	6.034	4.513	5.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP) of Joint Service Chemical, Biological, and Radiological (CBR) Collective Protection (CP) systems that are smaller, lighter, less costly to produce and maintain, and more logistically supportable enabling mission accomplishment in CBR environments. CP systems can be installed on any type of platform, such as, hard and soft shelters, vehicles, ships, aircraft, and buildings. CP systems provide spaces safe from the effects of CBR contamination. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting Concept of Operations (CONOPS) and Tactics, Techniques and Procedures (TTPs).

The system included in this project is the Joint Expeditionary Collective Protection (JECp).

JECp provides the Joint Expeditionary Forces a CP capability which is lightweight, compact, modular, and affordable. A family of systems, developed in two phases, that will allow the application of CP to transportable soft-side shelters, enclosed spaces of opportunity, and in remote austere locations as a standalone resource. Phase one includes standalone Collective protection systems, kits to provide existing host platforms and structures with CBRN protection. Phase two includes kits to provide other host platforms and structures that were not explicitly designed in phase one. JECp will be capable of protecting personnel groups of varying size, unencumbered by Individual Protective Equipment (IPE), from the effects of CB agents, Toxic Industrial Materials (TIMs), radiological particles, heat, dust, and sand. The employment of JECp is a strategic deterrence against enemy use of CBR agents or TIMs, and will reduce the need for personnel and equipment decontamination.

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

	FY 2015	FY 2016	FY 2017
Title: 1) JECp - Phase One Low Rate Initial Production (LRIP)	3.078	4.842	-
Description: Low rate initial production contract events.			
FY 2015 Accomplishments: Continued to develop level III drawing package, technical data package, technical manuals, training package and other required logistic support products.			
FY 2016 Plans: Finalize technical manuals, training package and all logistic support products in preparation for Full Rate Production (FRP)/ material release decision. Finalize level III drawing package. Conduct physical configuration audit and FRP manufacturing readiness assessment. Prepare for FRP.			
Title: 2) JECp - Phase One Developmental and Operational Testing	4.404	2.386	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Logistics demonstration, developmental and operational test events.</p> <p>FY 2015 Accomplishments: Conducted a combined DT/ MOT&E I field chemical simulant challenge event on LRIP systems. Completed Government system level DT on LRIP systems. Conducted Logistics Demonstration.</p> <p>FY 2016 Plans: Conduct MOT&E II without a field chemical simulant challenge to test the operational capabilities of the system to support service specific missions.</p>			
<p>Title: 3) JECF - Phase Two System Development and Demonstration</p> <p>Description: Phase two system development and demonstration events.</p> <p>FY 2017 Plans: Generate Engineering Change Proposal(s) and begin design and development of Phase 2 tent kits to address emerging service requirements for collective protection to new host platforms. Effort will include prototyping, identifying and beginning changes to logistic support products and beginning update of the Govt owned Tech Data Package.</p>	-	-	4.224
<p>Title: 4) SBIR/STTR</p> <p>FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.133	-
Accomplishments/Planned Programs Subtotals	7.482	7.361	4.224

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• JP1111: JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECF)	14.624	5.864	12.449	-	12.449	14.037	26.020	25.418	22.876	Continuing	Continuing

Remarks

D. Acquisition Strategy

JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECF)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program Date: February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)
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Strategy based on evolutionary development, based on a family of systems approach. After MS B, awarded competitive Cost Plus Incentive Fee (CPIF) contract to Science Applications International Corporation (now Leidos) in 2008 to build prototypes subjected to robust engineering developmental testing and Operational Assessment during the Engineering and Manufacturing Development (EMD) phase. After MS C, awarded a Firm Fixed Price (FFP) option to Leidos in September 2013 for Low Rate Initial Production (LRIP) systems to support formal Developmental Testing (DT) and Multi-Service Operational Test & Evaluation (MOT&E) events. In addition, a Fixed Price Incentive Firm Target (FPIF) option was awarded to Leidos in January 2014 to perform non-recurring engineering (NRE) and logistic product development associated with the LRIP system configurations. A post MS C Milestone Decision Authority Acquisition Decision Memorandum, dated March 2014, separated the program into two phases. Phase two systems will be developed as engineering changes to phase one systems. A business case analysis (BCA) will be conducted to determine the best strategy for full rate production. Following a successful Full Rate Production (FRP) decision for phase one systems implement recommendations from the BCA. Phase two systems will undergo limited developmental and operational testing and then pursue a MS C full rate production decision. BA7 funding develops incremental improvements to fielded systems.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - HW S - Non-recurring Engineering	C/FFP	Leidos : Abingdon, MD	1.834	1.578	Nov 2014	1.049	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
JECP - HW S - Phase Two System Prototype Development	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.000	0.000		0.000		0.728	Nov 2016	-		0.728	Continuing	Continuing	0.000
JECP - HW S - Phase Two Systems Prototype Development	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.194	Nov 2016	-		0.194	Continuing	Continuing	0.000
Subtotal			1.834	1.578		1.049		0.922		-		0.922	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - ES S - Systems Engineering Oversight	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.681	0.340	Nov 2014	0.742	Dec 2015	0.318	Nov 2016	-		0.318	Continuing	Continuing	0.000
JECP - ES S - Systems Engineering IPT	MIPR	Various : TBD	6.100	0.502	Dec 2014	0.796	Dec 2015	0.422	Nov 2016	-		0.422	Continuing	Continuing	0.000
JECP - ILS S - Integrated Logistics IPT	MIPR	Various : TBD	3.819	0.708	Dec 2014	0.599	Dec 2015	1.207	Nov 2016	-		1.207	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.133	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			10.600	1.550		2.270		1.947		-		1.947	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - OTHT SB - Test & Evaluation IPT	MIPR	Various : TBD	6.286	0.525	Nov 2014	0.584	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
JECP - DTE S - Low Rate Initial Production Units Production Verification Testing	MIPR	Various : TBD	2.390	0.752	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JECP - OTE S - Low Rate Initial Production Multi-Service Operational Testing	MIPR	Various : TBD	0.403	1.931	Dec 2014	1.802	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
JECP - DTE S - Phase Two Systems Production Verification Testing	MIPR	Various : TBD	0.000	0.000		0.000		0.500	Nov 2016	-		0.500	Continuing	Continuing	0.000
Subtotal			9.079	3.208		2.386		0.500		-		0.500	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - PM/MS S - Program Management Support	MIPR	Various : TBD	8.324	1.146	Dec 2014	1.656	Dec 2015	0.855	Nov 2016	-		0.855	Continuing	Continuing	0.000
Subtotal			8.324	1.146		1.656		0.855		-		0.855	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		29.837	7.482	7.361	4.224	4.224	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CO5 / COLLECTIVE PROTECTION (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JECP - Phase One Production Verification Testing (PVT)	██████████																											
JECP - Phase One Multi-service Operational Test and Evaluation I				██████████																								
JECP - Phase One Multi-service Operational Test and Evaluation II							██████████																					
JECP - Phase One Full Rate Production Decision Review											██████████																	
JECP - Phase Two Engineering Changes Development											██████████																	
JECP - Phase Two Design Review											██████████																	
JECP - Phase Two Development Testing															██████████													
JECP - Phase Two Operational Testing																											██████████	
JECP - Phase Two Milestone C Full Rate Production Decision																												██████████
JECP - Initial Operational Capability																												██████████

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CO5 / <i>COLLECTIVE PROTECTION (EMD)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JECP - Phase One Production Verification Testing (PVT)	1	2015	4	2015
JECP - Phase One Multi-service Operational Test and Evaluation I	4	2015	1	2016
JECP - Phase One Multi-service Operational Test and Evaluation II	2	2016	3	2016
JECP - Phase One Full Rate Production Decision Review	1	2017	1	2017
JECP - Phase Two Engineering Changes Development	1	2017	2	2017
JECP - Phase Two Design Review	3	2017	3	2017
JECP - Phase Two Development Testing	3	2018	3	2019
JECP - Phase Two Operational Testing	3	2020	3	2020
JECP - Phase Two Milestone C Full Rate Production Decision	1	2021	1	2021
JECP - Initial Operational Capability	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
DE5: DECONTAMINATION SYSTEMS (EMD)	-	9.031	15.244	9.984	-	9.984	16.164	10.416	14.209	17.681	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides Engineering and Manufacturing Development (EMD) for: (1) Major Defense Acquisition Program (MDAP); (2) Contamination Indicator Decontamination Assurance System (CIDAS); (3) General Purpose Decontaminant (GPD); (4) Joint Service Equipment Wipe (JSEW); and (5) Joint Biological Agent Decontamination System (JBADS). Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

The F-35 Joint Strike Fighter (JSF) Decontamination System MDAP project will develop an integrated decontamination containment system and decontaminant delivery system to support the JSF program office Live Fire Test and Evaluation (LFT&E) to satisfy specific F-35 decontamination requirements through aircraft-unique interfaces and demonstrate the aircraft's ability to meet CB decontamination and survivability requirements.

The CIDAS is a contamination indicator/decontamination assurance technology. It will consist of an indicator and an applicator, for which there will be three applicator configurations (a small-scale, mid-scale and large scale applicator). The indicator will be sprayed on tactical vehicles, aircraft, ships, crew-served weapons, and individual weapons that may have been exposed to traditional and non-traditional chemical contamination. CIDAS is a new capability for the Joint Forces that will reduce the logistics burden of decontamination by indicating presence and location of traditional (Nerve and Blister) and non-traditional chemical agents on militarily relevant surfaces pre- and post-decontamination.

General Purpose Decontaminant (GPD) is a liquid, field adjustable decontaminant for chemical and biological agents that will provide thorough decontamination capabilities for tactical vehicles, shipboard surfaces, crew-served weapons, and individual/personal weapons in hostile and non-hostile environments that have been exposed to traditional and non-traditional CB contamination while providing the lowest logistical footprint.

The Joint Service Equipment Wipe (JSEW) is a decontamination wipe that will provide immediate/operational decontamination capabilities for sensitive and non-sensitive equipment in hostile and non-hostile environments that have been exposed to chemical agents/contamination and shall decontaminate Nerve and Blister agents from a starting liquid challenge of 10 g/m2 to less than or equal to 1 g/m2 and non-traditional agents from a starting liquid challenge of 5 g/m2 to less than or equal to 1 g/m2. In addition, the JSEW is intended to be a replacement for the Individual Equipment Decontamination Kit (M295). Follow on increments of JSEW may include biological agent capability and/or use on skin.

The JBADS will provide the capability to conduct biological and chemical agent decontamination of the interior and exterior of aircraft and vehicle platforms. The capabilities will be provided in two phases. Phase I will provide thorough biological decontamination of the interior and exterior of cargo aircraft. The JBADS Phase I is a capability set that will include a shelter to encapsulate an airframe, a decontamination delivery system (e.g. hot-humid air-blower, etc.), environmental control and

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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monitoring system(s), and other ancillary components required to ensure efficacious biological agent decontamination. It will provide the capability to decontaminate biologically contaminated airframes to safe levels and allow more rapid return to service. Phase II will expand upon the Phase I capability set. Phase II will develop multiple decontaminants and modular designs to address various platforms and chemical agent decontamination.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) MDAP Support JSF DECON SYSTEM</p> <p>FY 2015 Accomplishments: Conducted Joint Strike Fighter (JSF) Decontamination System Integration Demonstration and began System modification and refurbishment in preparation for JSF Live Fire Test and Evaluation (LFT&E).</p> <p>FY 2016 Plans: Provide engineering and technical support to the JSF Program Office Live Fire Test and Evaluation (LFT&E).</p> <p>FY 2017 Plans: Complete engineering and technical support to the JSF Live Fire Test and Evaluation (LFT&E).</p>	1.117	0.388	0.155
<p>Title: 2) CIDAS Development Test and Evaluation</p> <p>FY 2015 Accomplishments: Conducted Human Factors Assessment. Achieved Milestone B and completed contract documentation. Conducted Manufacturing Readiness Assessment and Critical Design Review of the Large Scale Applicator. Built large scale applicators and initiated Developmental Testing (DT) planning and preparation of nerve indicators and applicators.</p> <p>FY 2016 Plans: Continue DT to include indication level, decontaminant compatibility, detector compatibility, equipment compatibility, IPE compatibility, electromagnetic interference, coverage area, natural environmental factors, packaging, and limited shelf life testing. Conduct an Operational Assessment and Technical Manual Validation.</p> <p>FY 2017 Plans: Complete DT for nerve indicator and applicators. Conduct Technology Readiness Assessment, Technical Manual Validation and System Verification Review for nerve indicators and applicators.</p>	0.869	5.324	4.591
<p>Title: 3) CIDAS LRIP Test and Evaluation</p> <p>FY 2015 Accomplishments: Procured 410 test assets (120 small scale nerve and training indicator and applicator kits at \$381 each; 60 mid scale nerve and training indicator kits at \$922 each; and 230 large scale nerve and training indicator kits at \$1,844 each) for \$525,160 for</p>	1.511	1.272	0.169

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Developmental Testing. Funded documentation, readiness assessments support, technical review support, training and test support, and sustainment cost reduction efforts. FY 2016 Plans: Purchase 800 CIDAS test assets (523 small scale applicators at approximately \$381 each; 15 mid scale applicators at \$2,885 each and 10 large scale applicators at \$6,300 each; 126 mid scale indicator kits at approximately \$922 each; and 126 large scale indicator kits at \$1844) for DT; fund engineering support for engineering changes, training, test support and development of integrated product support deliverables. FY 2017 Plans: Procure 12 small scale nerve and training indicator and applicator kit test assets (at \$381 each) for performance verification testing.				
Title: 4) GPD FY 2015 Accomplishments: Conducted chemical and biological efficacy, and detector compatibility Developmental Testing (DT). Prepared documentation in support of MS C/LRIP decision, Request for Proposal (RFP), and contract award. Completed Early User Evaluation (EUE). FY 2016 Plans: Initiate and complete Operational Testing (to include MOT&E reporting, Log Demo & First Article Test), conduct and complete second phase of Joint Independent Logistics Assessment (JILA).		3.686	2.391	-
Title: 5) JSEW FY 2015 Accomplishments: Conducted Developmental Testing to include Chemical Efficacy with traditional agents as well as advanced threats and Shelf Life; conducted Technical Design Review (TDR). Prepared documentation for Milestone C/Low Rate Initial Production (LRIP) (Life Cycle Management Plan (LCMP), Life Cycle Sustainment Plan (LCSP), etc.)		1.848	-	-
Title: 6) JBADS Phase One FY 2016 Plans: Award Contract for fabrication of Modified Aircraft Enclosure and Conduct Design Verification Testing. FY 2017 Plans: Conduct Production Qualification Testing on Low Rate Initial Production (LRIP) JBADS (Aircraft Enclosure integrated with Aircraft Decontamination Units) to include MIL-STD 810 and Human Factors Assessment.		-	4.839	2.069
Title: 7) JBADS Phase Two		-	0.731	3.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
FY 2016 Plans: Initiate developmental testing (DT) to evaluate the efficacy of chemical agent hot air decontamination on several materials of interest.			
FY 2017 Plans: Award EMD contract for 1 JBADS (Aircraft Enclosure plus Aircraft Decontamination Units) Developmental Test asset (at \$3 million) for Design Verification Testing for Phase Two.			
Title: 8) SBIR/STTR	-	0.299	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	9.031	15.244	9.984

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• JD0050: DECONTAMINATION FAMILY OF SYSTEMS (DFoS)	0.000	7.254	7.602	-	7.602	8.913	14.862	12.058	9.958	Continuing	Continuing
• JD0063: CONTAMINATED HUMAN REMAINS POUCH (CHRP)	0.500	1.542	0.000	-	0.000	0.000	0.000	0.000	0.000	0	2.042

Remarks

D. Acquisition Strategy

MAJOR DEFENSE ACQUISITION PROGRAM (MDAP)

The F-35 Joint Strike Fighter (JSF) Decontamination System MDAP project is utilizing sole source contracting to leverage and integrate commercially available technologies to provide a decontamination delivery system for the Joint Strike Fighter program office in support of the JSF Live Fire Test and Evaluation (LFT&E). The firm fixed price contracts have a period of performance to December 2016.

DFoS CONTAMINATION INDICATOR DECONTAMINATION ASSURANCE SYSTEM (DFoS CIDAS)

The CIDAS program will follow an evolutionary acquisition strategy in consonance with user developed capability documents. Following MS A, collaborated with program efforts, including the Hazard Mitigation, Materiel and Equipment Restoration (HaMMER) Advanced Technology Development Operational Demonstration and Extended User Evaluations, and conducted technology demonstrations on candidate indicator and applicator technologies to mitigate risk and identify affordable mature

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>DECONTAMINATION SYSTEMS (EMD)</i>
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technologies that meet requirements. Determined need for and initiated Government designed mid and large scale applicators to provide an affordable solution to meet specific User requirements. Following MS B, used full and open competition to award a performance based firm fixed price contract with options for LRIP and FRP for nerve indicator and small scale applicator systems. Used full and open competition to award a performance based firm fixed price contract for engineering and manufacturing development and limited developmental testing of two blister technologies, with options for LRIP and FRP of preferred blister technology. Integrate and test the contractor and Government designs in the developmental and operational testing.

DFoS GENERAL PURPOSE DECONTAMINANT (DFoS GPD)

Due to the maturity levels of the systems entering the Technology Development (TD) phase, the Milestone Decision Authority (MDA) issued an Acquisition Decision Memorandum (ADM) which approved GPD to by-pass Milestone (MS) B and enter directly to MS C Low Rate Initial Production (LRIP). During the TD Phase (which includes CP I, CP II), the GPD Program employed a Competitive Prototyping (CP) effort to facilitate the evaluation of Commercial Off The Shelf (COTS) technologies releasing a Request for Proposal (RFP) as a combined synopsis/solicitation for commercial and Non-Developmental Items (NDI), utilizing full and open competition. As the GPD program entered the final phase of Technology Development (Developmental Test), the program continued to follow an evolutionary acquisition strategy. The production contract in support of MS C is a single award for LRIP with four option years for FRP, using Full and Open Competition in accordance with FAR Subpart 6.1. This strategy ensures that all prospective sources, with the capability of meeting the program requirements, have the opportunity to participate.

DFoS JOINT SENSITIVE EQUIPMENT WIPE (DFoS JSEW)

Due to the maturity levels of the systems entering the Technology Development (TD) phase, the Milestone Decision Authority (MDA) issued an Acquisition Decision Memorandum (ADM) which approved JSEW to pursue a Milestone (MS) A to MS C Low Rate Initial Production (LRIP) acquisition strategy. During the TD Phase (which includes CP I, CP II), the JSEW Program employed a Competitive Prototyping (CP) effort to facilitate the evaluation of Commercial Off The Shelf (COTS) technologies releasing a Request for Proposal (RFP) as a combined synopsis/solicitation for commercial and Non-Developmental Items (NDI), utilizing full and open competition. As the JSEW program entered the final phase of Technology Development (Developmental Test), the program continued to follow an evolutionary acquisition strategy. The JSEW acquisition strategy used to support Developmental Testing (DT), Low Rate Initial Production (LRIP) and Full Rate Production (FRP) is a single contract award for DT (awarded 4QFY14), with options for LRIP and FRP, using Full and Open Competition in accordance with FAR Subpart 6.1. This strategy ensures that all prospective sources, with the capability of meeting the contract requirements, have the opportunity to participate.

JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)

The JBADS program will be executed utilizing a phased approach. Phase One will deliver a biological agent decontamination capability for interior and exterior decontamination of cargo aircraft. For Phase One, the program will leverage the Joint Biological Agent Decontamination System Joint Capability Technology Demonstration (JCTD) and prior testing of candidate technologies to skip Milestone B and proceed directly to Milestone C, Low Rate Initial Production Decision. Modifications to the JCTD design will be made and technical testing will be conducted to support a Milestone C/Low Rate Initial Production Decision. A single, firm fixed price production contract with full and open competition will be awarded using a performance-based specification for the Aircraft Decontamination Units and a detailed

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 5	PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	DE5 / <i>DECONTAMINATION SYSTEMS (EMD)</i>

specification for the Aircraft Enclosure. Low Rate Initial Production/Operational test assets will be purchased using procurement funding due to the low density and estimated cost of the Phase One system. These assets will be retrofitted and fielded following a successful Full Rate Production decision.

JBADS Phase Two will expand the biological agent decontamination capability to other platforms such as tactical and rotary wing aircraft, as well as ground vehicles. In addition, Phase Two will provide chemical agent decontamination capabilities. Phase Two will enter the acquisition process at Milestone B and a full and open cost plus fixed fee contract will be awarded to conduct the Engineering and Manufacturing Development (EMD) phase. Candidate technologies will be evaluated during EMD to determine the most cost effective combination of biological and chemical agent decontamination for a variety of platforms. Following Milestone C/LRIP decision, a single, firm fixed price production contract with full and open competition will be awarded.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MDAP - HW SB - JSF Decontamination Delivery System	SS/FFP	STERIS Corporation : Mentor, OH	0.000	0.364	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
MDAP - HW SB - JSF Decontamination Shelter and Heater	SS/FFP	HDT Global : Fredericksburg, VA	0.000	0.192	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
MDAP - HW SB - JSF Decontamination System Liner	SS/FFP	Production Products Inc. : St Louis, MO	0.000	0.433	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DFoS CIDAS - HW S - Nerve Test Assets	C/FPIF	FLIR Detection : Inc, Stillwater, OK	0.000	0.986	Sep 2015	0.757	Nov 2015	0.169	Nov 2016	-		0.169	Continuing	Continuing	0.000
DFoS CIDAS - HW S - Mid and Large Scale Applicator	MIPR	Various : TBD	0.000	0.525	May 2015	0.575	Nov 2015	0.221	Apr 2017	-		0.221	Continuing	Continuing	0.000
DFoS JSEW - HW S - Test Assets	C/FFP	STERIS Corporation : Mentor, OH	0.000	0.003	Sep 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - HW C - Aircraft Enclosure (Phase I)	C/CPFF	Materials Engineering and Technical Support Services Corp. (METSS) : Westerville, OH	0.000	0.000		2.011	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
JBADS - HW S - Chemical Agent Decon Mods (Phase II)	C/FPIF	TBD : TBD	0.000	0.000		0.000		3.000	Jun 2017	-		3.000	Continuing	Continuing	0.000
Subtotal			0.000	2.503		3.343		3.390		-		3.390	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MDAP - TD/D SB - IPT and Technical Support	MIPR	Various : TBD	0.000	0.117	Feb 2015	0.315	Oct 2015	0.124	Nov 2016	-		0.124	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DFoS CIDAS - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.549	May 2015	1.075	Nov 2015	1.878	Nov 2016	-		1.878	Continuing	Continuing	0.000
DFoS GPD - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.277	Sep 2014	0.600	Oct 2015	0.000		-		0.000	Continuing	Continuing	0.000
DFoS JSEW - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.141	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - TD/D S - IPT and Technical Support	MIPR	Various : TBD	0.000	0.000		0.975	Dec 2015	0.685	Nov 2016	-		0.685	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.299	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.000	1.084		3.264		2.687		-		2.687	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DFoS CIDAS - DTE S - Live Agent / Lab Testing	MIPR	Various : TBD	0.000	0.320	May 2015	2.949	Oct 2015	1.540	Nov 2016	-		1.540	Continuing	Continuing	0.000
DFoS GPD - DTE S - Developmental Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	2.135	Nov 2014	1.305	Oct 2015	0.000		-		0.000	Continuing	Continuing	0.000
DFoS GPD - DTE S - Developmental Testing #2	MIPR	Various : TBD	0.000	0.963	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DFoS JSEW - OTE S - Developmental Testing	MIPR	Various : TBD	0.000	1.504	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - DTE S - Phase I Design Verification Testing	MIPR	Various : TBD	0.000	0.000		0.796	Apr 2016	0.000		-		0.000	Continuing	Continuing	0.000
JBADS - DTE S - Phase I Product Qualification Testing	MIPR	Various : TBD	0.000	0.000		0.000		0.738	Jun 2017	-		0.738	Continuing	Continuing	0.000
Subtotal			0.000	4.922		5.050		2.278		-		2.278	-	-	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDAP - JSF Decontamination System Shelter and Liner Modification, Repairs and Refurbishment and System Integration Demonstration	██████████																											
MDAP - Final System Demonstration							████																					
MDAP - JSF LFT&E Support											██████████																	
DFOS - CIDAS Technology Demonstrations	████																											
DFOS - CIDAS MS B			████																									
DFOS - CIDAS CDR (Large Scale Applicator)				████																								
DFOS - CIDAS DT (Nerve Indicator and Applicators)					██████████																							
DFOS - CIDAS CPD (Nerve Indicator and Applicators)											████																	
DFOS - CIDAS MS C/LRIP												████																
DFOS - CIDAS LRIP Delivery (Nerve Indicator and Applicators)													██████████															
DFOS - CIDAS OT (Nerve Indicator and Applicators)															████													
DFOS - CIDAS DT (Blister Indicator)													██████████															
DFOS - CIDAS CPD (Blister Indicator)																				████								
DFOS - CIDAS MS C/LRIP (Blister Indicator)																				████								
DFOS - CIDAS LRIP Delivery (Blister Indicator)																					██████████							
DFOS - CIDAS OT (Blister Indicator)																											████	
DFOS - CIDAS FRP (Nerve Indicator and Applicators)																									██████████			
DFOS - CIDAS FPR (Blister Indicator)																												████

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DFOS - GPD TEMP	■																											
DFOS - GPD Early User Evaluation (EUE)	■																											
DFOS - GPD DT	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
DFOS - GPD System Verification Review							■	■																				
DFOS - GPD MRA Final Assessment							■	■																				
DFOS - GPD CPD							■	■																				
DFOS - GPD MS C/LRIP								■	■																			
DFOS - GPD OT								■	■	■	■																	
DFOS - GPD FRP										■	■																	
DFOS - GPD IOC													■	■														
DFOS - GPD FOC																										■	■	
DFOS - JSEW System Requirements/ Technical Design Review		■	■																									
DFOS - JSEW DT	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
DFOS - JSEW System Verification Review							■	■																				
DFOS - JSEW TEMP	■																											
DFOS - JSEW CPD								■	■																			
DFOS - JSEW MS C/LRIP								■	■																			
DFOS - JSEW OT								■	■	■	■																	
DFOS - JSEW FRP										■	■																	
DFOS - JSEW IOC													■	■														
DFOS - JSEW FOC																										■	■	
JBADS - TRA			■	■																								
JBADS - Engineering Trade Analysis/Design Modifications							■	■																				

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JBADS - Biothermal Decontamination Characterization Testing (Phase One)			■																									
JBADS - Fabricate Aircraft Enclosure (Phase One)							■																					
JBADS - Design Verification Testing (Phase One)																												
JBADS - Capability Development Document (CDD)																												
JBADS - Capability Production Document (CPD) (Phase One)																												
JBADS - MS C/LRIP (Phase One)																												
JBADS - LRIP Contract Award (Phase One)																												
JBADS - LRIP Production (Phase One)																												
JBADS - Production Qualification Testing (Phase One)																												
JBADS - Initial Operational Test and Evaluation (IOT&E) (Phase One)																												
JBADS - FRP (Phase One)																												
JBADS - Hot Air Dry Testing (Phase Two)																												
JBADS - MS B (Phase Two)																												
JBADS - EMD Contract Award (Phase Two)																												
JBADS - Design Verification Testing (Phase Two)																												
JBADS - MS C/LRIP (Phase Two)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MDAP - JSF Decontamination System Shelter and Liner Modification, Repairs and Refurbishment and System Integration Demonstration	1	2015	4	2015
MDAP - Final System Demonstration	2	2016	2	2016
MDAP - JSF LFT&E Support	4	2016	2	2017
DFOS - CIDAS Technology Demonstrations	1	2015	1	2015
DFOS - CIDAS MS B	3	2015	3	2015
DFOS - CIDAS CDR (Large Scale Applicator)	4	2015	4	2015
DFOS - CIDAS DT (Nerve Indicator and Applicators)	1	2016	1	2017
DFOS - CIDAS CPD (Nerve Indicator and Applicators)	3	2017	3	2017
DFOS - CIDAS MS C/LRIP	4	2017	4	2017
DFOS - CIDAS LRIP Delivery (Nerve Indicator and Applicators)	1	2018	1	2019
DFOS - CIDAS OT (Nerve Indicator and Applicators)	4	2018	4	2018
DFOS - CIDAS DT (Blister Indicator)	3	2018	3	2019
DFOS - CIDAS CPD (Blister Indicator)	4	2019	4	2019
DFOS - CIDAS MS C/LRIP (Blister Indicator)	4	2019	4	2019
DFOS - CIDAS LRIP Delivery (Blister Indicator)	1	2020	1	2021
DFOS - CIDAS OT (Blister Indicator)	2	2021	2	2021
DFOS - CIDAS FRP (Nerve Indicator and Applicators)	3	2019	4	2021
DFOS - CIDAS FPR (Blister Indicator)	4	2021	4	2021
DFOS - GPD TEMP	1	2015	1	2015
DFOS - GPD Early User Evaluation (EUE)	1	2015	1	2015
DFOS - GPD DT	1	2015	2	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / DECONTAMINATION SYSTEMS (EMD)
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Events	Start		End	
	Quarter	Year	Quarter	Year
DFOS - GPD System Verification Review	2	2016	2	2016
DFOS - GPD MRA Final Assessment	2	2016	2	2016
DFOS - GPD CPD	2	2016	2	2016
DFOS - GPD MS C/LRIP	3	2016	3	2016
DFOS - GPD OT	3	2016	4	2016
DFOS - GPD FRP	2	2017	2	2017
DFOS - GPD IOC	2	2018	2	2018
DFOS - GPD FOC	4	2020	4	2020
DFOS - JSEW System Requirements/Technical Design Review	2	2015	2	2015
DFOS - JSEW DT	1	2015	1	2016
DFOS - JSEW System Verification Review	1	2016	1	2016
DFOS - JSEW TEMP	1	2015	1	2015
DFOS - JSEW CPD	2	2016	2	2016
DFOS - JSEW MS C/LRIP	2	2016	2	2016
DFOS - JSEW OT	3	2016	4	2016
DFOS - JSEW FRP	2	2017	2	2017
DFOS - JSEW IOC	4	2017	4	2017
DFOS - JSEW FOC	4	2019	4	2019
JBADS - TRA	3	2015	3	2015
JBADS - Engineering Trade Analysis/Design Modifications	4	2015	4	2015
JBADS - Biothermal Decontamination Characterization Testing (Phase One)	3	2015	1	2016
JBADS - Fabricate Aircraft Enclosure (Phase One)	1	2016	2	2016
JBADS - Design Verification Testing (Phase One)	3	2016	3	2016
JBADS - Capability Development Document (CDD)	4	2016	4	2016
JBADS - Capability Production Document (CPD) (Phase One)	1	2017	1	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>DECONTAMINATION SYSTEMS (EMD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
JBADS - MS C/LRIP (Phase One)	2	2017	2	2017
JBADS - LRIP Contract Award (Phase One)	2	2017	2	2017
JBADS - LRIP Production (Phase One)	2	2017	3	2017
JBADS - Production Qualification Testing (Phase One)	3	2017	4	2017
JBADS - Initial Operational Test and Evaluation (IOT&E) (Phase One)	1	2018	2	2018
JBADS - FRP (Phase One)	3	2018	3	2018
JBADS - Hot Air Dry Testing (Phase Two)	1	2016	3	2016
JBADS - MS B (Phase Two)	3	2017	3	2017
JBADS - EMD Contract Award (Phase Two)	3	2017	3	2017
JBADS - Design Verification Testing (Phase Two)	1	2018	3	2019
JBADS - MS C/LRIP (Phase Two)	2	2020	2	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IP5: INDIVIDUAL PROTECTION (EMD)	-	16.961	19.439	11.427	-	11.427	11.206	11.610	3.799	6.419	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides Engineering & Manufacturing Development Phase and Low Rate Initial Production (EMD/LRIP) for individual protection equipment, with the goal of providing equipment that allows the individual soldier, sailor, airman, or Marine to operate in a contaminated Nuclear, Biological and Chemical (NBC) environment with little or no degradation of his/her performance. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, Concept of Operations (CONOPS) and Techniques, Tactics, and Procedures (TTP).

Included in this program are:

(1) The Joint Service Aircrew Mask (JSAM) for Tactical Aircraft (TA), Strategic Aircraft (SA), Joint Strike Fighter (JSF), and Rotary Wing (RW) are Acquisition Category (ACAT) III programs developed to provide respiratory and ocular protection. The JSAM will be a lightweight chemical and biological (CB) protective mask that will be worn as CB protection for most Army, Air Force, Navy and Marine Corps fixed wing (FW) and RW aircrew members. All JSAM variants will be compatible with most below-the-neck (BTN) CB protection ensembles and existing aircrew life support equipment (ALSE). They will include a protective hood assembly, CB filter, blower assembly, and an intercom for ground communication. They will also provide flame protection, demist/emergency demist, and anti-drowning features. The goal of the JSAM programs is to develop, manufacture, field, and sustain an aircrew respirator system that, in conjunction with BTN clothing ensembles, will provide the capability for all aircrew to operate in an actual or perceived CB warfare environment.

In FY14, the JSAM FW program was separated into two programs: JSAM TA and JSAM SA. The JSAM TA and SA respirators are being developed for use in the majority of DoD FW aircraft except for the F-35 JSF. The JSAM TA program will provide CB and anti-G protection up to nine times the vertical force (Gz), for aircrew in high-performance aircraft. The JSAM SA program will be used in aircrew positions that do not require anti-G protection and provide CB protection for positions that only need pressure breathing for altitude.

The JSAM-JSF is a CB respirator being specifically designed to support the F-35. It is designed to ensure that system integration and qualification of CB protection and survivability requirements are achieved as derived from the JSF Operational Requirements Document. Prior to FY15, this project was funded under the JSAM funding line. When integrated with aircraft and pilot mounted equipment, the JSAM-JSF will provide combined CB, hypoxia and anti-G protection to all F-35 users, including the United States Air Force (USAF), Navy (USN), Marine Corps (USMC), and International Partners.

The JSAM MPU-5 RW mask is being developed for use by pilots and aircrew in the majority of DoD RW aircraft in the United States Army (USA) except AH-64 users, USAF, USN, and USMC. The JSAM RW will integrate with most BTN CB ensembles, normal aircrew flight equipment, and RW flight helmets. The system contains a removable face plate, allowing the user to fly "face free" in Mission Oriented Protective Posture (MOPP) 2 (garment and boots) and easily convert to MOPP 3 (garment,

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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boots, and mask) when the threat level dictates, thereby reducing physiological burden. If threat level warrants, the user can install their face plate into an already donned hood and enter MOPP 4 without removing their flight helmet.

(2) The Joint Service General Purpose Mask (JSGPM) Advanced Respiratory Protection Initiative (ARPI) will address improved mask protection, filter protection against Toxic Industrial Chemicals (TIC)/Toxic Industrial Materials (TIM) and improved profile and breathing resistance; and wearability compatibility/integration. This will be accomplished through class-based analysis, Filtration Advanced Screening Test (FAST), desorption study, and advanced Chemical, Biological, Radiological, and Nuclear (CBRN) filtration efforts. Several technologies are being pursued by the Joint Science and Technology Office (JSTO), with two specific technologies being pursued in the FY14-16 timeframe. The JSGPM ARPI effort will investigate alternative designs and modifications to Zirconium hydroxide, Zinc, Argentum (Silver), Triethylene di-amine (TEDA) (ZZAT) to further increase filtration of TICs and Chemical Warfare Agents (CWA). ZZAT is a zirconium hydroxide based filtration media that can potentially be layered with carbon. The first technology, known as Cobalt-Zinc ZZAT (CoZZAT), uses a layered bed of carbon concept to improve TIC and CWA protection capabilities, while the second technology known as Metal Organic Framework (MOF), is an engineered media that is a porous crystalline compound made up of metal ions and organic bridging molecules (ligands) for targeted removal of chemicals. The JSGPM ARPI effort will also investigate various applications of nanofiber particulate media. The new filters will create a new JSGPM mask, the M53A1, which will meet National Institute of Occupational Safety and Health (NIOSH) certification standards for use against CBRN agents in order to provide users the flexibility to have one mask that is approved for both military and Occupational Safety and Health Administration (OSHA) regulated missions. This effort transitions to BA7 in FY16.

The Uniform Integrated Protection Ensemble (UIPE) is a Chemical, Biological, Radiological, Nuclear (CBRN) protective system offering the capability to select a tailored material solution based on the expected threat level commensurate with operational mission requirements. Where appropriate, a family of systems approach that meets the scope of UIPE individual protection capability needs will be utilized. The objective of UIPE is to fully integrate CBRN and toxic industrial material (TIM) protections into an ensemble, identical in fit and form to the combat uniform (including mask - helmet integration and protective boots and gloves), thus negating the need for separate protective ensemble components. This integrated protection approach will result in increased warfighter operational performance in a CBRN environment. The UIPE program will develop, integrate, test, procure and field incremental capability solutions that are modular in function and offer improvements in form and fit over current systems; the program will explore trade-space in areas such as protection level, heat stress, durability, antimicrobial properties, flame resistance, launderability, self-detoxification, and protection time in order to provide capabilities that afford maximum utility to the warfighter. Where appropriate modeling and simulation tools will be used to lower UIPE program risks, reduce costs, and ensure a high confidence in selected technologies. UIPE is aimed specifically at providing enhanced individual protection capabilities to the warfighter through reduction of physiological and psychological effects associated with CBRN protective garment thermal burden, weight, and bulk. The UIPE program will consider modernization in order to ensure that the warfighter retains access to state of the art capability to support future operational mission requirements.

The UIPE Increment 2 will seek to provide reduced thermal burden and weight compared to current protective ensembles. It will develop, integrate, test, procure, and field incremental capability solutions that are modular in function and offer improvements over current systems. The program will explore trade-space in areas such as protection level, heat stress, durability, antimicrobial properties, flame resistance, launderability, self-detoxification, and protection time in order to provide capabilities that afford maximum utility to the Warfighter. Where appropriate, modeling and simulation tools will be used to lower UIPE Increment 2 program risks, reduce costs, and ensure a high confidence in selected technologies.

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: 1) JSAM SA</p> <p>Description: Complete Developmental Testing and Operational Testing on the E-3 (Air Force) and P-8 (Navy) aircraft.</p> <p>FY 2016 Plans: Complete Design Verification Testing (DVT), including flight tests on the E-3 and P-3C aircraft. Conduct System Verification Review (SVR), Production Readiness Review (PRR), and Physical Configuration Audit (PCA). Initiate preliminary events leading to operational testing (OT), and initiate OT. Develop and finalize the Operational Test Agency (OTA) Milestone Assessment Report (OMAR), conduct the Logistics Demonstration, finalize the Technical Manual (TM) and complete the Joint Integrated Logistics Assessment (JILA).</p> <p>FY 2017 Plans: Conduct operational testing (OT) for use on the E-3 (Air Force), and P-8 (Navy) aircraft. Develop the Operational Evaluation Report (OER). Acquire final safe-to-fly certification aboard the E-3, and P-8 aircraft. Prepare for fielding decision to deploy masks to E-3, and P-8 aircrew. Update the technical manual, based on any findings from OT. Integrate the JSAM SA mask to subsequent aircraft, beyond the E-3, and P-8. Make any final product changes to the mask, based on any findings from OT.</p>	-	5.588	3.539
<p>Title: 2) JSAM TA</p> <p>Description: Achieve MS C and conduct test integration events on aircraft platforms.</p> <p>FY 2016 Plans: Continue with comparative gate testing for the full and open contract and award contract to the JSAM TA selected vendor. Purchase 100 masks at an estimated unit cost of \$13,000.00 for use in Operational Tests (OT) and integration events. Conduct OT and integration events with JSAM TA platforms, and achieve Milestone C/Low Rate Initial Production decision.</p> <p>FY 2017 Plans: Conduct test integration events on USAF and USN aircraft platforms.</p>	-	6.000	4.065
<p>Title: 3) JSAM JSF</p> <p>Description: Developmental Testing and Live Fire Test and Evaluation</p> <p>FY 2015 Accomplishments: Completed key Developmental Testing (DT) events including in part Quantitative Fit Factor (QFF) testing, Simulant Agent Resistance Test Manikin (SMARTMAN) testing, Man in Simulant Test (MIST), Filter testing, and Acceleration and Altitude Tests.</p>	2.457	3.099	1.883

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Conducted Logistic Demonstration and Manufacturing Readiness Assessment. Provided product development support to the JSF program office in support of the Chemical and Biological Live Fire Test and Evaluation (LFT&E) planning.</p> <p>FY 2016 Plans: Complete Developmental Testing (DT) and F-35 CB SDD flights. Conduct follow-on DT and Initiate JSF CB LFT&E event. Conclude Manufacturing Readiness Assessment. Conduct System Verification and Production Readiness Reviews supporting a Low Rate Initial Production decision. Conduct Physical Configuration Audit (PCA) and Instructor and Key Personnel Training (IKPT).</p> <p>FY 2017 Plans: Complete JSF Chemical and Biological Live Fire Test and Evaluation (LFT&E) event. Conduct Chemical and Biological Operational Test event.</p>				
<p>Title: 4) JSAM RW</p> <p>Description: Multi-Service Operational Testing and Evaluation (MOT&E)</p> <p>FY 2015 Accomplishments: Conducted and completed MOT&E for USA and USAF. Conducted USN/USMC aircraft integration testing. Conducted airworthiness testing and obtained airworthiness releases for operational testing of USA and USAF rotary wing aircraft. Conducted System Verification Review (SVR) and achieved Milestone (MS) C / Low Rate Initial Production (LRIP).</p> <p>FY 2016 Plans: Conduct and complete USN/USMC MOT&E and USN shipboard flight testing. Complete USN airworthiness testing and obtain airworthiness releases for the USN rotary wing aircraft.</p> <p>FY 2017 Plans: Receive the final Operational Evaluation Report, implement potential design changes through modifications or reconfiguration to the MPU-5 as result of USN/USMC MOT&E and shipboard testing, update the Test and Evaluation Master Plan, and perform validation testing.</p>		3.179	4.404	0.940
<p>Title: 5) JSAM (FW) - SA</p> <p>Description: Completed final design and initiated Developmental Testing.</p> <p>FY 2015 Accomplishments:</p>		6.687	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Completed Design Verification Testing (DVT). Conducted the Critical Design Review (CDR) and Manufacturing Readiness Assessment (MRA), and completed the final design phase. Initiated production tooling and built 265 assets (200 for DT and 65 for other users) at a unit cost of \$1,900 each. Completed draft Technical Manual. Began Developmental Testing (DT)				
Title: 6) JSAM (FW) -TA Description: Conducted USAF-F22 ECP testing and prepare for MS C. FY 2015 Accomplishments: Purchased 44 modified A/P22P(A)V3 test assets at \$10,653 to support testing of the ECP respirator for the USAF F-22 Readiness requirement. Continued testing the ECP respirator for the USAF F-22 Readiness requirement and provided test data for risk reduction of the program. Initiated documentation to support solicitation of Request for Proposals (RFP) and initiated Full and Open Competition and Milestone C documentation.		3.677	-	-
Title: 7) JSGPM Description: Advanced Respiratory Protection Initiative - M53A1 NIOSH Certification FY 2015 Accomplishments: Completed refinement of technical data and manufacturing process controls for the CoZZAT material. Fully funded National Institute for Occupational Safety and Health (NIOSH) certification delivery order for filter prototype systems development and delivery to National Personal Protective Test Laboratory (NPPTL). M53A1 is scheduled to be NIOSH certified in October 2015.		0.961	-	-
Title: 8) UIPE - Increment 2 Description: System Development and Demonstration/Engineering and Manufacturing Development FY 2017 Plans: Achieve Milestone B. Initiate detailed design and prototype development in coordination with the selected manufacturing partner. Perform system-level design verification testing.		-	-	1.000
Title: 9) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.		-	0.348	-
Accomplishments/Planned Programs Subtotals		16.961	19.439	11.427

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• JI0002: JS AIRCREW MASK (JSAM)	11.526	24.630	52.284	-	52.284	54.558	55.136	50.374	50.062	Continuing	Continuing
• MA0401: CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)	8.222	11.101	13.525	-	13.525	11.101	13.200	14.000	14.600	Continuing	Continuing

Remarks

D. Acquisition Strategy

JS AIRCREW MASK FIXED WING (JSAM FW)

The overall JSAM acquisition approach is phased due to the complexity of interfacing with almost 200 aircraft types and models with different mission sets, Aviation Life Support Equipment (ALSE), cockpit layouts, priorities, etc. JSAM will pursue two materiel solutions for fixed wing aircraft via the JSAM for Tactical Aircraft (TA) and JSAM for Strategic Aircraft (SA) programs. JSAM TA and SA must be compatible with current CB ensembles and provide flame protection and will replace all existing Pressure Breathing for Gravity (PBG) and non-PBG CB aircrew respirators. The JSAM TA program utilizes a phased acquisition strategy to provide aircrew of all Services with individual head-eye-respiratory protection against Chemical-Biological (CB) warfare agents. The JSAM TA effort will provide Pressure Breathing for Gravity (PBG) Mask for USN and USAF tactical aircraft. The JSAM SA (Modified M53 (MM53)) effort will test and field a mask for aircrew positions not requiring PBG capabilities. This contract was awarded via sole source to Avon Protection Systems, Cadillac, Michigan to modify and field a commercially available mask (M53).

JS AIRCREW MASK ROTARY WING (JSAM RW)

The JSAM RW was developed under a competitive Cost Plus Fixed Fee contract, which is also used by JSAM Apache and JSAM Apache Block III. A sole source Fixed Price Incentive (FPI) contract was awarded for LRIP items. A sole source Indefinite Delivery/Indefinite Quantity (IDIQ) production contract with FPI and FFP CLINs will be pursued for additional LRIP quantities and FRP.

JS AIRCREW MASK FIXED WING STRATEGIC AIRCRAFT (JSAM SA)

The JSAM SA acquisition approach involves modifying the fielded M53 ground mask design in order to add Pressure Breathing for Altitude (PBA), up to 40,000 feet above sea-level, and middle ear equalization capabilities. The JSAM SA mask is intended to be fielded to the United States Air Force (USAF), United States Navy (USN), United States Marine Corps (USMC), United States Army (USA), and United States Coast Guard (USCG). The RDT&E contract was awarded via sole source to Avon Protection Systems, Cadillac, Michigan to modify and field a commercially available mask (M53).

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The overall acquisition strategy is to initially produce and field the JSAM SA masks in four LRIP phases. This phased approach will allow the JSAM SA mask to be fielded to aircrew of the most applicable aircrafts in the shortest amount of time. At the end of each LRIP phase, the aircraft associated with each phase will have achieved an Initial Operating Capability (IOC) with the JSAM SA mask. The remaining aircrew, not given a JSAM SA mask during the LRIP phases, will receive their masks after FRP. At the end of FRP, the Services will have achieved their Full Operating Capability (FOC) with the mask. LRIP 1 will consist of fielding the JSAM SA mask to most of the USAF E-3 and USN P-8 aircrew. Based on technical difficulty and mission need, the JSAM SA program will work with the Services to determine which LRIP phase (i.e. 2, 3, or 4) will include the remaining aircraft.

The overall test strategy involves four major phases. The first test phase consists of Design Verification Testing (DVT) which will evaluate developmental prototype masks prior to CDR. The second test phase is Developmental Testing (DT) to support Milestone C/LRIP. The third test phase is Operational Testing (OT) of LRIP assets to support IOC fielding to USAF E-3 and USN P-8 aircrew. The final test phase is combined DT/OT for the LRIPs 2, 3, and 4.

The contract strategy consists of two sole-source contracts with Avon Protection Systems, the manufacturer of the base M53 mask. The first contract, which was awarded on 31 July 2013, covers all activities during Engineering, Manufacturing, and Development (EMD) phase. The second contract, which is planned to be awarded after Milestone C/LRIP, will cover the activities during the Production and Deployment (PD) phase including all LRIP and FRP builds.

JS AIRCREW MASK FIXED WING TACTICAL AIRCRAFT (JSAM TA)

The JSAM TA planned solution for the USAF F-22 Readiness requirement is an integration effort and an Engineering Change Proposal (ECP) to the Navy's A/P22P-14(A). The ECP will provide CB-protection capability to F-22 pilots while providing valuable test data to characterize the JSAM TA performance envelope. The JSAM TA program plans to pursue a full-and-open competition for the production contract to cover Low Rate Initial Production (LRIP) and Full Rate Production (FRP). The Government plans to competitively award one, Firm Fixed Price (FFP) contract that will include production and subsequent integration efforts to be completed for each aircraft platform.

JS AIRCREW MASK JOINT STRIKE FIGHTER (JSAM JSF)

JSAM-JSF is specifically designed for the F-35 (Joint Strike Fighter) to be incorporated within the JSF platform and fielded to US Services and international partners. JSAM-JSF is being developed concurrently with other JSF equipment including life support and pilot flight equipment. JSAM-JSF initially leveraged a JSAM-FW design and shared the same base contract with a Cost Plus Incentive Fee delivery order.

JS GENERAL PURPOSE MASK (JSGPM)

The JSGPM Advanced Respiratory Protection Initiative (ARPI) effort is using the two M61 filter contracts awarded to 3M and Avon to develop improved filters for the JSGPM. There is a continual technology refreshment CLIN on both contracts that allow for filter development tasks to be awarded. The tasks can be competed between the two awardees or awarded to both to ensure competition on future spares and delivery orders. As filter technologies transition from the Defense Threat Reduction Agency (DTRA) and Joint Science and Technology Office (JSTO), the technologies will be matured from system/subsystem prototyping demonstration

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technologies at Technology Readiness Level (TRL) 6 to actual system "mission proven" through successful mission operations in a mission environment at TRL 9. In addition to the maturing of the technology, the Manufacturing Readiness Level (MRL) of the media and the layered bed design requires maturing to an MRL level 9. The complexity of maturing all these different items requires an evolutionary approach with one prototype iteration governing the approach on the next iteration. With the criticality of the filter, the production transition to the new improved filter has to be done with a high degree of confidence with risks mitigated to a low level.

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)

The UIPE Increment 2 supports an evolutionary acquisition strategy with the intent of protecting the Warfighter from operationally relevant and non-traditional chemical, biological, radiological, and nuclear (CBRN)/toxic industrial hazards during Joint Force operations. UIPE Increment 2 will leverage the approved UIPE CBRN Initial Capabilities Document (ICD) to build on and enhance capabilities attained in UIPE Increment 1 by continuing to provide integrated individual protective equipment that enables the Warfighter to operate in a contaminated environment with no or minimal degradation to performance. UIPE Increment 2 will perform trade space analysis using Requests for Information for materials, closures, and designs, the issuance of a Challenge, and a concept demonstration event to provide a baseline assessment and feed the requirements development process. A manufacturing and development contract will be awarded prior to Milestone A to build prototypes/development samples, produce test articles, and provide manufacturability, development and documentation support. The final UIPE Increment 2 garment design will be Government owned in order to control interfaces and insert future technologies. UIPE Increment 2 is exploring the use of a Government issued Challenge to attract innovative ideas from Government, Industry, and Academia for inclusion into the final solutions. Strategies for obtaining various capability solutions will be developed as those solutions are identified. If Commercial-of-the-Shelf (COTS) or Non-Developmental Item (NDI) solutions are identified, appropriate contracting methods will be pursued. Where possible, rights and data will be requested to allow competitive procurement.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSAM FW - HW S - Modified M53 - Design Modification and Development	SS/CPFF	AVON Protection Systems Inc. : Cadillac, MI	4.893	1.670	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM FW - HW S - HW C- AP22P-14 (A)- Mask/Respirators/System Components	SS/CPFF	Cam Lock Limited : Aldershot Hampshire, UK	0.000	0.469	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM JSF - HW S - Engineering and Manufacturing Contract	C/CPIF	GENTEX Corp. : Rancho Cucamonga, CA	0.000	1.366	Jan 2015	0.775	Jan 2016	0.330	Jan 2017	-		0.330	Continuing	Continuing	0.000
JSAM RW - HW S - MBU-5 Engineering and Manufacturing Contract	C/CPFF	AVOX Systems Inc. : Lancaster, NY	1.452	0.214	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - HW S - Modified M53 - Design Modification and Development	SS/CPFF	AVON Protection Systems Inc. : Cadillac, MI	0.000	0.000		0.502	Nov 2015	0.207	Nov 2016	-		0.207	Continuing	Continuing	0.000
JSAM TA - HW S - Hardware and Support Equipment for Integration and Test	C/FPIF	TBD : TBD	0.000	0.000		0.000		0.440	Dec 2016	-		0.440	Continuing	Continuing	0.000
JSAM TA - HW S - Mask	C/FPIF	TBD : TBD	0.000	0.000		1.300	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
JSGPM - HW C - NIOSH Certification	C/FFP	AVON Protection Systems Inc. : Cadillac, MI	0.642	0.207	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - HW S - UIPE Increment 2 - Prototype Development	Various	TBD : TBD	0.000	0.000		0.000		0.598	Jul 2017	-		0.598	Continuing	Continuing	0.000
Subtotal			6.987	3.926		2.577		1.575		-		1.575	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM FW - (TA) - ES S - Engineering Support	MIPR	Various : TBD	3.654	1.249	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM FW - (SA)- ES S - MM53 - Engineering and IPT Support	MIPR	Various : TBD	3.974	1.776	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM JSF - ES S - JSAM-JSF Engineering Support	MIPR	Various : TBD	0.000	0.202	Nov 2014	0.800	Jan 2016	0.642	Nov 2016	-		0.642	Continuing	Continuing	0.000
JSAM RW - ES S - MBU-5 Integrated Product Team/ Engineering/Technical Support	MIPR	Various : TBD	3.902	0.713	Dec 2014	0.601	Dec 2015	0.290	Nov 2016	-		0.290	Continuing	Continuing	0.000
JSAM SA - TD/D S - Logistics Demonstration	MIPR	Various : TBD	0.000	0.000		0.150	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - ES S - Engineering and IPT Support	MIPR	Various : TBD	0.000	0.000		2.167	Jan 2016	1.779	Nov 2016	-		1.779	Continuing	Continuing	0.000
JSAM TA - ES S - Engineering Support	MIPR	Various : TBD	0.000	0.000		1.331	Nov 2015	1.353	Nov 2016	-		1.353	Continuing	Continuing	0.000
JSGPM - TD/D SB - NIOSH Test/Log Support	MIPR	Various : TBD	1.286	0.353	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.348	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			12.816	4.293		5.397		4.064		-		4.064	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM FW - (SA) - DTE S - MM53 - Developmental Testing	MIPR	Various : TBD	1.044	1.408	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSAM FW - (TA) - DTE S - AP22P-14(A) - Developmental Testing	MIPR	Various : TBD	1.309	0.878	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM JSF - OTE S - LFT&E	MIPR	Various : TBD	0.000	0.000		0.622	Jan 2016	0.671	Nov 2016	-		0.671	Continuing	Continuing	0.000
JSAM JSF - DTE S - Developmental Testing	MIPR	Various : TBD	0.000	0.232	Nov 2014	0.300	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
JSAM JSF - DTE S - Follow-On DT	MIPR	Various : TBD	0.000	0.000		0.200	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
JSAM RW - DTE S - MPU-5 Developmental Testing (USN/USMC)	MIPR	Various : TBD	2.681	0.680	Apr 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM RW - OTE S - MPU-5 Multi-Service Operational Testing (USA/USAF)	MIPR	Various : TBD	0.000	0.600	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM RW - OTE S - MPU-5 Multi-Service Operational Testing (USN/USMC)	MIPR	Various : TBD	0.000	0.000		1.848	Jan 2016	0.459	Nov 2016	-		0.459	Continuing	Continuing	0.000
JSAM SA - DTE S - Developmental Testing	MIPR	Various : TBD	0.000	0.000		0.669	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - OTE S - Operational Testing	MIPR	Various : TBD	0.000	0.000		1.375	Nov 2015	1.102	Nov 2016	-		1.102	Continuing	Continuing	0.000
JSAM TA - JSAM TA - Testing and Integration	MIPR	Various : TBD	0.000	0.000		2.590	Nov 2015	1.754	Nov 2016	-		1.754	Continuing	Continuing	0.000
JSGPM - DTE SB - JSGPM Filter Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	3.596	0.092	Apr 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - DTE S - Design Verification Testing	MIPR	TBD : TBD	0.000	0.000		0.000		0.200	Jul 2017	-		0.200	Continuing	Continuing	0.000
Subtotal			8.630	3.890		7.604		4.186		-		4.186	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSAM FW - (SA)- PM/MS C - JSAM MM53 - Program Management and Technical Support	Various	Various : TBD	0.210	1.833	Nov 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM FW - (TA)- PM/MS C - AP22P-14(A) - Program Management and Technical Support	Various	Various : TBD	0.975	1.081	Oct 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM JSF - PM/MS C - Program Management and Technical Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.657	Jan 2015	0.402	Jan 2016	0.240	Nov 2016	-		0.240	Continuing	Continuing	0.000
JSAM RW - PM/MS S - MBU-5 Program Management and Technical Support	Various	Various : TBD	1.499	0.972	Dec 2014	1.955	Dec 2015	0.191	Nov 2016	-		0.191	Continuing	Continuing	0.000
JSAM SA - PM/MS S - Program Management and Technical Support Services	MIPR	Various : TBD	0.000	0.000		0.725	Nov 2015	0.451	Nov 2016	-		0.451	Continuing	Continuing	0.000
JSAM TA - PM/MS S - Program and Technical Management	MIPR	Various : TBD	0.000	0.000		0.779	Nov 2015	0.518	Nov 2016	-		0.518	Continuing	Continuing	0.000
JSGPM - PM/MS C - Program Management and Technical Support	Various	Various : TBD	1.056	0.309	Jan 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - PM/MS S - UIPE Increment 2 - PM/SME Prog Mgt	MIPR	Various : TBD	0.000	0.000		0.000		0.202	Jul 2017	-		0.202	Continuing	Continuing	0.000
Subtotal			3.740	4.852		3.861		1.602		-		1.602	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program								Date: February 2016					
Appropriation/Budget Activity 0400 / 5			R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)						
	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	32.173	16.961		19.439		11.427		-		11.427	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSAM FW - AP22P(A) ECP Integration	██████████																											
JSAM FW - AP22P(A) USAF Variant Purchase					██████																							
JSAM FW - MM53 Developmental Testing	████████████████████																											
JSAM FW - Critical Design Review (CDR)	██████████																											
JSAM FW - Design Verification Testing (DVT)	██████████																											
JSAM RW - Multi Service Operational Test and Evaluation (MOT&E) USA/USAF	██████																											
JSAM RW - MS C/ Low Rate Initial Production (LRIP)	████																											
JSAM RW - Multi Service Operational Test and Evaluation (MOT&E) USN/USMC					████████████████																							
JSAM RW - USAF IOC									████																			
JSAM RW - USAF FOC													████															
JSAM RW - USA IOC													████															
JSAM RW - USN/USMC IOC																	████											
JSAM RW - Full Rate Production (FRP)									████																			
JSAM SA - MM53 Developmental Testing	████████████████████																											
JSAM SA - MS C / Low Rate Initial Production					████████																							
JSAM SA - Operational Testing									████████████████████																			
JSAM SA - LRIP 1					████████																							
JSAM SA - LRIP 2									████████																			
JSAM SA - LRIP 3													████████															
JSAM SA - LRIP 4																	████████											
JSAM SA - MS C / Full Rate Production																					████████████████████							
JSAM SA - Initial Operational Capability																	████████████████											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSAM TA - MS C Low Rate Initial Production (LRIP)																												
JSAM TA - Aircraft Platform Integration/ Operational Testing																												
JSAM TA - Initial Operational Capability																												
JSAM TA - Full Rate Production (FRP)																												
JSAM JSF - Developmental Testing																												
JSAM JSF - Safe-to-Fly Certification																												
JSAM JSF - Logistic Demonstration																												
JSAM JSF - LRIP Decision																												
JSAM JSF - Manufacturing Readiness Assessment, System Verification Review, Production Readiness Review																												
JSAM JSF - Production Contract Award																												
JSAM JSF - LRIP Support																												
JSAM JSF - F-35 CB SDD Flights																												
JSAM JSF - Instructor Key Personnel Training (IKPT)																												
JSAM JSF - Physical Configuration Audit																												
JSAM JSF - Chemical and Biological (CB) Live Fire Test and Evaluation (LFTE)																												
JSGPM - Bed Design Analysis (CoZZAT)																												
JSGPM - TD Contract Award (CoZZAT)																												
JSGPM - Prototype Systems Development and Delivery (CoZZAT)																												
JSGPM - M53A1 NIOSH Certification																												
UIPE Increment 2 - Baseline Ensemble Testing																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE Increment 2 - Material Development/ Tradespace Analysis							■																					
UIPE Increment 2 - Milestone A							■																					
UIPE Increment 2 - Manufacturing Readiness Review (MRA) / Technology Readiness Assessment (TRA)							■																					
UIPE Increment 2 - Design Concept/System Level Risk Reduction Testing					■	■																						
UIPE Increment 2 - System Level Design Concept Testing									■	■	■																	
UIPE Increment 2 - Preliminary Design Review (PDR)											■																	
UIPE Increment 2 - Capability Development Document (CDD)											■																	
UIPE Increment 2 - Milestone B											■																	
UIPE Increment 2 - EMD Contract Award											■																	
UIPE Increment 2 - Prototype Development													■	■	■													

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JSAM FW - AP22P(A) ECP Integration	1	2015	4	2015
JSAM FW - AP22P(A) USAF Variant Purchase	4	2015	4	2015
JSAM FW - MM53 Developmental Testing	1	2015	3	2016
JSAM FW - Critical Design Review (CDR)	1	2015	4	2015
JSAM FW - Design Verification Testing (DVT)	1	2015	4	2015
JSAM RW - Multi Service Operational Test and Evaluation (MOT&E) USA/USAF	2	2015	3	2015
JSAM RW - MS C/ Low Rate Initial Production (LRIP)	2	2015	2	2015
JSAM RW - Multi Service Operational Test and Evaluation (MOT&E) USN/USMC	2	2016	1	2017
JSAM RW - USAF IOC	2	2017	2	2017
JSAM RW - USAF FOC	1	2018	1	2018
JSAM RW - USA IOC	2	2018	2	2018
JSAM RW - USN/USMC IOC	4	2018	4	2018
JSAM RW - Full Rate Production (FRP)	4	2017	4	2017
JSAM SA - MM53 Developmental Testing	1	2015	3	2016
JSAM SA - MS C / Low Rate Initial Production	4	2016	1	2017
JSAM SA - Operational Testing	2	2017	2	2019
JSAM SA - LRIP 1	4	2016	1	2017
JSAM SA - LRIP 2	4	2017	1	2018
JSAM SA - LRIP 3	3	2018	4	2018
JSAM SA - LRIP 4	2	2019	4	2019
JSAM SA - MS C / Full Rate Production	1	2020	4	2021
JSAM SA - Initial Operational Capability	1	2019	4	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IP5 / INDIVIDUAL PROTECTION (EMD)
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Events	Start		End	
	Quarter	Year	Quarter	Year
JSAM TA - MS C Low Rate Initial Production (LRIP)	2	2016	2	2019
JSAM TA - Aircraft Platform Integration/ Operational Testing	2	2016	2	2019
JSAM TA - Initial Operational Capability	1	2018	4	2018
JSAM TA - Full Rate Production (FRP)	3	2019	4	2021
JSAM JSF - Developmental Testing	1	2015	2	2016
JSAM JSF - Safe-to-Fly Certification	1	2015	2	2016
JSAM JSF - Logistic Demonstration	1	2015	1	2015
JSAM JSF - LRIP Decision	1	2016	1	2016
JSAM JSF - Manufacturing Readiness Assessment, System Verification Review, Production Readiness Review	4	2015	2	2016
JSAM JSF - Production Contract Award	2	2016	2	2016
JSAM JSF - LRIP Support	1	2016	4	2017
JSAM JSF - F-35 CB SDD Flights	2	2016	3	2016
JSAM JSF - Instructor Key Personnel Training (IKPT)	2	2016	2	2016
JSAM JSF - Physical Configuration Audit	3	2016	3	2016
JSAM JSF - Chemical and Biological (CB) Live Fire Test and Evaluation (LFTE)	3	2016	1	2017
JSGPM - Bed Design Analysis (CoZZAT)	1	2015	2	2015
JSGPM - TD Contract Award (CoZZAT)	2	2015	3	2015
JSGPM - Prototype Systems Development and Delivery (CoZZAT)	2	2015	4	2015
JSGPM - M53A1 NIOSH Certification	1	2016	1	2016
UIPE Increment 2 - Baseline Ensemble Testing	2	2015	1	2016
UIPE Increment 2 - Material Development/Tradespace Analysis	3	2016	3	2016
UIPE Increment 2 - Milestone A	3	2016	3	2016
UIPE Increment 2 - Manufacturing Readiness Review (MRA) / Technology Readiness Assessment (TRA)	3	2016	3	2016
UIPE Increment 2 - Design Concept/System Level Risk Reduction Testing	1	2016	2	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IP5 / <i>INDIVIDUAL PROTECTION (EMD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
UIPE Increment 2 - System Level Design Concept Testing	4	2016	2	2017
UIPE Increment 2 - Preliminary Design Review (PDR)	3	2017	3	2017
UIPE Increment 2 - Capability Development Document (CDD)	3	2017	3	2017
UIPE Increment 2 - Milestone B	3	2017	3	2017
UIPE Increment 2 - EMD Contract Award	3	2017	3	2017
UIPE Increment 2 - Prototype Development	4	2017	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IS5: INFORMATION SYSTEMS (EMD)	-	12.277	19.960	27.323	-	27.323	24.676	25.853	26.236	28.806	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP). Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

Efforts included in this project are: (1) Chemical Biological Radiological and Nuclear Information Systems (CBRN IS); (2) Joint Effects Model (JEM); (3) Joint Warning and Reporting Network (JWARN); (4) Biosurveillance Portal (BSP); and (5) Software Support Activity (SSA).

CBRN IS aligns Joint Program Executive Office for Chemical Biological Defense (JPEO CBD) information technology in order to utilize a common software architecture, eliminate duplicative integration effort, produce interoperable system components, and minimize time-to-market of end user capability. JPEO CBD information technology is assembled from the inventory of available capability in place of the current paradigm where functionality only exists within the individual Joint Effects Model (JEM), Joint Warning and Report Network (JWARN), and Biosurveillance Portal (BSP) applications. CBRN IS aligns with the Joint Information Environment (JIE), such as milCloud, in order to field the integrated capabilities. The JIE is the cornerstone of the DoD's future - providing a secure information framework from our national senior leaders and joint force commanders, command and control forces that deliver responsive, decisive actions from any device; anytime and anywhere.

The Joint Effects Model (JEM) is a web-based software application that supplies the Department of Defense (DoD) with the one and only accredited tool to effectively model and simulate the effects of Chemical, Biological, Radiological and Nuclear (CBRN) weapon strikes and incidents. JEM is capable of providing all Warfighters with the ability to accurately model and predict the time-phased impact of CBRN and Toxic Industrial Chemical/Material (TIC/TIM) events and effects. JEM supports planning to mitigate the effects of Weapons of Mass Destruction (WMD) and to provide rapid estimates of hazards and effects into the Common Operational Picture (COP).

Follow-on increments of JEM will refine and display hazard areas in near real time to reflect inputs such as meteorological, oceanographic, or actual agent concentration data. JEM will automatically receive input data from the Command, Control, Communications, Computers and Intelligence (C4I) system on which it resides such as historical climatology, local observations, weather forecasts, natural environmental threats (i.e.: pandemic influenza, etc.), terrain data, intelligence information, or population data. Increment 2 will allow manual user input for factors such as concentrations of chemical warfare agents or actual exposure measurements and forecast sheltering stay-times and provide for modeling sheltering time through user-defined scenarios.

The Joint Warning and Reporting Network (JWARN) is an accredited Department of Defense (DOD) warning and reporting system that provides a standardized warning and reporting capability for Chemical, Biological, Radiological and Nuclear (CBRN) and Toxic Industrial Materials (TIM) incidents.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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JWARN supports the Joint Force Commander (JFC) by improving force protection capabilities for units operating in chemical, biological, radiological and nuclear environments. JWARN provides a digital display of CBRN 1-6 reports on the Common Operational Picture, displayed through Service provided C4I systems resident at all echelons of command. JWARN will be operated by CBRN and non-CBRN trained personnel operating in the operations center at various command nodes. This provides commanders with situational awareness to inform decision making for force protection criteria, unmasking operations, decontamination, and continuity of operations in a contaminated environment. Future sensor configurations will forward sensor inputs directly to JWARN via established communication lanes, removing the man-in-the-loop requirement with the current system configuration. JWARN will be information system classification agnostic and must be able to operate on unclassified, secret, top secret, and mission partner IT Systems without increasing system operator requirement, i.e.: sensor to COP via one communication loop. As a result, sensors will then be able to communicate with JWARN on the same network, regardless of classification.

JEM and JWARN utilize the Joint Capabilities Integration and Development System (JCIDS) Manual prescribed Information Technology Box (IT Box) construct for managing requirements for the follow-on increments of capability development. The "IT Box" is an acquisition approach and methodology regarding how software systems should be developed and fielded. It is a process that differs from the way DoD acquires hardware systems. The acquisition approach uses the Information Systems Initial Capabilities Document (IS ICD) to describe the required operational capabilities for the entire development effort. These overarching requirements are further broken out into Requirements Definition Packages (RDPs) released over the life of the product instead of a single Capability Development Document released early in the program. "Agile Software Development", a term used frequently through the JPM IS R forms, is a set of industry standard software development methods used in conjunction with the IT Box framework. Agile Software Development promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change. The Agile methodology is an alternative to traditional program management, typically used in software development. It helps teams respond to unpredictability through incremental, iterative work cadences, known as sprints. Agile methodologies are an alternative to waterfall, or traditional sequential development.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 Interim to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MSB) decision by the Milestone Decision Authority that covers the entire program. MS B is followed by a series of supporting Build Decisions (BDs) associated with each RDP as they are released. The supporting BDs will ensure incorporation of mature technology and development efforts culminating in incremental deliveries of capability to Joint and Service Command and Control (C2) architectures. Instead of a single Milestone C decision and fielding event for one increment, the program will return to the MDA for more frequent fielding decisions, as often as annually, as portions of capability are determined suitable and operationally effective. These multiple fielding efforts are based on providing capabilities with the most value to the operators based on Warfighter priorities/needs, maturation of the technology being incorporated and available resources supporting the effort.

The Biosurveillance Portal (BSP) is a web-based enterprise environment that will facilitate collaboration, communication, and information sharing in support of the detection, management, and mitigation of man-made and naturally occurring biological events. BSP bridges the communication gaps in the biosurveillance domain to provide a central access point for biosurveillance information and situational awareness for DoD, interagency and allied partners supporting the early identification and response to biological events.

BSP provides an integrated suite of web-based components designed to support public health officers, environmental officers, clinicians, physicians, and CBRN personnel as they maintain their situational awareness of local, regional, and global biological threats to the force. BSP does not duplicate existing DoD capabilities,

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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but rather leverages existing tools and technologies to provide users across multiple organizations and disciplines with a centralized "one-stop shop" for all of their biosurveillance resources.

As software-intensive systems, JEM, JWARN, and BSP have no separately identifiable unit production components. JEM and JWARN are designated as ACAT III programs and unit cost calculations including Program Acquisition Unit Cost/Average Procurement Unit Cost (PAUC/APUC) and Operations and Sustainment (O&S) average annual per unit costs are not applicable. Expect BSP to be similarly designated.

The Software Support Activity (SSA) is a Chem-Bio Defense user developmental support and service organization to facilitate net-centric interoperability of systems in acquisition for the Warfighter. The SSA provides the CBRN Warfighter with Joint Service solutions for Cybersecurity/Information Assurance (IA), Integrated Architectures, Data Management/Modeling, Interoperability Certifications, Verification, Validation and Accreditation (VV&A) to support interoperable and integrated net-centric, service-oriented solutions for CBRN systems. The SSA emphasizes development of reference implementations to guide Government and industry system and software developers to ensure that their products meet common interoperability standards. The latest technologies/products include the definition of a Common CBRN Sensor Integration Standard (CCSI) and the CBRN Data Model. These technologies and direct enablers for the development of CBRN integrated sensor networks and the dissemination of CBRN information across all users. The SSA directly supports Chemical and Biological Defense Program (CBDP) initiatives by providing common service oriented architectures and frameworks for the collection and dissemination of Bio-Surveillance and other critical CBRN information.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) BSP Product Development</p> <p>FY 2016 Plans: Plan to development and integration of BSP capabilities for inclusion in Capability Releases. This will included architecture development, system design, key system tools, third party developed models, access to external data sources, information assurance, and host platform design.</p> <p>FY 2017 Plans: Continued development and integration of BSP capabilities for inclusion in Capability Releases. This will included architecture development, system design, key system tools, third party developed models, access to external data sources, information assurance, and host platform design.</p>	-	6.954	8.101
<p>Title: 2) BSP Developmental Test and Evaluation</p> <p>FY 2016 Plans: Joint and Service Developmental Testing of BSP Capability Releases as required in accordance with the BSP Test and Evaluation Master Plan (TEMP).</p> <p>FY 2017 Plans:</p>	-	0.998	0.984

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continued Joint and Service Developmental Testing of BSP Capability Releases as required in accordance with the BSP Test and Evaluation Master Plan (TEMP).				
Title: 3) BSP Program Management Support FY 2016 Plans: Will provide support for the management of all aspects of BSP development and testing. Tasks will included, planning, budgeting, execution oversight, risk management, user feedback, scheduling, and administration. FY 2017 Plans: Continued support for the management of all aspects of BSP development and testing. Tasks will included, planning, budgeting, execution oversight, risk management, user feedback, scheduling, and administration.		-	0.867	1.003
Title: 4) BSP Operational Testing and Evaluation FY 2016 Plans: Will support the Operational Testing of BSP in a realistic operational environment prior to fielding decision to determine system suitability and supportability. Support will consist of test support personnel as well as engineering, and operational support. FY 2017 Plans: Continued Operational Testing of BSP in a realistic operational environment prior to fielding decision to determine system suitability and supportability. Support will consist of test support personnel as well as engineering, and operational support.		-	1.135	1.486
Title: 5) CBRN IS - Technical Guidance FY 2017 Plans: Define CBRN IS Technical Guidance.		-	-	0.500
Title: 6) CBRN IS - Standardization FY 2017 Plans: Ensure BSP, JEM, JWARN are built using industry standards and best practices that are consistent with CBRN IS.		-	-	0.800
Title: 7) CBRN IS - Cybersecurity / Information Assurance FY 2017 Plans: Implement cybersecurity lock-downs for CBRN and achieve an Authority To Operate.		-	-	0.500
Title: 8) CBRN IS - Product Development FY 2017 Plans:		-	-	2.339

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Install CBRN IS on milCloud and other data centers. "milCloud" is a cloud-services product portfolio, managed by DISA. milCloud allows our users to access our web-enabled products world-wide without having the application directly installed on their machines. Ensure it can be operational 24/7.				
Title: 9) CBRN IS - Operational Assessments		-	-	1.500
FY 2017 Plans: Conduct Operational Assessments of CBRN IS in various operational environments.				
Title: 10) JEM - Increment 2 Developmental Test and Evaluation		1.305	0.677	0.656
FY 2015 Accomplishments: Conducted Government Development Test of the software deliveries. Conduct independent Verification, Validation, and Accreditation of software models to support OT.				
FY 2016 Plans: Continue Government Development Test of software deliveries.				
FY 2017 Plans: Continue Government Development Test of software deliveries in Command and Control (C2) environments. Continue test of JEM Increment 2 implementation in the DISA milCloud environment. Perform verification, validation, and accreditation of new hazard prediction models provided by the S&T community.				
Title: 11) JEM - Increment 2 Program Development		4.594	1.005	1.051
FY 2015 Accomplishments: Developed JEM Increment 2 software development and perform integration into Command and Control (C2) systems.				
FY 2016 Plans: Continue development of JEM Increment 2 software and perform integration into Command and Control (C2) systems.				
FY 2017 Plans: Continue development of JEM Increment 2 software and perform integration into Command and Control (C2) systems. Integrate new hazard prediction models provided by the S&T community into the JEM Increment 2 baseline software.				
Title: 12) JEM - Increment 2 Program Management		0.747	0.833	0.674
FY 2015 Accomplishments: Performed program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continued development and execution of Build Decisions (BD) for JEM Increment 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in				

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>order to deploy JEM Increment 2 to the services. Completed development of Requirements Definition Package 3 (RDP-3), which defines requirements for C2 systems integration of the JEM software. Completed Build Decision 2 (BD2) for JEM Increment 2.</p> <p>FY 2016 Plans: Complete Fielding Decision and IOC of Stand Alone capabilities of JEM Increment 2. Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continue development and execution of Build Decision 4 (BD4) for JEM Increment 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in order to deploy JEM Increment 2 to the services. Complete development of Requirements Definition Package 3 (RDP-3), which defines requirements for C2 systems integration of the JEM software. Complete fielding decision and IOC of C2 systems capabilities of JEM Increment 2.</p> <p>FY 2017 Plans: Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Manage transitions of mature science and technology from JSTO into the JEM increment 2 program. Continue development and execution of Build Decision 3 (BD3) for JEM Increment 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in order to deploy JEM Increment 2 to the services. Complete development of Requirements Definition Package 4 (RDP-4), which defines requirements for C2 systems integration of the JEM software.</p>				
<p>Title: 13) JEM - Increment 2 Operational Test and Evaluation</p> <p>FY 2015 Accomplishments: Developed Operational Test Plans. Conducted lab based Operational Test (OT) and limited scope service-specific Initial Operational Test & Evaluation (IOT&E) which will allowed for Initial Operational Capability (IOC) of JEM Increment 2 as a standalone to be deployed to the services.</p> <p>FY 2016 Plans: Continue lab based OT and limited scope service specific IOT&E to support fielding of software with additional capability. Conduct Service C2 Follow-on Test and Evaluation (FOT&E) which will allow for IOC of JEM Increment 2 on service C2 systems.</p> <p>FY 2017 Plans: As a continuation of the agile development process, for each IT Box Capability Drop (CD), develop operational test plans and conduct lab based OT and limited scope service specific IOT&E to support fielding decisions for the JEM Increment 2 software. Continue Service C2 and DISA milCloud Follow-on Test and Evaluation (FOT&E) of JEM Increment 2 on service C2 systems and the milCloud environment.</p>		1.050	1.037	0.539
<p>Title: 14) JWARN Management Support</p>		0.351	0.574	0.735

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Achieved Milestone B (MS B) approval. As part of IT Box development received approval for the following: Build Decision 1 (BD-1), Requirements Definition Packages 1 & 2 (RDP-1/2) and Capability Drops 1.1 & 1.2 (CD 1.1/1.2).</p> <p><i>FY 2016 Plans:</i> Continue program/financial management, costing, contracting, scheduling and acquisition oversight for JWARN Increment 2. Continue development and execution of Build Decisions (BDs) for JWARN Increment 2 while working within the Agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in preparation for test and deployment of JWARN Increment 2 to the services.</p> <p><i>FY 2017 Plans:</i> Provide program/financial management, costing, contracting, scheduling and acquisition oversight for JWARN Increment 2. Continue development and execution of Build Decisions (BDs) for JWARN Increment 2 while working within the Agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in preparation for test and deployment of JWARN Increment 2 to the services.</p>			
<p><i>Title:</i> 15) JWARN - Increment 2 Product Development</p> <p><i>FY 2015 Accomplishments:</i> Initiated JWARN Increment 2 software development and perform integration into Command and Control (C2) systems.</p> <p><i>FY 2016 Plans:</i> Continue JWARN Increment 2 software development and perform integration into Command and Control (C2) systems. Initiate integration of CBRN sensor/detector data/input with JWARN software baseline.</p> <p><i>FY 2017 Plans:</i> Continue JWARN Increment 2 software development and perform integration into Command and Control (C2) systems and integration of CBRN sensor/detector data/input with JWARN software baseline.</p>	1.601	2.609	3.196
<p><i>Title:</i> 16) JWARN - Developmental Test and Evaluation</p> <p><i>FY 2015 Accomplishments:</i> Initiate Government development test and evaluation of software deliveries in preparation for Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability of JWARN Increment 2 to be deployed to the services.</p> <p><i>FY 2016 Plans:</i></p>	0.153	0.257	0.329

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue Government development test and evaluation of software deliveries in preparation for Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability of JWARN Increment 2 to be deployed to the services. FY 2017 Plans: Continue Government development test and evaluation of software deliveries in preparation for annual Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability of JWARN Increment 2 to be deployed to the services.				
Title: 17) JWARN - Operational Test and Evaluation FY 2015 Accomplishments: Conducted Operational Test and Evaluation. FY 2016 Plans: Conduct Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability (IOC) of JWARN Increment 2 to be deployed to the services. FY 2017 Plans: Conduct Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability (IOC) of JWARN Increment 2 to be deployed to the services.		0.462	0.789	0.809
Title: 18) SSA Policies, Standards and Guidelines FY 2015 Accomplishments: Provided updates to acquisition documentation for CBRN IT systems based on changes in policy, procedures, and guidelines. Performed surveillance of Federal Information Security Management Act (FISMA) and DoD Acquisition policies necessary to maintain certification on deployed service platforms. Provided M&S strategic and accreditation support. FY 2016 Plans: Continue updates to acquisition documentation for CBRN IT systems based on changes in policy, procedures, and guidelines. Perform surveillance of Federal Information Security Management Act (FISMA) and DoD Acquisition policies necessary to maintain certification on deployed service platforms. Provide M&S strategic and accreditation support. FY 2017 Plans: Continue updates to acquisition documentation for CBRN IT systems based on changes in policy, procedures, and guidelines. Perform surveillance of Federal Information Security Management Act (FISMA) and DoD Acquisition policies necessary to maintain certification on deployed service platforms. Provide M&S strategic and accreditation support.		0.203	0.211	0.235
Title: 19) SSA Integrated Architecture		0.240	0.247	0.276

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Modified the Integrated Architecture on host platforms and document the infrastructure and technical standards. Conducted Net-Centric Assessments for programs. Reviewed and updated the Common CBRN Interface standards on operational systems, including a CCSI.</p> <p><i>FY 2016 Plans:</i> Continue to perform required modifications to the Integrated Architecture on host platforms and document the infrastructure and technical standards. Conduct Net-Centric Assessments for programs. Review and update the Common CBRN Interface standards on operational systems, including a CCSI.</p> <p><i>FY 2017 Plans:</i> Continue to perform required modifications to the Integrated Architecture on host platforms and document the infrastructure and technical standards. Conduct Net-Centric Assessments for programs. Review and update the Common CBRN Interface standards on operational systems, including a CCSI.</p>			
<p><i>Title:</i> 20) SSA Enterprise Support and Services</p> <p><i>FY 2015 Accomplishments:</i> Supported processes and support services for Cybersecurity/Information Assurance, Architectures, Data, Modeling and Simulation, Science and Technology, and Standards and Policy. Modified support processes and services necessary to maintain relevancy in accordance with DoD standards, policies, and guidelines.</p> <p><i>FY 2016 Plans:</i> Continue to support processes and services for Architectures, Data, Information Assurance, Modeling and Simulation, Science and Technology, and Standards and Policy. Modify support processes and services necessary to maintain relevancy in accordance with DoD standards, policies, and guidelines.</p> <p><i>FY 2017 Plans:</i> Continue to support processes and services for Cybersecurity/Information Assurance, Architectures, Modeling and Simulation, Science and Technology, and Standards and Policy. Modify support processes and services necessary to maintain relevancy in accordance with DoD standards, policies, and guidelines.</p>	0.219	0.177	0.197
<p><i>Title:</i> 21) SSA Chemical, Biological, Radiological, Nuclear (CBRN) Data Model</p> <p><i>FY 2015 Accomplishments:</i> Developed and updated CBRN data model and define the structure and content of information exchange "Extensible Markup Language"(XML) schemas that support interoperability between CBD programs.</p> <p><i>FY 2016 Plans:</i></p>	0.167	0.198	0.221

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue to develop and update CBRN data model and define the structure and content of information exchange "Extensible Markup Language"(XML) schemas that support interoperability between CBD programs. FY 2017 Plans: Continue to develop and update CBRN data model and define the structure and content of information exchange "Extensible Markup Language"(XML) schemas that support interoperability between CBD programs.				
Title: 22) SSA Cybersecurity / Information Assurance FY 2015 Accomplishments: Employed Information Systems Security Engineering (Cybersecurity) efforts to develop or modify the Cybersecurity/Information Assurance (CS/IA) component of a system architecture to ensure it is in compliance with the CS/IA component of the Global Information Grid architecture, and makes maximum use of enterprise CS/IA capabilities and services. FY 2016 Plans: Continue to employ Information Systems Security Engineering efforts to develop or modify the IA component of a system architecture to ensure it is in compliance with the IA component of the Global Information Grid architecture, and makes maximum use of enterprise IA capabilities and services. FY 2017 Plans: Continue to employ Information Systems Security Engineering (Cybersecurity) efforts to develop or modify the Cybersecurity/Information Assurance (CS/IA) component of a system architecture to ensure it is in compliance with the IA component of the Global Information Grid architecture, and makes maximum use of enterprise CS/IA capabilities and services.		0.477	0.423	0.509
Title: 23) SSA Policy and Standards Repository FY 2015 Accomplishments: Provided standards, formats, templates, training, and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices. FY 2016 Plans: Continue to provide standards, formats, templates, training, and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices. FY 2017 Plans:		0.357	0.355	0.396

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue to provide standards, formats, templates, training, and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices.			
Title: 24) SSA Technology Transition Support	0.351	0.257	0.287
FY 2015 Accomplishments: Performed Technology Transition support services (common components and services) for CBD programs.			
FY 2016 Plans: Continue to perform Technology Transition support services (common components and services) for CBD programs.			
FY 2017 Plans: Continue to perform Technology Transition support services (common components and services) for CBD programs.			
Title: 25) SBIR/STTR	-	0.357	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	12.277	19.960	27.323

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• IS7: INFORMATION SYSTEMS (OP SYS DEV)	4.703	7.703	10.357	-	10.357	12.707	13.219	13.967	13.590	Continuing	Continuing
• G47101: JOINT WARNING & REPORTING NETWORK (JWARN)	0.766	0.000	3.889	-	3.889	1.022	0.533	0.479	0.431	Continuing	Continuing
• JC0208: JOINT EFFECTS MODEL (JEM)	1.141	3.316	3.069	-	3.069	3.086	3.031	2.728	2.455	Continuing	Continuing
• JS5230: SOFTWARE SUPPORT ACTIVITY (SSA)	0.000	0.100	0.300	-	0.300	0.100	0.100	0.090	0.081	Continuing	Continuing

Remarks

D. Acquisition Strategy
BIOSURVEILLANCE PORTAL (BSP)

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The Biosurveillance Portal (BSP) program will meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. BSP is a new start program in FY16. The BSP program will utilize the JROC's "IT Box" construct for program requirements, management, and development. The intent is to provide the next generation of capability with current and future technologies in less time and fielding products to the DoD utilizing an incremental delivery approach. IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 Interim to conduct multiple, more frequent fielding events in lieu of a single fielding event. Capabilities will be developed and delivered in a series of Capability Drops (CDs) identified in Requirement Definition Packages (RDPs). Intent is to deliver CDs every three months. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD and an operational assessment (OA) will be conducted to verify capabilities for each RDP. User Feedback Events (UFEs) will be conducted with identified Users to illicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) is targeted for 3QFY16 with Final Operational Capability to be delivered in 3QFY20.

CBRN INFORMATION SYSTEMS

CBRN IS utilizes the agile construct for software requirements management and development. The intent is to scan the programs within the JPEO CBD, DTRA, and other sources for IT assets that can be hosted in a cloud environment and provide a CBRN capability for the warfighter. Once a program has been identified for integration into CBRN IS, an evaluation will occur in order to see if any changes are necessary. Modifications will be completed in coordination with the developer of the capability in order to be in alignment with CBRN IS guidelines.

JOINT EFFECTS MODEL (JEM)

JEM Increment 2 acquisition will utilize the JROC's "IT Box" construct for software development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and fielding products to the service more frequently than an incremental delivery approach.

As part of this strategy, JEM program office developed and issued a competitive prototyping contract in April 2013 where two offerers were given the same Technical Data Package (TDP), performance Work Statement (PWS), and software requirements and were tasked to deliver a JEM prototype that implements the CCMI architecture. This competitive prototyping strategy was successful and a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in December 2013.

The current contractor for JEM 2.0 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) document. The JRO will release RDPs-2, 3, and 4 over the next three years prior to contract completion. It is anticipated when the contract is re-competed in FY17 that there will be four of five capability drops not yet developed under RDP-2 and two of five under RDP-3. The follow-on contract in FY17 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JEM follow-on contract will utilize full and open competition and will be referred to as the JEM development, modernization and sustainment contract.

The JEM IS ICD describes the notional implementation plan for fielding of future JEM capabilities among five separate JEM Requirement Definition Packages (RDPs). RDP-1 contains the baseline capabilities for software and was approved in June of 2014. Since last report, the numbering scheme for RDPs was rearranged to account for the sequence of approval for each RDP. RDP-2 now defines requirements to integrate baseline capabilities into a version that can be fielded on service

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C2 systems will be released in RDP-2. RDP-2 will be released following RDP-1 to rapidly allow baseline capabilities to be incorporated into C2 systems. RDP-3 is a notional package that allows the Science and Technology community a venue to use the JEM program to develop a version of the product for S&T and analytical use. Capabilities that are only required for the Science and Technology and analytical communities and not for operational users would be implemented in RDP-3. Capabilities in RDP-3 would not be required to go to Operational Test, as they would not be fielded to operational users. RDP-4 will be released after the completion of RDP-1. This RDP will incorporate emerging capabilities that have reached a sufficient maturity for incorporation into the operationally fielded JEM system, such as ability to model new agents. RDP-5 was added as a mechanism to define requirements for JEM 2.0 through the remainder of its life cycle.

- RDP 1 - Baseline Capabilities: There are 5 planned Capability Drops (CD) within RDP 1.
- RDP 2 - C2 Integration: There are 8 planned Capability Drops (CD) within RDP 2 tied to all the various Strategic and Service C2 Systems
- RDP 3 - Analytical Support: There are 2 planned Capability Drops (CD) within RDP 3.
- RDP 4 - Emerging Capabilities: There are 5 planned Capability Drops (CD) within RDP 4.
- RDP 5 - Modernization and Sustainment: There are 2 Capability Drops (CD) planned per year through the life of the program.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in September 2014. Each subsequent RDP will have an associated Build Decision. Each CD will have an associated fielding decision.

JOINT WARNING & REPORTING NETWORK (JWARN)

JWARN Increment 2 utilizes the JROC's "IT Box" construct for software requirements management and development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and away from an incremental delivery approach. This effort is being executed under a Cost-Plus-Award Term Incentive structure to gain maximum benefit to the Government in maintaining the fielded baseline and future software capability development and was awarded under a full and open competition Request for Proposal (RFP). The JWARN Program will procure a Sensor Connectivity Capability (SCC) (hardware materiel solution) in order to facilitate the transfer of CBRN sensor information from legacy CBRN sensors to DoD networks. This solution will be external to the CBRN Sensors and Service-identified network transmission device(s).

SOFTWARE SUPPORT ACTIVITY (SSA)

The SSA provides enterprise-wide services and coordination across all CBDP programs that contain data or software, or are capable of linking to the Global Information Grid (GIG). The SSA facilitates interoperability, integration, and supportability of existing and developing IT and National Security Systems (NSS). This will be followed by coordination to facilitate the concepts of interoperability, integration and supportability of enterprise-wide services. Next follows work with user communities to develop and demonstrate enterprise-wide common architectures, products and services. The SSA will support the application of the enterprise-wide architectures, products and services into the programs, with verification of compliance with the defined products and services.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSP - SW S - software	Various	TBD : TBD	0.000	0.000		6.954	Mar 2016	8.101	Mar 2017	-		8.101	Continuing	Continuing	0.000
CBRN IS - SW S	MIPR	Various : TBD	0.000	0.000		0.000		2.339	Dec 2016	-		2.339	Continuing	Continuing	0.000
JEM - SW SB - Increment 2 - Hazard Prediction Model Development and Integration	C/CPAF	General Dynamics Information Technologies : Fairfax, VA	5.927	4.594	Apr 2015	1.005	Apr 2016	1.051	Apr 2017	-		1.051	Continuing	Continuing	0.000
JWARN - SW S - Increments 1&2 - Software Development	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	0.000	1.601	Feb 2015	2.609	Feb 2016	3.196	Feb 2017	-		3.196	Continuing	Continuing	0.000
SSA - SW S - CBRN Data Model	C/CPAF	Various : TBD	5.679	0.664	Mar 2015	0.615	Mar 2016	0.687	Mar 2017	-		0.687	Continuing	Continuing	0.000
Subtotal			11.606	6.859		11.183		15.374		-		15.374	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CBRN IS - ES S	MIPR	Various : TBD	0.000	0.000		0.000		1.300	Dec 2016	-		1.300	Continuing	Continuing	0.000
SSA - ES S - Support Costs	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	7.221	0.616	Dec 2014	0.549	Nov 2015	0.649	Dec 2016	-		0.649	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.357	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			7.221	0.616		0.906		1.949		-		1.949	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSP - DTE S - Software	MIPR	Various : TBD	0.000	0.000		0.998	Dec 2015	0.984	Mar 2017	-		0.984	Continuing	Continuing	0.000

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - OTE S - Software - MOT&E	MIPR	Various : TBD	0.000	0.000		1.135	Dec 2015	1.486	Mar 2017	-		1.486	Continuing	Continuing	0.000
CBRN IS - OTE S	MIPR	Various : TBD	0.000	0.000		0.000		1.500	Dec 2016	-		1.500	Continuing	Continuing	0.000
JEM - DTE SB - Increment 2 - Hazard Prediction Model Development Test	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	7.360	1.305	Dec 2014	0.677	Nov 2015	0.656	Dec 2016	-		0.656	Continuing	Continuing	0.000
JEM - OTHT C - Increment 2 - OT&E Hazard Prediction Modeling software	MIPR	Various : TBD	0.000	1.050	Dec 2014	1.037	Nov 2015	0.539	Dec 2016	-		0.539	Continuing	Continuing	0.000
JWARN - DTE S - Increment 2	MIPR	Various : TBD	0.000	0.153	Dec 2014	0.257	Dec 2015	0.329	Dec 2016	-		0.329	Continuing	Continuing	0.000
JWARN - OTE S - Increment 2	MIPR	Various : TBD	0.000	0.462	Dec 2014	0.789	Dec 2015	0.809	Dec 2016	-		0.809	Continuing	Continuing	0.000
SSA - DTE S - Test and Evaluation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.718	0.477	Dec 2014	0.461	Nov 2015	0.514	Dec 2016	-		0.514	Continuing	Continuing	0.000
Subtotal			10.078	3.447		5.354		6.817		-		6.817	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - PM/MS S - Program Management	Various	Various : TBD	0.000	0.000		0.867	Dec 2015	1.003	Dec 2016	-		1.003	Continuing	Continuing	0.000
CBRN IS - PM/MS S	MIPR	Various : TBD	0.000	0.000		0.000		0.500	Dec 2016	-		0.500	Continuing	Continuing	0.000
JEM - PM/MS S - Program Office - Planning and Programming	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	5.643	0.747	Dec 2014	0.833	Nov 2015	0.674	Dec 2016	-		0.674	Continuing	Continuing	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BSP - MS B	■																											
BSP - TEMP			■	■	■	■																						
BSP - RDP-1			■	■	■	■	■																					
BSP - Operational Test and Evaluation - RDP 1						■	■																					
BSP - IOC							■																					
BSP - RDP-2						■	■	■	■																			
BSP - RDP-3										■	■	■	■															
BSP - RDP-4														■	■	■	■											
BSP - RDP-5																	■	■	■	■								
JEM Increment 2 - BD 1	■																											
JEM Increment 2 - RDP 2 / Build Decision 2				■																								
JEM Increment 2 - BD 2				■																								
JEM Increment 2 - FD 1					■																							
JEM Increment 2 - RDP 3						■																						
JEM Increment 2 - IOC Standalone							■																					
JEM Increment 2 - BD 3								■																				
JEM Increment 2 - FD 2									■																			
JEM Increment 2 - RDP 4										■																		
JEM Increment 2 - FD 3											■																	
JEM Increment 2 - FD 4												■																
JEM Increment 2 - C2 Integration Development Test																												
JEM Increment 2 - Govt DT / OT / V&V																												
JWARN Increment 2 - RDP 1 Approval	■																											
JWARN Increment 2 - MS B				■																								

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JWARN Increment 2 - RDP 1 Build Decision			■																									
JWARN Increment 2 - Baseline Critical Design Review (Software)				■																								
JWARN Increment 2 - RDP 2 Approval & Build Decision				■																								
JWARN Increment 2 - TEMP (Software)				■																								
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs				■																								
JWARN Increment 2 - RDP 3 Approval & Build Decision								■																				
JWARN Increment 2 - RDP 1 Fielding Decision & IOC Standalone Web								■																				
JWARN Increment 2 - RDP 2 Fielding Decision & IOC												■																
JWARN Increment 2 - RDP 3 Fielding Decision & IOC																■												
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	■																											
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	■																											
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	■																											
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	■																											
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	■																											

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface																												
SSA - Provide CM Services for Common User Products and Services																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BSP - MS B	1	2015	1	2015
BSP - TEMP	3	2015	1	2016
BSP - RDP-1	3	2015	3	2016
BSP - Operational Test and Evaluation - RDP 1	2	2016	3	2016
BSP - IOC	3	2016	3	2016
BSP - RDP-2	3	2016	3	2017
BSP - RDP-3	3	2017	3	2018
BSP - RDP-4	3	2018	3	2019
BSP - RDP-5	3	2019	3	2020
JEM Increment 2 - BD 1	1	2015	1	2015
JEM Increment 2 - RDP 2 / Build Decision 2	4	2015	4	2015
JEM Increment 2 - BD 2	4	2015	4	2015
JEM Increment 2 - FD 1	1	2016	1	2016
JEM Increment 2 - RDP 3	1	2016	1	2016
JEM Increment 2 - IOC Standalone	1	2016	1	2016
JEM Increment 2 - BD 3	2	2016	2	2016
JEM Increment 2 - FD 2	4	2016	4	2016
JEM Increment 2 - RDP 4	1	2017	1	2017
JEM Increment 2 - FD 3	4	2017	4	2017
JEM Increment 2 - FD 4	4	2018	4	2018
JEM Increment 2 - C2 Integration Development Test	1	2016	2	2020
JEM Increment 2 - Govt DT / OT / V&V	1	2015	4	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) IS5 / INFORMATION SYSTEMS (EMD)
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Events	Start		End	
	Quarter	Year	Quarter	Year
JWARN Increment 2 - RDP 1 Approval	1	2015	1	2015
JWARN Increment 2 - MS B	3	2015	3	2015
JWARN Increment 2 - RDP 1 Build Decision	3	2015	3	2015
JWARN Increment 2 - Baseline Critical Design Review (Software)	4	2015	4	2015
JWARN Increment 2 - RDP 2 Approval & Build Decision	4	2015	4	2015
JWARN Increment 2 - TEMP (Software)	4	2015	4	2015
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	4	2015	4	2020
JWARN Increment 2 - RDP 3 Approval & Build Decision	3	2016	3	2016
JWARN Increment 2 - RDP 1 Fielding Decision & IOC Standalone Web	3	2016	1	2017
JWARN Increment 2 - RDP 2 Fielding Decision & IOC	3	2017	1	2018
JWARN Increment 2 - RDP 3 Fielding Decision & IOC	3	2018	2	2019
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2015	4	2021
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2015	4	2021
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2015	4	2021
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	1	2015	4	2021
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2015	4	2021
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2015	4	2021
SSA - Provide CM Services for Common User Products and Services	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MB5: MEDICAL BIOLOGICAL DEFENSE (EMD)	-	169.400	107.883	106.223	-	106.223	170.667	190.756	188.537	181.318	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project includes medical countermeasures, development of reagents, assays, diagnostic equipment, biosurveillance and supporting efforts.

Biosurveillance programs align the biosurveillance efforts across the DoD and national strategies. The BSV program will scope and influence BSV capabilities as products to meet Warfighter requirements through innovative management of key BSV initiative. BSV will also support the Joint US Forces Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) ATD which will find, demonstrate, transition, and transfer the best operational concepts and technology solutions in support of a holistic approach to countering biological threats from laboratory to operational use. Depending on the maturity, outputs will focus on providing component, CONOPS, and subsystem transition into programs of record (PORs) and/or integration into existing PORs. Technologies identified from the JUPITR ATD will be fielded in FY16 to Pacific Command (PACOM). Future ATD developments will continue to bridge communication gaps between US Forces across other Combatant Command (COCOMs). The Biosurveillance (BSV) program will transfer from the Medical Countermeasures (MB) Project to the Contamination Avoidance (CA) Project effective FY 2016.

The Critical Reagents Program's (CRP) strategy establishes a core research and development capability by developing biological threat agent reference materials (strains, antigens, antibodies and nucleic acids) and detection/diagnostic assays for biothreat agent detection. These reagents/assays are leveraged across multiple programs to meet the requirements of the Warfighter and Joint biological defense systems and support the biological defense community. Through the Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) initiative, the CRP will use a systematic approach to the introduction of new materials and information into MCM development.

The Emerging Infectious Diseases Therapeutics (EID Tx) program is developing and will deliver a Food and Drug Administration (FDA) approved, broad-spectrum medical countermeasure to the Warfighter for protection against naturally occurring or biologically engineered viruses. The first indication being pursued is influenza due to a clear and established FDA regulatory approval pathway. The drug in development is highly efficacious against multiple influenza viruses, including the 2009 H1N1 pandemic virus, H5N1 avian influenza virus, the most recently identified H7N9 virus from the outbreak in China, and drug resistant strains of influenza viruses. It has also demonstrated efficacy against other viruses of concern to the DoD's biodefense program. FDA approval for an influenza treatment is anticipated following completion of the EMD phase. EID Tx will leverage on going filovirus countermeasure development to demonstrate additional broad-spectrum MCM's against naturally occurring and/or engineered biowarfare threats. To meet the mission need of "one drug, many bugs" EID Tx is testing product efficacy on BWA threats. This will allow the military to leverage a product that will be FDA approved for influenza against other viruses. This work will be funded by the Antiviral Therapeutic programs.

The Hemorrhagic Fever Virus (HFV) MCS Acquisition Program develops medical countermeasures (MCMs), using high threat, extremely lethal Biological Warfare Agents (BWAs) of the Filoviridae family agents as a model system. Medical countermeasures will be advanced through the Food and Drug Administration (FDA)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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licensure/approval via the FDA 'Animal Rule', which allows for the demonstration of efficacy in relevant animal model(s) when human testing is not ethically feasible. HFV will also conduct animal model development and refinement as needed to support the pivotal animal efficacy testing required under the FDA 'Animal Rule'. Completion of Phase I trials, animal model development, and manufacturing scale up were the focus of the TMRR phase. FDA approval for Filovirus therapeutics are expected following completion of the EMD phase. Beginning in FY17, the work will be continued under the Antiviral Therapeutic Countermeasures program.

The Antiviral Therapeutic Program will combine the efforts of the Emerging Infectious Diseases Therapeutics and the Hemorrhagic Fever Virus Program into a consolidated effort to develop and deliver FDA approved antiviral therapeutics for the warfighter, beginning in FY17. Drug products will be developed targeting the pathogens on the biological warfare threat lists, such as Ebola. This includes viruses of interest from the following families: Filoviridae, Alphaviridae, Arenaviridae, Bunyaviridae, and Flaviviridae. The program will conduct human clinical safety studies, pilot and pivotal animal efficacy, and toxicology studies, required for FDA approval. The performers will submit New Drug Applications/Biologic License Agreements for the therapeutics during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, they will be conducted during Production and Deployment.

The NGDS is an evolutionary acquisition family of systems to provide increments of capability over time across many echelons of the Combat Health Support System. The mission of the NGDS is to provide Chemical, biological and radiological (CBR) threat, and infectious disease identification and FDA-cleared diagnostics to inform individual patient treatment and CBR situational awareness and disease surveillance. NGDS Increment 1 will significantly improve diagnostic capabilities for deployable combat health support units (Role 3) while also improving operational suitability and affordability. The term "Role" is used to describe the stratification of the four tiers in which medical support is organized, on a progressive basis, to conduct treatment, evacuation, resupply, and functions essential to the maintenance of the health of the force. Role 3 support is normally provided at Division or Service equivalent level and includes specialist laboratory resources. NGDS Increment 2 will complement NGDS Increment 1 by developing diagnostics for unmet biological pathogen and toxin threats, chemical and radiological exposures, and to provide capability to lower echelons of care.

The DoD provides for the development of vaccines that are directed against validated biological warfare (BW) weapons to include bacteria, viruses, and toxins of biological origin. Effective medical countermeasures are urgently needed to negate the threat of these BW agents. Vaccines have been identified as the most efficient countermeasure against the validated threat of BW weapons. Products under development in this budget item include Recombinant Botulinum A/B, Plague, and Filovirus vaccines. Efforts to be conducted during the Engineering Manufacturing Development (EMD) Phase include the development of large scale manufacturing process and validation of that process, nonclinical studies, demonstration of manufacturing consistency, and expanded clinical human safety studies. The results of these efforts, and those conducted during the EMD phase, will be used to submit a Biologic License Application (BLA) to the Food and Drug Administration (FDA) for product licensure. To evaluate vaccine effectiveness, pivotal animal studies will be conducted concurrently with the Phase 3 clinical trial to satisfy the requirements of the FDA's "Animal Rule". The DoD anticipates that the FDA will approve these products using the Animal Rule, which allows for the demonstration of efficacy in relevant animal model(s). Upon FDA licensure, the product will transition to full-scale licensed production.

The DoD also has the mission to maintain Investigational New Drug (IND) vaccines in Good Manufacturing Practice (GMP) storage and to conduct the periodic potency and sterility testing of these materials to support submissions to the FDA. These IND vaccines will be used to provide additional levels of protection to laboratory workers in the Special Immunizations Program (SIP) conducting research on these diseases.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: 1) AV TX - Candidate 1 (Filovirus TRL 6)</p> <p>FY 2017 Plans: Complete source selection activities and award contract for Filovirus countermeasure. Initiate pilot and pivotal aerosol efficacy studies in a BSL 4, under GLP conditions. Initiate manufacturing process optimization activities for scale-up to meet DoD production requirements. Validation of assays to support GMP manufacture.</p> <p>Continue pivotal animal efficacy studies via aerosol and parenteral routes of challenge in non-human primates for Filo countermeasure. Continue manufacturing process optimization activities. Manufacture of GMP compliant drug substance and drug product.</p>	-	-	18.897
<p>Title: 2) BSV</p> <p>FY 2015 Accomplishments: Conducted down-select and test planning for the Assessment of Environmental Detector technologies.</p>	9.901	-	-
<p>Title: 3) BSV</p> <p>FY 2015 Accomplishments: Executed studies and initiatives to address biosurveillance capability needs across the CBRN program in alignment with DoD and National Strategies.</p>	3.167	-	-
<p>Title: 4) CRP</p> <p>FY 2015 Accomplishments: Continued development/expansion of biological select agents reference materials to known and emerging threats.</p> <p>FY 2016 Plans: Continue development/expansion of biological select agents reference materials to known and emerging threats.</p> <p>FY 2017 Plans: Continue development/expansion of biological select agents reference materials to known and emerging threats.</p>	2.438	1.918	1.753
<p>Title: 5) CRP</p> <p>FY 2015 Accomplishments: Continued development of immunoassays and nucleic acid based genomic assays to support fielded and developmental systems.</p> <p>FY 2016 Plans:</p>	1.290	1.370	1.514

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue development of immunoassays and nucleic acid based genomic assays to support fielded and developmental systems. FY 2017 Plans: Continue development of immunoassays and nucleic acid based genomic assays to support fielded and developmental systems.				
Title: 6) CRP FY 2015 Accomplishments: Continued QA/QC testing to encompass the transition and fielding of biological detection assays. FY 2016 Plans: Continue QA/QC testing to encompass the transition and fielding of biological detection assays. FY 2017 Plans: Continue QA/QC testing to encompass the transition and fielding of biological detection assays.		0.770	0.865	0.745
Title: 7) CRP FY 2015 Accomplishments: Continued to maintain yearly accreditation audits such as ISO 9001, 17025, and Guide 34 certifications. Continue quality actions throughout to maintain the quality managed systems. FY 2016 Plans: Continue to maintain yearly accreditation audits such as ISO 9001, 17025, and Guide 34 certifications. Continue quality actions throughout to maintain the quality managed systems. FY 2017 Plans: Continue to maintain yearly accreditation audits such as ISO 9001, 17025, and Guide 34 certifications. Continue quality actions throughout to maintain the quality managed systems.		0.990	1.064	1.251
Title: 8) CRP FY 2015 Accomplishments: Continued development of prototypes/information for strains contained in Unified Culture Collection. FY 2016 Plans: Continue development of prototypes/information for strains contained in Unified Culture Collection. FY 2017 Plans: Continue development of prototypes/information for strains contained in Unified Culture Collection.		2.084	1.653	1.894
Title: 9) DFAS EFD ADJUSTMENT		0.696	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Adjustment to balance to DFAS financial reporting within OSD. This is solely an accounting transaction.</p>			
<p>Title: 10) EID TX</p> <p>FY 2015 Accomplishments: Completed FDA required Phase 3 global Clinical trials in support of influenza indication.</p>	36.100	-	-
<p>Title: 11) EID TX</p> <p>FY 2015 Accomplishments: Continued analysis of data for all FDA required clinical trials, including the 1,716 patient Phase 3 clinical study. Developed FDA clinical study reports.</p> <p>FY 2016 Plans: Complete analysis of data for all FDA required clinical trials, including the 1,716 patient Phase 3 clinical study. Develop and deliver FDA clinical study reports.</p>	8.871	15.430	-
<p>Title: 12) EID TX</p> <p>FY 2015 Accomplishments: Prepared NDA submission for FDA review and approval.</p> <p>FY 2016 Plans: Deliver NDA for FDA approval, and answer any FDA questions.</p> <p>FY 2017 Plans: Submit influenza product and gain FDA approval.</p>	4.865	1.231	3.856
<p>Title: 13) EID TX</p> <p>Description: NOTE: Effort transitions to the Anti-Viral program (AV TX) in FY17.</p> <p>FY 2016 Plans: Initiate Dose Range and Response studies using Non-Human Primates (NHPs) in support of FDA approval for EID Tx-NI (New Indications) for Bio-Warfare Agent (BWA) threats using the animal rule.</p>	-	3.920	-
<p>Title: 14) EID TX</p> <p>Description: NOTE: Effort transitions to the Anti-Viral program (AV TX) in FY17.</p> <p>FY 2016 Plans:</p>	-	1.639	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Initiate Delay Time to Treat studies using 72 NHPs in support of FDA approval for EID Tx-NI BWA threats using the animal rule.				
Title: 15) EID TX FY 2015 Accomplishments: Produced manufacturing registration batches.		14.748	-	-
Title: 16) HFV Description: Ebola Medical Countermeasure NOTE: Effort transitions to the Anti-Viral (AV TX) program in FY17. FY 2015 Accomplishments: Completed Phase I clinical safety trials. Manufactured Ebola countermeasure to supply Phase 2 and 3 clinical trials under GMP conditions. FY 2016 Plans: Continue pivotal animal efficacy studies via aerosol and parenteral routes of challenge in non-human primates. Continue Phase 2 clinical trials.		26.288	18.994	-
Title: 17) HFV Description: NOTE: Effort transitions to the Anti-Viral program (AV TX) in FY17. FY 2016 Plans: Continue studies to further characterize the therapeutic window of the Ebola MCM under Good Laboratory Practice (GLP) conditions in a Biological Safety Level (BSL) 4.		-	13.431	-
Title: 18) HFV Description: Title X - Ebola Response FY 2015 Accomplishments: Developed protocol to conduct Phase 2 clinical trials for Africa for TEK MIRA (TKM-Ebola). Completed regulatory filing process in order to support new Investigational Drug Application.		9.834	-	-
Title: 19) DFAS EFD ADJUSTMENT FY 2015 Accomplishments: Adjustment to balance to DFAS financial reporting within OSD. This is solely an accounting transaction.		6.500	-	-
Title: 20) NGDS - Increment 2		-	3.600	1.600

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
FY 2016 Plans: Initiate clinical trials for CBR multiplex lateral flow immunoassays				
FY 2017 Plans: Continue clinical trials for CBR multiplex lateral flow immunoassays				
Title: 21) NGDS - Increment 2		-	0.400	0.400
FY 2016 Plans: Purchase lateral flow immunoassays to support clinical trials.				
FY 2017 Plans: Purchase lateral flow immunoassays to support clinical trials.				
Title: 22) NGDS - Increment 2		-	3.855	7.971
FY 2016 Plans: Initiate system development and demonstration for CBR NGDS Increment 2 diagnostic platform instrument.				
FY 2017 Plans: Continue system development and demonstration for CBR NGDS Increment 2 diagnostic platform instrument.				
Title: 23) NGDS - Increment 2		-	-	2.200
FY 2017 Plans: Initiate clinical efforts to expand Test-mate diagnostic capability for Chemical agent threats.				
Title: 24) VAC BOT - Recombinant Botulinum Vaccine		8.948	7.964	4.000
Description: Manufacturing Technology Transfer				
FY 2015 Accomplishments: Initiated technology transfer of the manufacturing process for serotype A & B; conducted process development work for both manufacturing process at the new Contract Manufacturing Organization (CMO) facility; performed three successful manufacturing feasibility runs of the serotype B manufacturing process at new CMO.				
FY 2016 Plans: Execute the manufacturing of serotypes A engineering and cGMP lots at the new CMO.				
FY 2017 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Complete the cGMP runs for the serotype B manufacturing process; complete the Process Performance Qualification (PPQ) manufacturing runs for both serotypes; perform drug product fill-finish of drug substance in preparation for Phase 3 clinical trial.				
<p>Title: 25) VAC BOT - Recombinant Botulinum Vaccine</p> <p>Description: Manufacturing/Analytical Technology Transfer</p> <p>FY 2015 Accomplishments: Conducted analytical technology transfer of the manufacturing process assays (in-process, release, and stability testing) that will be utilized for demonstration of drug substance comparability at the new CMO and submit comparability plan to the FDA.</p> <p>FY 2016 Plans: Continue non-clinical comparability studies to bridge newly manufactured drug substance and product that was made at the previous CMO prior to technology transfer; submit comparability protocol to the FDA. Continue to monitor requirements for safeguarding biological select agents and toxins. Initiate efforts for the development of the Chemistry Manufacturing and Controls (CMC) submission to the FDA.</p> <p>FY 2017 Plans: Continue drug substance comparability efforts.</p>		6.115	6.232	2.652
<p>Title: 26) VAC BOT</p> <p>Description: Program Management</p> <p>FY 2015 Accomplishments: Continued to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support.</p> <p>FY 2016 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support.</p> <p>FY 2017 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support.</p>		3.000	2.274	2.000
<p>Title: 27) DFAS EFD ADJUSTMENT</p> <p>FY 2015 Accomplishments:</p>		2.000	-	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Adjustment to balance to DFAS financial reporting within OSD. This is solely an accounting transaction.				
Title: 28) VAC FILO FY 2017 Plans: Initiate process development and manufacturing scale up.		-	-	4.300
Title: 29) VAC FILO FY 2017 Plans: Initiate nonclinical testing and assay qualification.		-	-	2.052
Title: 30) VAC PLG FY 2015 Accomplishments: Continued animal efficacy studies (mouse vaccine booster efficacy and duration study and low dose exposure macaque study). Initiated and completed the pivotal animal efficacy study design. FY 2016 Plans: Complete Animal efficacy studies. Send Pivotal Animal Efficacy Study design and Reproductive Toxicity Study design to FDA for approval. Continue requirements for safeguarding biological select agents and toxins. FY 2017 Plans: Initiate pivotal animal efficacy and reproductive toxicity studies to meet FDA licensure. Continue ongoing requirements for safeguarding biological select agents and toxins.		4.200	6.682	9.348
Title: 31) VAC PLG FY 2015 Accomplishments: Initiated and completed the FDA-required Phase 3 human clinical trial design. Initiated Fill/Finish operations to complete manufacturing of Drug Product consistency lots. FY 2016 Plans: Complete Fill-Finish Operations for release of Final Drug Product (FDP). Downselect, from among candidate contractors, a single contractor to conduct Phase 3 human clinical trial. Hold End-of-Phase 2 meeting with FDA. FY 2017 Plans: Initiate in-life portion of Phase 3 clinical trial to evaluate expanded safety and efficacy.		3.864	3.798	24.212
Title: 32) VAC PLG FY 2015 Accomplishments:		2.000	1.500	9.586

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Prepared and submitted Protective Capacity Assay results to the FDA for guidance and approval. Continued to prepare formal regulatory submissions to the FDA that document the ability to consistently manufacture drug substance and drug product.</p> <p>FY 2016 Plans: Complete and finalize adjustments to production, Fill/Finish operations and PCA results after receipt of FDA guidance.</p> <p>FY 2017 Plans: Submit FDP documentation to FDA. Complete final studies on the PCA. Prepare for BLA submission to the FDA.</p>				
<p>Title: 33) VAC PLG</p> <p>FY 2015 Accomplishments: Continued to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support.</p> <p>FY 2016 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support.</p> <p>FY 2017 Plans: Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support.</p>		7.350	5.200	3.304
<p>Title: 34) DFAS EFD ADJUSTMENT</p> <p>FY 2015 Accomplishments: Adjustment to balance to DFAS financial reporting within OSD. This is solely an accounting transaction.</p>		1.800	-	-
<p>Title: 35) VAC SIP</p> <p>FY 2015 Accomplishments: Continued storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program.</p> <p>FY 2016 Plans: Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program.</p> <p>FY 2017 Plans:</p>		1.581	2.722	2.688

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program.			
Title: 36) SBIR/STTR	-	2.141	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	169.400	107.883	106.223

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MB7: MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing
• JM8788: NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)	12.518	5.300	7.395	-	7.395	10.618	13.493	10.465	13.618	Continuing	Continuing
• JX0005: DOD BIOLOGICAL VACCINE PROCUREMENT (VACCINES)	0.185	0.185	0.185	-	0.185	0.185	0.185	13.048	0.185	Continuing	Continuing
• JX0210: CRITICAL REAGENTS PROGRAM (CRP)	1.553	1.005	1.005	-	1.005	1.005	1.005	1.005	0.905	Continuing	Continuing

Remarks

D. Acquisition Strategy
ANTI-VIRAL THERAPEUTICS (AV TX)

The acquisition strategy combines the HFV and EID TX Program efforts beginning in FY17, into a single funding line to develop and deliver FDA approved antiviral countermeasures. Independent market research conducted in FY15 identified multiple candidates appropriate for advanced development at varying stages of maturity. A source selection will be conducted targeting award in FY16. Candidates selected for entry into the EMD phase of development will be initiated in FY16 as part of the HFV program, and continued under the Antiviral Therapeutic program in FY17. Candidates selected which are appropriate for entry into the TMRR phase will be deferred for award until FY17 when BA4 funding is available to the program. The overall regulatory approach of the program remains to pursue development of products to FDA approval under the Animal Rule. The program will conduct human clinical safety studies, pilot and pivotal animal efficacy, and toxicology studies, required for FDA approval. The performers will submit New Drug Applications/Biologic License Agreements for the therapeutics during the EMD Phase. During the Production and

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<p>Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, they will be conducted during Production and Deployment.</p> <p>BIOSURVEILLANCE (BSV)</p> <p>BSV is a set of capabilities that acquire, integrate, and analyze medical, environmental, and incident management data using existing and next generation systems, medical and non-medical sample collection tools and identifiers/diagnostics; and transition hardware/software tools and devices as residuals from the Biosurveillance Joint United States Force Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD). Prototype family of systems will be released to Busan Pier 8 and Camp Humphreys with a two year paid sustainment. Lessons learned, technologies, concepts of employment from the ATD will be transitioned to the programs of record associated with the CBDP (such as G-BSP, NGDS, JBTDS & CALS). The acquisition strategy will address the materiel solutions identified out of the multiple Biosurveillance (BSV) related Analysis of Alternatives (AoA's).</p> <p>CRITICAL REAGENTS PROGRAM (CRP)</p> <p>The Critical Reagents Program's (CRP) strategy establishes a core research and development capability to develop biological threat agent reference materials (antigens, nucleic acids, and antibodies) and detection and diagnostic assays for biothreat agent detection that shall be used across multiple detection and diagnostic platforms. In addition, this strategy includes a formal, validated advanced development process for transitioning new assays into production and subsequent integration with the appropriate detection/diagnostic platform.</p> <p>EMERGING INFECTIOUS DISEASES - THERAPUTIC (EID TX)</p> <p>The goal of the EID Tx program is to develop a safe and effective MCM against biothreats of interest to the DoD. The first step of the acquisition strategy is to develop an MCM for influenza due to a clear and established FDA regulatory approval pathway. The Phase 2 clinical trial is complete, demonstrating both safety and efficacy in humans. Program was authorized by FDA to move forward at End of Phase 2 meeting on 3 SEP 13. Phase 3 clinical trials for EID Tx against influenza began during 1QFY14. NDA submission is expected in 4QFY16 with approval in FY17, and all remaining FY16/17 funds will support the influenza effort. In 3QFY16, the EID program will continue its strategy of leveraging broad spectrum therapeutics against new BW viral indications. The program will leverage on-going development to demonstrate additional broad-spectrum MCM's against naturally occurring and/or engineered biowarfare threats. The program will conduct human clinical safety studies, definitive animal efficacy, toxicology studies, and manufacturing scale up and optimization, as required for FDA approval. The performer will submit New Drug Applications/ Biologic License Agreements for the therapeutic during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, it will be conducted during Production and Deployment. This work will be funded by the Antiviral Therapeutic programs.</p> <p>HEMORRHAGIC FEVER VIRUS (HFV)</p>		

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The acquisition strategy uses an evaluation of a drug candidate against the lethal Ebola Zaire viruses. Following a successful Milestone B and entry into EMD phase, the program will conduct expanded human clinical safety studies, definitive animal efficacy, and toxicology studies, required for FDA approval. The performer will submit a New Drug Application for the Ebola Zaire therapeutic during the EMD Phase. During the Production and Deployment phase, full rate manufacturing and stockpile production will be pursued. If the FDA mandates post-marketing surveillance studies, they will be conducted during Production and Deployment.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS Increment 1 program has a streamlined MS A to MS C - Limited Deployment acquisition strategy. The NGDS Increment 1 is intended to replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17. NGDS Increment 2 will complement NGDS Increment 1 by developing diagnostic capabilities for biological pathogens and toxins and address diagnostics for chemical and radiological exposures, and to provide capability to lower echelons of care.

NGDS Increment 2 will conduct technology development FY14-FY16 prior to MS B. The acquisition strategy and capability to be developed will be informed by the results of the Analysis of Alternatives to be completed 4QFY14. NGDS Increment 2 is intended to be complementary to NGDS Increment 1 to expand the breadth and depth of diagnostics to CBR threats, pre-symptomatic diagnostics, and far forward echelons of care.

The MB7 program will support development, testing, and FDA approval of additional assays after system fielding.

BOTULINUM VACCINE (VAC BOT)

The Prime System Contractor (Dynport Vaccine Company/DVC LLC, Frederick MD) will function as the FDA regulatory sponsor and will perform all ancillary, regulatory, quality assurance, and data management as required by the FDA. The current budget supports development through FDA licensure of a recombinant bivalent (A and B) botulinum vaccine. Other serotypes will be developed through an evolutionary approach, as funding becomes available. The Advanced Component Development and Prototypes (ACD&P) phase included the manufacture of candidate current Good Manufacturing Practices (cGMP) lots, animal safety testing, and initial clinical trials. During this phase, the vaccine was evaluated for safety and immunogenicity in a small human clinical trial (Phase 1). During the Engineering Manufacturing Development (EMD) Phase, the prime contractor stabilized the vaccine formulation, validated the manufacturing process and testing protocols, optimized the delivery systems and manufactured consistency lots. Phase 2 clinical trials were performed and provided additional safety data. The evaluation of efficacy in pivotal animal studies to satisfy FDA requirements for the Animal Rule has been completed. The remaining efforts to be conducted during the EMD phase include the Phase 3 clinical trial to demonstrate safety in an expanded volunteer population. The Low Rate Initial Production (LRIP) decision will be conducted after the manufacturing process has been validated and consistency lots have been produced. A Biologics License Application (BLA) is submitted to the FDA including all clinical, nonclinical, and manufacturing data. The FDA grants licensure to products that are determined to be safe and efficacious.

FILOVIRUS (VAC FILO)

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The acquisition strategy supports the development of multiple filovirus vaccine prototypes through the Technology Maturation and Risk Reduction (TMRR) Phase. At Milestone B (MS B), the best prototype will be selected through a full and open competition to transition to the Engineering and Manufacturing Development (EMD) Phase with the delivery of an FDA licensed filovirus vaccine that will protect against multiple filoviruses. It is anticipated that the development contracts will be a mix of Cost Plus and Fixed Price. In addition, the program office may leverage the Advanced Development and Manufacturing capability, and other DOD agencies and laboratories to include U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). Following a successful MS B, the program will conduct manufacturing scale up, expanded clinical and nonclinical testing, and assay qualification and validation efforts. These efforts will support Biological Licensure Application (BLA) submission to the FDA and licensure of a filovirus vaccine.

PLAGUE VACCINE (VAC PLG)

The Advanced Component Development and Prototypes (ACD&P) phase included the manufacture of candidate current Good Manufacturing Practices (cGMP) lots, animal safety testing, and initial clinical trials. During this phase, the vaccine was evaluated for safety and immunogenicity in a small human clinical trial (Phase 1). In order to reduce technical program risk in the Plague vaccine program, the program office conducted competitive prototyping between a US vaccine candidate and a United Kingdom vaccine candidate. During the 2008 Resource Allocation Decision, the US Plague Vaccine candidate was selected for development through licensure under a Prime System Contract. The Prime System Contractor (Dynport Vaccine Company/DVC LLC, Frederick MD) currently functions as the FDA regulatory sponsor and performs all ancillary, regulatory, quality assurance, and data management as required by the FDA. A Project Arrangement is in place with the United Kingdom and Canada. During the Engineering Manufacturing Development (EMD) Phase, the prime contractor stabilized the vaccine formulation, validated the manufacturing process and testing protocols, optimized the delivery systems and manufactured consistency lots. Phase 2 clinical trials were performed and provided additional safety data. The remaining efforts to be conducted during the EMD phase include the Phase 3 clinical trial to demonstrate safety in an expanded volunteer population and evaluation of efficacy and duration of protection in pivotal animal studies to satisfy FDA requirements for the Animal Rule. The Low Rate Initial Production (LRIP) decision will be conducted after the manufacturing process has been validated and consistency lots have been produced. A Biologics License Application will be submitted to the FDA with all clinical, nonclinical, and manufacturing data. The FDA grants licensure to products that are determined to be safe and efficacious. Currently, the Phase 3 clinical trial has been delayed about 12-14 months due to new guidance from the FDA that all documentation concerning vaccine production (large scale engineering and consistency lot manufacturing) and formulation and Fill/Finish (vialing) must be completed and approved prior to the start of the Phase 3 clinical trial. This was normally done concurrently with the Phase 3 clinical trial.

SPECIAL IMMUNIZATION PROGRAM (VAC SIP)

The SIP effort Life Cycle Cost Estimate (LCCE) manages the IND vaccines which provide additional protection to laboratory workers performing research on the infectious agents for Tularemia, Eastern Equine Encephalitis (EEE), Western Equine Encephalitis (WEE), Venezuelan Equine Encephalitis (VEE), and Q-Fever. Efforts include Good Manufacturing Practices (GMP) storage and periodic potency testing to support the FDA regulated Investigational New Drug (IND) reporting requirements. This Department of Defense program supports the Federal interagency with this effort, as well as academic and industry partners.

E. Performance Metrics

N/A

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AV TX - Candidate 1 - Complete Pivotal Animal Efficacy Studies	C/CPAF	TBD : TBD	0.000	0.000		0.000		8.626	Jan 2017	-		8.626	Continuing	Continuing	0.000
AV TX - Candidate 1 - Manufacturing Process Optimization and Scale up	C/CPIF	TBD : TBD	0.000	0.000		0.000		6.059	Jan 2017	-		6.059	Continuing	Continuing	0.000
BSV - HW S - HW S - Purchase COTS Detectors for JUPITR Assessment Env. Detectors	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	2.200	Jul 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - HW S - HW S - Purchase COTS Detectors for JUPITR Assessment Env. Detectors #2	C/CPIF	Leidos : Abingdon, MD	0.000	1.340	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - HW S -HW S - Purchase COTS Detectors for JUPITR Assessment Env. Detectors	MIPR	Defense Logistics Agency : Philadelphia, PA	0.000	1.400	Apr 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - HW C - Scale-up of Select Biological Threat Agent Reference Materials	MIPR	Various : TBD	14.290	1.779	Jun 2015	2.015	Jun 2016	2.521	Jun 2017	-		2.521	Continuing	Continuing	0.000
CRP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : TBD	10.427	1.580	Jun 2015	1.195	Jun 2016	1.686	Jan 2017	-		1.686	Continuing	Continuing	0.000
EID TX - SW SB - TMT EID FLU	C/CPFF	MediVector Inc. : Boston, MA	145.815	58.087	Dec 2014	8.955	Dec 2015	2.932	Dec 2016	-		2.932	Continuing	Continuing	0.000
EID TX - SW GFPR - T705 Broad Spectrum Capability Development	C/CPIF	TBD : TBD	0.000	0.000		7.800	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
HFV - HW S - Pivotal Animal Efficacy Studies	C/CPIF	Tekmira Pharmaceuticals	2.500	17.567	Jan 2015	13.121	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
		Corp. : Vancouver British Columbia, CN														
HFV - HW S - OGA Marburg Development	MIPR	Various : TBD	0.000	0.000		3.002	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000	
HFV - HW S - Ebola Response Phase 2 clinical trials for TKM-Ebola targeting Guinea Variant	C/CPIF	Tekmira Pharmaceuticals Corp. : Vancouver British Columbia, CN	0.000	9.834	Feb 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000	
NGDS - HW C - Complete assay optimization for multiplex lateral flow immunoassay to support clinical trials	C/CPFF	TBD : TBD	0.000	0.000		3.355	Jun 2016	2.000	Dec 2016	-		2.000	Continuing	Continuing	0.000	
NGDS - HW C - Develop Diagnostic Platform	C/CPFF	TBD : TBD	0.000	0.000		0.000		5.518	Dec 2016	-		5.518	Continuing	Continuing	0.000	
VAC BOT - HW S - Manufacturing, Validation and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	5.115	1.455	Dec 2014	1.400	Dec 2015	2.000	Dec 2016	-		2.000	Continuing	Continuing	0.000	
VAC BOT - HW S - Manufacturing Tech Transfer	MIPR	Battelle Memorial Institute : Columbus, OH	5.686	3.503	Dec 2014	3.146	Jan 2016	2.000	Jan 2017	-		2.000	Continuing	Continuing	0.000	
VAC FILO - HW S - Manufacturing Scale Up	Various	TBD : TBD	0.000	0.000		0.000		4.300	Dec 2016	-		4.300	Continuing	Continuing	0.000	
VAC FILO - HW S - Nonclinical & Assay Development	Various	TBD : TBD	0.000	0.000		0.000		2.052	Dec 2016	-		2.052	Continuing	Continuing	0.000	
VAC PLG - HW S - Manufacturing, Validation, and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	7.855	0.000		3.400	Dec 2015	14.638	Dec 2016	-		14.638	Continuing	Continuing	0.000	
Subtotal			191.688	98.745		47.389		54.332		-		54.332	-	-	0.000	

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BSV - ES S - System Engineering	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	1.300	Dec 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - ES S - OTA/OGA Representatives	MIPR	Various : TBD	0.000	1.200	Nov 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - ES S - Special Studies and Support	PO	Various : TBD	0.000	0.900	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : TBD	3.886	0.928	Jun 2015	0.785	Jun 2016	0.800	Jan 2017	-		0.800	Continuing	Continuing	0.000
CRP - ES C - Select Biological Threat Agent Reference Material Regulatory/Quality Assurance (QA) Support	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	1.525	0.408	Jun 2015	0.318	Jun 2016	0.350	Jun 2017	-		0.350	Continuing	Continuing	0.000
NGDS - ES C - Studies and WIPT Support	MIPR	Various : TBD	0.000	0.000		0.350	Jun 2016	0.971	Dec 2016	-		0.971	Continuing	Continuing	0.000
VAC BOT - TD/D C - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	16.123	2.001	Dec 2014	3.000	Dec 2015	1.208	Dec 2016	-		1.208	Continuing	Continuing	0.000
VAC PLG - TD/D C - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	16.123	2.000	Dec 2014	1.500	Dec 2015	1.600	Dec 2016	-		1.600	Continuing	Continuing	0.000
VAC SIP - Storage and Distribution of Vaccines	SS/FP	Fisher BioServices : Rockville, MD	0.326	0.314	Dec 2014	0.350	Dec 2015	0.370	Dec 2016	-		0.370	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		2.141	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000

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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			37.983	9.051		8.444		5.299		-		5.299	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
BSV - DTE S - Developmental Testing	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	1.300	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - DTE S - Government Test Center	MIPR	Various : TBD	0.000	1.750	Oct 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
HFV - OTHT C - BSL4 Non-Clinical Animal Efficacy Studies	C/CPIF	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	0.000		7.710	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
NGDS - OTHT C - Test and evaluate interagency	MIPR	TBD : TBD	0.000	0.000		2.668	Jun 2016	0.000		-		0.000	Continuing	Continuing	0.000
NGDS - OTHT C - Evaluate Test Mate	MIPR	TBD : TBD	0.000	0.000		0.000		2.200	Dec 2016	-		2.200	Continuing	Continuing	0.000
VAC BOT - DTE C - Clinical Trials - Nonclinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	67.099	5.811	Dec 2014	4.150	Dec 2015	2.500	Dec 2016	-		2.500	Continuing	Continuing	0.000
VAC PLG - DTE C - Clinical Trials/Non-Clinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	67.765	13.214	Dec 2014	7.980	Dec 2015	24.212	Dec 2016	-		24.212	Continuing	Continuing	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	6.001	0.987	Dec 2014	2.087	Dec 2015	2.028	Dec 2016	-		2.028	Continuing	Continuing	0.000
Subtotal			140.865	23.062		24.595		30.940		-		30.940	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
USAMRIID will conduct testing acting as a sub-contractor to TEKIRA. TEKIRA will receive USAMRIID test data and write the final report.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AV TX - PM/MS - SB - Candidate 1 - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.314	Jan 2017	-		1.314	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Candidate 1 - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		1.001	Jan 2017	-		1.001	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Candidate 1 - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.000		0.577	Jan 2017	-		0.577	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Candidate 1 - Management Support #4	C/FP	Various : TBD	0.000	0.000		0.000		1.320	Jan 2017	-		1.320	Continuing	Continuing	0.000
BSV - PM/MS S - Management Support to Commercial Off the Shelf AED as part of JUPITR ATD	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.400	0.830	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - PM/MS SB - Program Management Support	MIPR	Various : TBD	0.000	0.848	Dec 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRP - PM/MS C - Product Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.839	0.897	Mar 2015	0.755	Mar 2016	0.800	Jan 2017	-		0.800	Continuing	Continuing	0.000
CRP - PM/MS C - Product Management Support #2	SS/FFP	Goldbelt Raven LLC. : Frederick, MD	8.080	1.543	Jun 2015	1.384	Jun 2016	1.000	Jan 2017	-		1.000	Continuing	Continuing	0.000
CRP - PM/MS C - Chemical and Biological Medical Systems Office	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.893	0.437	Jun 2015	0.418	Jun 2016	0.000		-		0.000	Continuing	Continuing	0.000
CRP - DFAS EFD Adjustment	Various	TBD : TBD	0.000	0.696		0.000		0.000		-		0.000	Continuing	Continuing	0.000
EID TX - PM/MS SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	2.507	1.517	Jan 2015	1.398	Jan 2016	0.610	Jan 2017	-		0.610	Continuing	Continuing	0.000
EID TX - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	3.536	2.097	Jan 2015	2.160	Jan 2016	0.083	Jan 2017	-		0.083	Continuing	Continuing	0.000
EID TX - PM/MS SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.914	0.578	Sep 2015	0.533	Sep 2016	0.037	Jan 2017	-		0.037	Continuing	Continuing	0.000
EID TX - PM/MS C - Contractor Systems Engineering/ Program Management Support	C/FP	TAURI GROUP LLC THE : Alexandria, VA	4.778	1.129	Dec 2014	1.162	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
EID TX - PM/MS C - Contractor Systems	C/FP	Various : TBD	2.030	1.176	Aug 2015	0.212	Aug 2016	0.194	Dec 2016	-		0.194	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering/ Program Management Support #2															
HFV - PM/MS SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	2.001	Sep 2015	2.268	Sep 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.793	Sep 2015	0.864	Sep 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.965	0.994	Jan 2015	0.787	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS C - Contractor Systems Engineering/ Program Management Support	C/FP	Various : TBD	0.553	0.728	Aug 2015	0.698	Aug 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS C - Contractor Systems Engineering/ Program Management Support #2	C/FP	Patricio Enterprises : Inc., Woodbridge, VA	1.364	1.756	Aug 2015	1.660	Aug 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS C - Contractor/ Systems Engineering/ Program Management Support	C/FP	Noblis Inc. : Falls Church, VA	0.970	1.247	Aug 2015	1.177	Aug 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - PM/MS C - Contractor Systems Engineering/ Program Management Support #3	C/FP	TASC : INC., Andover, MA	0.931	1.202	Aug 2015	1.138	Aug 2016	0.000		-		0.000	Continuing	Continuing	0.000
HFV - DFAS EFD Adjustment	Various	TBD : TBD	0.000	6.500		0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGDS - PM/MS S - Product Management Support	Allot	TBD : TBD	0.000	0.000		0.732	Dec 2015	0.732	Dec 2016	-		0.732	Continuing	Continuing	0.000
NGDS - PM/MS SB - Product Management Systems Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.750	Jun 2016	0.750	Dec 2016	-		0.750	Continuing	Continuing	0.000
VAC BOT - PM/MS C - JPM Chemical and Biological Medical Systems (JPM CBMS), Fort Detrick, MD	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	10.234	3.000	Dec 2014	2.500	Dec 2015	0.944	Dec 2016	-		0.944	Continuing	Continuing	0.000
VAC BOT - PM/MS S - Joint Vaccine Acquisition Program Management	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	53.480	2.293	Dec 2014	2.274	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
VAC BOT - DFAS EFD Adjustment	Various	TBD : TBD	0.000	2.000		0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - PM/MS S - Joint Vaccine Acquisition Program Management Office	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	15.736	2.200	Dec 2014	1.700	Dec 2015	6.000	Dec 2016	-		6.000	Continuing	Continuing	0.000
VAC PLG - PM/MS S - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	35.990	0.000	Dec 2014	2.600	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - DFAS EFD Adjustment	Various	TBD : TBD	0.000	1.800		0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC SIP - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.744	0.280	Mar 2015	0.285	Mar 2016	0.290	Mar 2017	-		0.290	Continuing	Continuing	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program			Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)	

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AV TX - Candidate 1 - Manufacturing Process Optimization and Scale Up																												
AV TX - Candidate 1 - Pivotal Animal Efficacy Study																												
AV TX - Candidate 1 - Phase 3 Clinical Trial																												
AV TX - Candidate 1 - NDA Filing and Support																												
BSV - JUPITR ATD																												
BSV - JUPITR ATD Op Demo																												
BSV - Biological Identification Capability Sets (BICS) Exercises																												
BSV - Residual Purchase - Additional Systems																												
BSV - Transition of purchase of residual end items																												
CRP - Expand Select Biological Threat Agent Reference Materials																												
CRP - Development of Assays																												
CRP - Development and Implementation of Quality Initiatives, Validation Program, and Systems Engineering, QA/QC testing																												
CRP - ISO certification																												
CRP - Enabling early warning tools and information exchange																												
CRP - Surveillance capabilities																												
EID TX - Flu Phase 3 Clinical Trials required for FDA approval																												
EID TX - Flu Manufacture FDA Required Registration Batches																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EID TX - Flu Prepare and Submit NDA Package to FDA	██████████																											
EID TX - Flu MS C Decision									████																			
EID TX - LE Milestone B					████																							
EID TX - LE Initiate and Complete Dose Ranging and Schedule Studies					██████████																							
HFV - Ebola Milestone B Decision					████																							
HFV - Phase I Clinical Trials	████																											
HFV - Manufacturing Process Optimization (Antiviral TX Candidate)					██████████																							
HFV - Pivotal Animal Efficacy Studies for HFV Medical Countermeasures (MCM) (Antiviral TX Candidate).					██████████																							
NGDS - TD Phase	████████████████████																											
NGDS - EMD Phase									██████████																			
NGDS - MS A/IPR	████																											
NGDS - FDA clearance for additional assays, Integration, Connectivity									████																			
VAC BOT - Technology Transfer to New CMO/ Manufacturing & Production of Consistency Lots	██																											
VAC BOT - Milestone C/LRIP													████															
VAC BOT - Phase 3 Clinical Trial (A/B)													██															
VAC BOT - Biological Licensure Application (BLA) Submission																					████							
VAC BOT - Ongoing Manufacturing, Testing Efforts/Regulatory																					██████████							
VAC BOT - FDA Licensure																									████			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AV TX - Candidate 1 - Manufacturing Process Optimization and Scale Up	2	2017	3	2018
AV TX - Candidate 1 - Pivotal Animal Efficacy Study	2	2017	3	2018
AV TX - Candidate 1 - Phase 3 Clinical Trial	3	2018	4	2019
AV TX - Candidate 1 - NDA Filing and Support	4	2019	2	2021
BSV - JUPITR ATD	1	2015	3	2016
BSV - JUPITR ATD Op Demo	3	2015	4	2015
BSV - Biological Identification Capability Sets (BICS) Exercises	1	2015	1	2016
BSV - Residual Purchase - Additional Systems	2	2016	3	2018
BSV - Transition of purchase of residual end items	4	2015	3	2018
CRP - Expand Select Biological Threat Agent Reference Materials	1	2015	2	2017
CRP - Development of Assays	1	2015	2	2017
CRP - Development and Implementation of Quality Initiatives, Validation Program, and Systems Engineering, QA/QC testing	1	2015	2	2017
CRP - ISO certification	1	2015	4	2017
CRP - Enabling early warning tools and information exchange	1	2015	4	2017
CRP - Surveillance capabilities	1	2015	4	2017
EID TX - Flu Phase 3 Clinical Trials required for FDA approval	1	2015	3	2015
EID TX - Flu Manufacture FDA Required Registration Batches	1	2015	4	2015
EID TX - Flu Prepare and Submit NDA Package to FDA	2	2015	3	2016
EID TX - Flu MS C Decision	1	2017	1	2017
EID TX - LE Milestone B	4	2015	4	2015
EID TX - LE Initiate and Complete Dose Ranging and Schedule Studies	1	2016	4	2016

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / MEDICAL BIOLOGICAL DEFENSE (EMD)
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Events	Start		End	
	Quarter	Year	Quarter	Year
HFV - Ebola Milestone B Decision	1	2016	1	2016
HFV - Phase I Clinical Trials	1	2015	1	2015
HFV - Manufacturing Process Optimization (Antiviral TX Candidate)	1	2016	4	2016
HFV - Pivotal Animal Efficacy Studies for HFV Medical Countermeasures (MCM) (Antiviral TX Candidate).	1	2016	4	2016
NGDS - TD Phase	1	2015	1	2017
NGDS - EMD Phase	1	2017	4	2017
NGDS - MS A/IPR	2	2015	2	2015
NGDS - FDA clearance for additional assays, Integration, Connectivity	3	2016	3	2016
VAC BOT - Technology Transfer to New CMO/Manufacturing & Production of Consistency Lots	1	2015	4	2017
VAC BOT - Milestone C/LRIP	4	2017	4	2017
VAC BOT - Phase 3 Clinical Trial (A/B)	1	2018	4	2020
VAC BOT - Biological Licensure Application (BLA) Submission	1	2021	1	2021
VAC BOT - Ongoing Manufacturing, Testing Efforts/Regulatory	2	2021	3	2021
VAC BOT - FDA Licensure	4	2021	4	2021
VAC BOT - Full Operational Capability (FOC)	4	2021	4	2021
VAC FILO - Milestone B	2	2017	2	2017
VAC FILO - Manufacturing Scale Up	2	2017	2	2020
VAC FILO - Non Clinical Testing & Assay Qualification	2	2017	4	2019
VAC FILO - Manufacturing Phase 2 Lots	2	2020	3	2020
VAC FILO - Manufacturing Validation	2	2020	2	2021
VAC FILO - Phase 2	1	2021	4	2021
VAC PLG - Consistency Lot Production	4	2015	2	2016
VAC PLG - Phase 3 Clinical Trial/IND Submission for Consistency Lot Production	2	2016	3	2019
VAC PLG - Non-Clinical Studies Pivotal Animal Efficacy	4	2016	1	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MB5 / <i>MEDICAL BIOLOGICAL DEFENSE (EMD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
VAC PLG - Milestone C/LRIP	2	2019	2	2019
VAC PLG - Biological Licensure Application (BLA) Submission	2	2019	2	2019
VAC PLG - Production - IOC/FOC	4	2019	1	2021
VAC PLG - FDA Licensure	3	2020	3	2020
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MC5: MEDICAL CHEMICAL DEFENSE (EMD)	-	25.966	42.911	39.504	-	39.504	44.656	25.358	11.155	4.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the development of medical materiel and other medical equipment items necessary to provide an effective capability for medical defense against chemical warfare agent threats facing U.S. forces in the field. This project supports efforts in the Engineering and Manufacturing Development (EMD) phase of the acquisition strategy for prophylactic, pre-treatment, and therapeutic drugs and diagnostic medical devices for the protection, treatment, detection, and medical management of chemical warfare agent exposures. Project provides for the research and development of safety studies, manufacturing scale-up, process validation, drug interaction, performance test, and submission of the Food and Drug Administration (FDA) drug licensure application(s). This program currently includes: (1) Alternative Autoinjector (AUTOINJ), which consists of investigating an FDA approved alternative source(s), beyond the single current DoD source, for autoinjectors that deliver DoD nerve agent antidote and treatment capabilities to the warfighter; mitigates capability fielding and operational readiness risks. This resulted from the manufacturing and quality issues for the Advanced Anticonvulsant System (AAS) program, Midazolam in an autoinjector. (2) Bioscavenger (BSCAV), a new capability, to be used as a prophylaxis against nerve agents; (3) Improved Nerve Agent Treatment System (INATS) an enhanced nerve agent treatment regimen consisting of an improved oxime to replace the current fielded oxime 2-pralidoxime chloride (2-PAM), a centrally acting therapeutic to increase survival, and studies to generate data to support use of pyridostigmine bromide (PB), as a pretreatment for nerve agents in addition to soman.

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

	FY 2015	FY 2016	FY 2017
Title: 1) AUTOINJ	-	-	2.950
FY 2017 Plans: Initiate manufacturing of autoinjector consistency lots.			
Title: 2) AUTOINJ	-	-	1.980
FY 2017 Plans: Initiate storage stability and bioequivalency testing.			
Title: 3) AUTOINJ	-	-	0.218
FY 2017 Plans: Coordinate New Drug Application meetings with the FDA.			
Title: 4) AAS	4.000	-	-
FY 2015 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Completed market research of alternative autoinjector manufacturers and reverse engineering of the currently fielded autoinjector.			
Title: 5) BSCAV FY 2015 Accomplishments: Complete commissioning and qualification of the manufacturing suite.	9.395	-	-
Title: 6) BSCAV FY 2015 Accomplishments: Initiated and completed evaluation and optimization of alternative source materials at small and intermediate scales.	6.191	-	-
Title: 7) BSCAV FY 2015 Accomplishments: Continued storage and stability testing of purified product. FY 2016 Plans: Continue storage and stability testing of purified product.	2.000	2.050	-
Title: 8) BSCAV FY 2015 Accomplishments: Initiated engineering and scale-up manufacturing runs. FY 2016 Plans: Complete engineering and scale-up manufacturing runs.	1.050	5.000	-
Title: 9) BSCAV FY 2016 Plans: Initiated pilot nonclinical toxicity and pharmacokinetic (PK) and efficacy studies. FY 2017 Plans: Complete pilot nonclinical toxicity and pharmacokinetic (PK) and efficacy studies.	-	5.195	6.018
Title: 10) BSCAV FY 2016 Plans: Initiate cGMP manufacturing for clinical and nonclinical studies. FY 2017 Plans:	-	6.543	8.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue cGMP manufacturing for clinical and nonclinical studies.				
Title: 11) BSCAV		-	6.706	3.100
FY 2016 Plans: Initiate phase 1 clinical pharmacokinetic (PK) and safety studies.				
FY 2017 Plans: Complete phase 1 clinical pharmacokinetic (PK) and safety studies.				
Title: 12) BSCAV		-	5.542	4.600
FY 2016 Plans: Initiate Phase 2 clinical and safety studies.				
FY 2017 Plans: Complete development of a manufacturing process for additional source materials.				
Title: 13) BSCAV		-	-	2.400
FY 2017 Plans: Initiate nonclinical studies to evaluate drug-drug interactions in small animal models.				
Title: 14) INATS		0.840	1.448	1.500
FY 2015 Accomplishments: Continued nonclinical studies to expand indications for pyridostigmine bromide (PB).				
FY 2016 Plans: Continue nonclinical studies to expand indications for pyridostigmine bromide (PB).				
FY 2017 Plans: Complete nonclinical studies to expand indications for pyridostigmine bromide (PB).				
Title: 15) INATS		1.495	-	-
FY 2015 Accomplishments: Conducted centrally-acting formulation development.				
Title: 16) INATS		0.995	2.703	-
FY 2015 Accomplishments:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Initiated nonclinical studies to evaluate the efficacy of centrally-acting therapeutics with fielded oxime FY 2016 Plans: Complete nonclinical studies to evaluate the efficacy of centrally-acting therapeutics with fielded oxime.			
Title: 17) INATS FY 2016 Plans: Initiate and complete pilot scale development of oxime bulk drug substance (BDS) and final drug product (FDP).	-	4.122	-
Title: 18) INATS FY 2016 Plans: Initiate oxime current Good Manufacturing Practice (cGMP) efforts and manufacture of clinical trial material. FY 2017 Plans: Complete small-scale centrally acting current Good Manufacturing Practice (cGMP) efforts and manufacture of clinical trial material.	-	2.819	1.800
Title: 19) INATS FY 2017 Plans: Initiate large-scale centrally acting current Good Manufacturing Practice (cGMP) efforts and manufacturing of clinical trial material.	-	-	3.838
Title: 20) INATS FY 2017 Plans: Initiate centrally acting phase 1 clinical trial.	-	-	3.000
Title: 21) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.	-	0.783	-
Accomplishments/Planned Programs Subtotals	25.966	42.911	39.504

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• JM6677: <i>ADVANCED ANTICONVULSANT SYSTEM (AAS)</i>	0.000	11.133	0.000	-	0.000	7.215	0.000	0.000	0.000	0	18.348

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

ALTERNATE AUTOINJECTOR MANUFACTURER CAPABILITY (AUTOINJ)

The Alternative Autoinjector Investigation will identify an alternative source(s) to develop, and provide required and FDA approved autoinjector-delivered nerve agent antidote and treatment capabilities to the services. Currently, a single DoD source provides all of these capabilities, and should that single source experience manufacturing or quality issues, the services may not meet their operational requirements. This effort leverages previous work begun under the Advanced Anticonvulsant System (AAS) autoinjector-delivered product wherein the single manufacturer notified the AAS program office that the FDA had noted manufacturing and quality issues which impacted the AAS program as well as all other DoD autoinjector-delivered nerve agent antidotes and treatments. At that time, the AAS program began investigating alternative sources through the release of a request for Information (RFI). Subsequent to the RFI, the AAS program awarded a task order under an existing IDIQ contract vehicle to begin the identification efforts. As this issue is well beyond the scope of the AAS program and impacts all developmental and fielded autoinjector-delivered capabilities, the Joint Program Executive Office, Chemical and Biological Defense (JPEO-CBD) approved the strategy to expand the alternative autoinjector effort beyond AAS, thus initiating a new effort benefiting both fielded and developmental capabilities. The JPEO-CBD also approved the management and oversight of the effort via a series of In-Process Reviews (IPRs). The effort will proceed through the submission of a New Drug Application and will culminate with FDA approval of an alternative autoinjector source(s).

ADVANCED ANTICONVULSANT SYSTEM (AAS)

The Advanced Anticonvulsant System, consists of Midazolam in an autoinjector for treatment of nerve agent induced seizures. Midazolam, injected intramuscularly, will treat traditional nerve agent and non-traditional agent-induced seizures and prevent subsequent neurological damage. Midazolam is more water-soluble than diazepam (the currently fielded medication to control nerve agent-induced seizures) and terminates nerve agent-induced seizures more quickly than diazepam. AAS will not eliminate the need for other protective and therapeutic systems.

A contractor shall be responsible for conducting activities associated with drug development in a manner consistent with eventual approval by the Food and Drug Administration (FDA). The contractor shall sponsor the drug to the FDA and hold all approvals and/or licenses. During the System Development and Demonstration (SDD) Phase, large scale manufacturing, Phase 2 human clinical safety studies and definitive animal efficacy studies will be conducted. FDA approval of the countermeasure is an exit criterion for the SDD phase. During the Production and Deployment Phase, sufficient quantities of product to meet Initial Operational Capability will be purchased. Subsequent purchases will be made by the Defense Logistics Agency. Any post-marketing surveillance requested by the FDA will be the responsibility of the contractor.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>MEDICAL CHEMICAL DEFENSE (EMD)</i>
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In addition, the program will assess the viability of establishing an alternative manufacturing capability for currently fielded autoinjectors used for therapeutic treatment and medical management of chemical warfare agent exposures.

BIOSCAVENGER (BSCAV)

Used a serial evaluation of candidates to achieve competitive prototyping in the Technology Development Phase which culminated in a down-select decision. The Bioscavenger program issued a Request For Proposal (RFP) to select the best value for the government for a prophylaxis to support an initial limited user group. During the System Development and Demonstration (SDD) phase the program will continue to exercise management oversight with system integration support of a commercial partner to ensure that manufacturing of the product is in accordance with Food and Drug Administration (FDA) regulations and guidelines. The RFP for product manufacturing includes options for transition to the Medical Countermeasures Initiative (MCMI) Advanced Development and Manufacturing (ADM) capability. Prior to FDA licensure, a commercial partner will perform a Phase 2 human clinical safety study, definitive animal efficacy studies, and toxicology studies. The system integrator will also develop and manufacture a product formulation and delivery system and will submit a New Drug Application and seek FDA approval. The SDD phase will culminate in FDA licensure of the Bioscavenger. During the Production and Deployment phase, the Bioscavenger program, in conjunction with a commercial partner, will pursue full rate production and conduct any FDA-mandated post-marketing surveillance studies. Concurrently the Bioscavenger program will conduct an analysis of alternative manufacturing technologies, investigate additional product indications, and pursue an expanded force prophylaxis once alternate technologies have matured.

IMPROVED NERVE AGENT TREATMENT SYSTEM (INATS)

INATS' evolutionary Acquisition Strategy was recently expanded to (1) align all Department of Defense nerve agent therapeutics under it, and to (2) insert a centrally-acting (CA) anticholinergic agent, employs an incremental approach to provide independent, and more rapid deliveries of oxime, expanded PB indications, and CA capabilities than in a combined treatment regimen delivery. To accomplish this, separate Milestones B and C reviews were originally scheduled for the oxime and CA development efforts. However after decision briefings to the Milestone Decision Authority and discussions with the Joint Services, MCS-CDP will conduct combined Milestone B and C reviews for the oxime and CA development efforts and decision reviews for PB expansion beyond the combined-development Technology Maturation and Risk Reduction (TM&RR) Phase. In the TM&RR phase, close collaborations will occur between the Joint Program Manager - Medical Countermeasure Systems (JPM-MCS)), and the science/ technology, and user communities to assess technical viability, capability delivery options, and to refine operational concepts; the Government will be the systems integrator overseeing the conduct of oxime and centrally acting formulation development efforts, nonclinical toxicology and efficacy studies, clinical safety studies, and efficacy studies addressing the PB indication. In the Engineering and Manufacturing Development (EMD) phase for the oxime and CA each capability, the Government will engage with commercial partners to ensure that INATS development and manufacture is in accordance with Food and Drug Administration (FDA) regulations and guidelines; the commercial partner(s) will perform a Phase 2 human clinical safety study, nonclinical toxicology studies and definitive animal efficacy studies; the system integrator will also oversee the manufacture of improved oxime and CA formulations and delivery system that is stable under operationally relevant temperatures. The system integrator will submit a New Drug Application and seek FDA approval for the INATS product. In the Production and Deployment (P&D) Phase, the Government will pursue full-rate and stockpile production, conduct any FDA mandated post-marketing surveillance studies, and will transfer contracting/logistical responsibilities to the Defense Logistics Agency (DLA) while remaining to monitor program performance through disposal as the life-cycle manager.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>MEDICAL CHEMICAL DEFENSE (EMD)</i>

E. Performance Metrics N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AUTOINJ - HW S - Autoinjector - Manufacturing of Consistency Lots	PO	TBD : TBD	0.000	0.000		0.000		2.840	Dec 2016	-		2.840	Continuing	Continuing	0.000
AAS - HW S - Alternative Autoinjector	PO	Battelle Memorial Institute : Columbus, OH	4.154	4.000	Sep 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - HW C - Qualification of the Manufacturing Suit	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	24.650	8.260	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - HW S - cGMP Manufacturing and Process Validation	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	14.643	0.000		6.440	Feb 2016	6.883	Jan 2017	-		6.883	Continuing	Continuing	0.000
BSCAV-P - SW S - Engineering and Scale up Manufacturing	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	0.600	Mar 2015	4.100	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - Evaluation of Alternative Source Material	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	5.200	Nov 2015	0.000		3.750	Dec 2016	-		3.750	Continuing	Continuing	0.000
INATS - HW C - Pilot Scale Development of Drug Product	PO	TBD : TBD	0.000	0.000		3.981	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
INATS - HW C - cGMP Efforts and Manufacture of Material	PO	TBD : TBD	0.000	0.000		3.040	Apr 2016	4.980	Dec 2016	-		4.980	Continuing	Continuing	0.000
INATS - HW S - Centrally Acting Formulation Development	PO	Battelle Memorial Institute : Columbus, OH	0.000	0.825	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			43.447	18.885		17.561		18.453		-		18.453	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AUTOINJ - TD/D S - Autoinjector - FDA NDA coordination	PO	TBD : TBD	0.000	0.000		0.000		0.190	Jun 2017	-		0.190	Continuing	Continuing	0.000
INATS - ILS S - Regulatory Support	PO	Battelle Memorial Institute : Columbus, OH	0.224	0.205	Jun 2015	0.245	Jun 2016	0.260	Jun 2017	-		0.260	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.783	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.224	0.205		1.028		0.450		-		0.450	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AUTOINJ - DTE S - Autoinjector - Stability Testing	PO	TBD : TBD	0.000	0.000		0.000		1.760	Jun 2017	-		1.760	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Stability Testing	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	2.830	1.754	Jan 2015	1.920	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Phase 1 PK and Safety Studies	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	0.000		5.361	Mar 2016	2.310	Jan 2017	-		2.310	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Nonclinical Studies in Small Models	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	0.000		4.235	Dec 2015	1.870	Jan 2017	-		1.870	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Pilot Nonclinical PK Efficacy Studies	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	0.000		4.250	Dec 2015	5.340	Jan 2017	-		5.340	Continuing	Continuing	0.000
INATS - DTE S - Nonclinical Studies for PB	PO	Battelle Memorial Institute : Columbus, OH	3.194	0.700	Jan 2015	0.706	Jan 2016	1.140	Jan 2017	-		1.140	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
INATS - DTE S - Centrally Acting Nonclinical Studies - Oxime / 2-PAM	PO	Battelle Memorial Institute : Columbus, OH	0.000	0.650	Dec 2014	1.960	Dec 2015	0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE S - INATS - Centrally Acting Phase 1 Trial	PO	TBD : TBD	0.000	0.000		0.000		2.240	Dec 2016	-		2.240	Continuing	Continuing	0.000
Subtotal			6.024	3.104		18.432		14.660		-		14.660	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AUTOINJ - PM/MS S - Autoinjector - Program Support	PO	JPM Chem/Bio Medical Systems (JPM CBMS) : Fort Detrick, MD	0.000	0.000		0.000		0.358	Dec 2016	-		0.358	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - MCS Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.048	0.800	Mar 2015	1.300	Mar 2016	1.010	Mar 2017	-		1.010	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - Product Management Support	C/FFP	Various : TBD	2.170	0.882	Jun 2015	1.470	Jun 2016	1.190	Jun 2017	-		1.190	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - Product Management Support #2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.796	0.240	Mar 2015	0.460	Mar 2016	0.240	Mar 2017	-		0.240	Continuing	Continuing	0.000
BSCAV-P - PM/MS C - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	1.825	0.900	Sep 2015	1.500	Sep 2016	1.625	Sep 2017	-		1.625	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
INATS - PM/MS S - Product Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.145	0.155	Dec 2014	0.160	Dec 2015	0.165	Dec 2016	-		0.165	Continuing	Continuing	0.000
INATS - PM/MS S - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.140	0.330	Sep 2015	0.480	Sep 2016	0.528	Sep 2017	-		0.528	Continuing	Continuing	0.000
INATS - PM/MS S - Product Management Support #2	C/FFP	Various : TBD	0.000	0.465	Jun 2015	0.520	Jun 2016	0.825	Jun 2017	-		0.825	Continuing	Continuing	0.000
Subtotal			7.124	3.772		5.890		5.941		-		5.941	-	-	0.000
Project Cost Totals			56.819	25.966		42.911		39.504		-		39.504	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>MEDICAL CHEMICAL DEFENSE (EMD)</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

INATS - Centrally Acting Formulation Development																												
INATS - Nonclinical Studies - Centrally Acting																												
INATS - PB Studies																												
INATS - Manufacture of Clinical Trial Material																												
INATS - Milestone B - Centrally Acting																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / MEDICAL CHEMICAL DEFENSE (EMD)
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AUTOINJ - Autoinjector - Manufacturing of Consistency Lots	1	2017	1	2018
AUTOINJ - Autoinjector - Storage and Bioequivalency Testing	3	2017	2	2018
AUTOINJ - Autoinjector - FDA Coordination	3	2017	3	2018
AUTOINJ - NDA Submission	1	2018	1	2018
AUTOINJ - FDA Approval	1	2019	1	2019
AAS - Alternative autoinjector source development	1	2015	4	2015
BSCAV - Alternate Source Material Evaluation	1	2015	2	2017
BSCAV - Storage and Stability Testing of Purified Product	1	2015	4	2017
BSCAV - Engineering and Scale up Manufacturing	4	2015	3	2016
BSCAV - Manufacturing & Process Qualification at Small Scale	1	2015	1	2017
BSCAV - Nonclinical Toxicity PK and LD50 Studies	3	2015	3	2017
BSCAV - cGMP Manufacturing	3	2016	4	2018
BSCAV - Phase 1 Pilot PK and Clinical Studies	2	2016	3	2017
BSCAV - Milestone C	1	2019	1	2019
BSCAV - Phase 2 Clinical Trial	2	2018	4	2019
BSCAV - Qualification of Manufacturing Suit	1	2015	4	2015
BSCAV - Non Clinical Studies	2	2017	2	2018
INATS - Milestone B - Oxime	3	2017	3	2017
INATS - Centrally Acting Formulation Development	1	2015	3	2016
INATS - Nonclinical Studies - Centrally Acting	1	2015	3	2017
INATS - PB Studies	1	2015	2	2017
INATS - Manufacture of Clinical Trial Material	2	2016	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program			Date: February 2016	
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>MEDICAL CHEMICAL DEFENSE (EMD)</i>		

Events	Start		End	
	Quarter	Year	Quarter	Year
INATS - Milestone B - Centrally Acting	3	2017	3	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) TE5 / TEST & EVALUATION (EMD)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TE5: TEST & EVALUATION (EMD)	-	9.901	6.053	6.119	-	6.119	6.385	6.341	6.310	6.436	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This funding supports the Chemical Biological Defense Portfolio (CBDP) Test Equipment, Strategy, and Support (TESS) efforts TESS provides test infrastructure products for testing and evaluating chemical and biological defense systems throughout the life cycle acquisition process. TESS test infrastructure products are aligned in two groups to include: (1) Laboratory; (2) Field.

(1) Laboratory: The products for this area are the Non-Traditional Agent Defense Test System (NTADTS) and improvements to the Dynamic Test Chamber (DTC). The NTADTS provides a new capability to conduct chemical defense testing against current and emerging threat agents. The NTADTS supports testing of decontamination, collective protection, individual protection, and contamination avoidance products. The DTC provides a new capability for testing chemical point detection systems against chemical warfare agents in various environmental conditions. The CBD acquisition programs supported are Dismounted Reconnaissance Sets Kits and Outfits (DR SKO), Next Generation Chemical Detector (NGCD), Joint Sensitive Equipment Wipes (JSEW), and Common Analytical Laboratory System (CALs). Future efforts will include the development of test methods and methodologies for additional classes of agents.

(2) Field: The products for this area are the Test Grid, the Mobile Test Infrastructure (MTI), the Joint Ambient Breeze Tunnel (JABT) and the Active Standoff Chamber (ASC). The Test Grid effort provides a fully instrumented grid for chemical and biological simulant field test capabilities that integrate referee systems; dissemination equipment; real-time cloud tracking capability; meteorological equipment; a wireless network; and a Data Management System (DMS) software to track and display the cloud health and status of all of the equipment in the network anywhere in Dugway Proving Ground (DPG). The MTI is an all-inclusive mobile management service functioning wirelessly. MTI is capable of integrating, controlling, commanding and managing all assets required to conduct transportable testing. It provides algorithms and graphical user interfaces for automating real-time visualization, raw data, computation, hosts data collection and indefinite storage that can go to any Major Range Test Facility Base (MRTFB) for CB Testing. The JABT and ASC improvements will provide a tech refresh to existing infrastructure and allow for test results to be integrated into the Test Grid Data Management System (DMS). The CBD acquisition programs supported are the Joint Expeditionary Collective Protection (JECp), Next Generation Chemical Detector (NGCD), Joint Biological Tactical Detection System (JBTDs), and the Joint USFK Point and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD).

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

	FY 2015	FY 2016	FY 2017
Title: 1) PD TESS - Dynamic Test Chamber (DTC)	0.497	1.196	-
FY 2015 Accomplishments: Initiated validation of chamber.			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Validate chamber. Initiate upgrade for Next Generation Chemical Detector (NGCD) use.				
Title: 2) PD TESS - Non-Traditional Agent Defense Test System (NTADTS)		4.525	2.452	2.260
FY 2015 Accomplishments: Transitioned test system to the Chemical and Biological (CB) Test and Evaluation (T&E) community.				
FY 2016 Plans: Transition additional validated test subsystems to the CB T&E community.				
FY 2017 Plans: Continue to transition additional validated test subsystems to the CB T&E community.				
Title: 3) PD TESS - Test Grid		3.754	2.293	1.100
FY 2015 Accomplishments: Conducted V&V Tests for the Chemical Wet and Biological Wet Capabilities.				
FY 2016 Plans: Complete verification and validation of test capability upgrade IOC and transition of capabilities to CB T&E community.				
FY 2017 Plans: Perform software maintenance upgrades. Provide support management reach back. Support refresher training on system operation.				
Title: 4) PD TESS - Joint Biological Tactical Detection System Test Infrastructure		1.125	-	-
FY 2015 Accomplishments: Completed referee equipment, natural background and interferent development.				
Title: 5) PD TESS - Joint Ambient Breeze Tunnel (JABT)		-	-	0.715
FY 2017 Plans: Conduct V&V Testing on upgrades and transition.				
Title: 6) PD TESS - Active Standoff Chamber - (ASC)		-	-	0.715
FY 2017 Plans: Conduct V&V Testing on upgrades and transition.				
Title: 7) PD TESS - Mobile Test Infrastructure (MTI)		-	-	1.329
FY 2017 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Conduct V&V Testing. Integrate sensors. Transition MTI to DPG for network dissemination and referee devices.			
Title: 8) SBIR/STTR	-	0.112	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	9.901	6.053	6.119

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• TE7: TEST & EVALUATION (OP SYS DEV)	5.940	4.091	2.594	-	2.594	6.605	6.318	5.416	5.733	Continuing	Continuing

Remarks

D. Acquisition Strategy

TEST EQUIPMENT, STRATEGY & SUPPORT (PD TESS)

TESS efforts are supported through competitive contract actions, academia, and other Government agencies. Infrastructure solutions will leverage commercially available systems to provide state-of-the-art capabilities that address current and future CBDP test and evaluation needs.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - Test Infrastructure - HW S - DTC Fabrication/ Installation	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	4.524	0.300	Mar 2015	0.600	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid Instrumentation/ Data Network	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	4.892	0.600	Mar 2015	0.650	Mar 2016	1.100	Dec 2016	-		1.100	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid Instrumentation Data Network	C/CPFF	ITT Information Systems : Alexandria, VA	27.301	2.089	Jun 2015	1.050	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HWS - NTA Defense Test System Design/Fabrication/ Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.740	1.000	Mar 2015	0.000		0.581	Dec 2016	-		0.581	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - NTA Defense Test System Design, Fabrication, Install	C/CPFF	MRIGlobal : Kansas City, MO	9.666	1.257	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid	MIPR	Various : TBD	0.504	0.104	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - SW GFPR - DTC Fabrication/ Installation	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.350	0.000		0.200	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - NTADTS Support	MIPR	Various : TBD	0.000	0.000		1.800	Mar 2016	1.000	Dec 2016	-		1.000	Continuing	Continuing	0.000
PD TESS - HW S - JBTDSTI - Engineering Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.349	0.105	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - HW S - JBTDS TI -Engineering Support	MIPR	Various : TBD	0.310	1.020	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - NTADTS Design/Fabrication/Installation	MIPR	TBD : TBD	0.000	1.111	Jun 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - ASC Component Upgrades	C/CPFF	Various : TBD	0.000	0.000		0.000		0.350	Mar 2017	-		0.350	Continuing	Continuing	0.000
PD TESS - HW S - ASC Component Upgrades #2	MIPR	Various : TBD	0.000	0.000		0.000		0.150	Mar 2017	-		0.150	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.350	Mar 2017	-		0.350	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades #2	MIPR	Various : TBD	0.000	0.000		0.000		0.150	Mar 2017	-		0.150	Continuing	Continuing	0.000
Subtotal			48.636	7.586		4.300		3.681		-		3.681	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PD TESS - Test Infrastructure - ES S - Integrated Product Team (IPT) Support	MIPR	Various : TBD	14.271	0.379	Dec 2014	0.400	Dec 2015	0.761	Jan 2017	-		0.761	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.112	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			14.271	0.379		0.512		0.761		-		0.761	-	-	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
PD TESS - DTC - Pre-Validation/Validation																												
PD TESS - NTADTS - Design/Fabrication/ Installation																												
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents																												
PD TESS - Test Grid - Validate and Transition Initial Capability/Conduct Upgrades																												
PD TESS - Test Grid - Transition activities																												
PD TESS - WSLAT Chamber Design/ Fabrication/Validation for JBTDS TI																												
PD TESS - MTI Integration																												
PD TESS - Test Grid IOC																												
PD TESS - Joint Ambient Breeze Tunnel (JABT) Test Upgrades & Transition																												
PD TESS - Active Standoff Chamber (ASC) Test Upgrades & Transition																												
PD TESS - Test Grid Maintenance and Management Reachback																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) TE5 / TEST & EVALUATION (EMD)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
PD TESS - DTC - Pre-Validation/Validation	1	2015	2	2016
PD TESS - NTADTS - Design/Fabrication/Installation	1	2015	2	2015
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents	3	2015	4	2020
PD TESS - Test Grid - Validate and Transition Initial Capability/Conduct Upgrades	1	2015	4	2016
PD TESS - Test Grid - Transition activities	1	2015	4	2016
PD TESS - WSLAT Chamber Design/Fabrication/Validation for JBTDS TI	1	2015	4	2016
PD TESS - MTI Integration	1	2017	4	2017
PD TESS - Test Grid IOC	4	2016	4	2016
PD TESS - Joint Ambient Breeze Tunnel (JABT) Test Upgrades & Transition	1	2017	4	2017
PD TESS - Active Standoff Chamber (ASC) Test Upgrades & Transition	1	2017	4	2017
PD TESS - Test Grid Maintenance and Management Reachback	1	2017	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	104.597	102.238	85.754	-	85.754	117.960	115.422	111.106	113.063	Continuing	Continuing
DT6: <i>JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)</i>	-	5.065	4.744	3.185	-	3.185	5.953	5.720	5.325	5.429	Continuing	Continuing
DW6: <i>MAJOR RANGE AND TEST FACILITY BASE (MRTFB)</i>	-	55.245	51.878	50.639	-	50.639	53.164	52.862	53.039	53.673	Continuing	Continuing
LS6: <i>LABORATORY SUPPORT</i>	-	11.950	10.120	9.339	-	9.339	13.864	13.655	12.949	13.202	Continuing	Continuing
MS6: <i>RDT&E MGT SUPPORT</i>	-	28.404	31.385	21.212	-	21.212	39.986	38.516	35.658	36.544	Continuing	Continuing
O49: <i>JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION PROGRAM</i>	-	3.933	4.111	1.379	-	1.379	4.993	4.669	4.135	4.215	Continuing	Continuing

A. Mission Description and Budget Item Justification

This Budget Activity includes research, development, testing and evaluation management support for the Department of Defense (DoD) Chemical and Biological Defense Program (CBDP).

Program Element 0605384BP supports Joint Doctrine and Training (Project DT6), sustains the technical test capability at West Desert Test Center (WDTC) (Project DW6); sustains the core Department of Defense (DoD) Science and Technology (S&T) laboratory infrastructure (Project LS6), provides for program management and financial management support (Project MS6), and supports the Joint Concept Development and Experimentation (JCDE) program (Project O49).

The Joint Training and Doctrine Support (DT6) project supports the development of Joint Doctrine and Tactics, Techniques, and Procedures (TTPs) for developing CB defense systems. This project also supports CB modeling and simulation to support the Warfighter.

The Major Range and Test Facility Base (MRTFB) is a set of test installations, facilities, and ranges which are regarded as "national assets". These assets are sized, operated, and maintained primarily for DoD test and evaluation missions. However, the MRTFB facilities and ranges are also available to commercial and other users on a reimbursable basis. WDTC is designated as the primary element of the MRTFB to primarily conduct CB Defense test and evaluation. The DW6 Project provides operating support to WDTC to ensure that DoD test customers are only charged direct costs of testing and that overhead expenses are centrally funded. It finances the required institutional test operating costs. Institutional test operating costs include institutional civilian and contractor labor; repair and maintenance of test instrumentation, equipment, and facilities; and replacement of test equipment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>
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The Laboratory Support (LS6) project includes laboratory infrastructure to maintain and enhance DoD infrastructure capabilities to counter an expanding threat space, exploit advances in technology; and develop and transition CB defense equipment and countermeasures to the Warfighter.

The management support (MS6) project, provides management support for the DoD CBDP to allow program overview and integration of overall medical and non-medical programs by the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs (ASD(NCB)), through the Deputy Assistant Secretary of Defense for Chemical Biological Defense Programs (DATSD(CBD)); funds management by the Defense Threat Reduction Agency (DTRA); Development, coordination, and approval of joint CBRND requirements, management of multi-service and joint CBRND doctrine, tactics, techniques and procedures; training, leader development, education, exercises, and development of the CBDP Program Objective Memorandum (POM) by the Joint Requirements Office; Joint RDA planning, input to the Annual Report to Congress and Program Objective Memorandum (POM) development by the Program Analysis and Integration Office (PAIO); review of Joint plans and the consolidated CB Defense POM Strategy by Army in its Executive Agent role.

The management support project also includes the Test and Evaluation (T&E) Executive mission to establish test infrastructure investment strategy and adequate testing for Developmental Testing (DT) and Operational Testing (OT) of Department of Defense (DoD) Chemical Biological Defense (CBD) systems and components throughout the systems' acquisition life cycle, as required in the RDA Plan under the Joint Test Infrastructure Working Group (JTIWG) program. The JTIWG program includes T&E Early Involvement, test threat planning, Fielded Equipment Assessments, T&E studies, and T&E Standards planning and development to support testing the CBD systems for all services to include radiological, nuclear, medical T&E efforts.

The Joint Concept Development and Experimentation (O49) project supports the planning, conduct, evaluation, and reporting on Joint tests (for other than developmental hardware) and accomplishment of operational research assessments in support of requirements received from the Services and the Combatant Commanders for already fielded equipment and systems.

This Budget Activity also provides for Program Element 0605502BP, which supports the Small Business Innovative Research (SBIR) program. The overall objective of the CBD SBIR program is to improve the transition or transfer of innovative CBD technologies between DoD components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a CB environment using passive and active means as deterrents. These technologies include CB detection; information assessment (identification, modeling, and intelligence); contamination avoidance; and protection of both individual soldiers and equipment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	105.927	102.264	108.292	-	108.292
Current President's Budget	104.597	102.238	85.754	-	85.754
Total Adjustments	-1.330	-0.026	-22.538	-	-22.538
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	0.000	-0.026			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.225	-			
• SBIR/STTR Transfer	-1.465	-			
• Other Adjustments	0.360	-	-22.538	-	-22.538

Change Summary Explanation

Funding: FY17 - Adjustments due to underexecution and fact-of-life changes (\$15M). Other Departmental adjustments (\$7M).

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)				Project (Number/Name) DT6 / JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
DT6: JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)	-	5.065	4.744	3.185	-	3.185	5.953	5.720	5.325	5.429	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The activities of this project directly support the Joint Service CB defense program; in particular, the development of Joint Chemical, Biological, Radiological, and Nuclear (CBRN) defense capability requirements and the improvement of CBRN defense related doctrine, education, training, and awareness at the Joint and Service levels. This effort provides for: (1) Development, coordination, and integration of Joint CBRN defense capability requirements; (2) Development/revision of medical and non-medical CBRN defense Multi-Service Tactics, Techniques, and Procedures (MTTP) and development/revision of Joint Doctrine and Tactics, Techniques, and Procedures (JTTP); (3) The CBDP Joint Senior Leader Course (JSLC); (4) Assistance in correcting training and doctrine deficiencies covered in the lessons learned process, combat operations, capability development studies and Department of Defense Inspector General (DODIG) and Government Accountability Office (GAO) reports and; (5) Support of current and planned CBRN defense studies, analysis, training, exercises, and war games; determine overlaps, duplication, and shortfalls; and build and execute programs to correct shortfalls in all aspects of CBRN defense across all DoD mission areas.

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

	FY 2015	FY 2016	FY 2017
Title: 1) JRO DT	5.065	4.652	3.185
<p>Description: The purpose of this requirement is to provide technical and subject matter expert (SME) support in the areas of: related Chemical, Biological, Radiological, and Nuclear Defense (CBRND)/Countering Weapons of Mass Destruction (CWMD); Joint and Multi-Service doctrine development; Joint and Service training, leadership development, education, and exercises.</p> <p>Specifically, support is needed to:</p> <ol style="list-style-type: none"> 1. Conduct technical reviews of Joint and Multi-service CBRN Defense/CWMD doctrinal materials and develop CBRND/CWMD related MTTP manuals. 2. Plan and conduct CBRN defense/CWMD Joint Professional Military Education (JPME). 3. Provide CBRN defense/CWMD planning, execution and SME support to Combatant Command (CCMD) and Joint Task Force (JTF) level exercises. 4. Conduct staff and leader CBRN defense/CWMD training for CCMD and JTF level commands. <p>Provides support to the National Defense University (NDU) Center for the Study of Weapons of Mass Destruction (WMD) to support their efforts as the Chairman's focal point for CWMD JPME.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) DT6 / JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Continued to support Joint and Multi-service doctrine development. This included preparation of various Joint publications which then inform MTTPs. JRO supported COCOM scenario development and controller/evaluator training by providing SMEs to exercises. JRO supported training efforts at various Joint Senior Leadership schools.</p> <p><i>FY 2016 Plans:</i> Continue to support Joint and Multi-service doctrine development. This includes preparation of various Joint publications which then inform MTTPs. JRO will continue to support COCOM scenario development and controller/evaluator training by providing SMEs to exercises. JRO will continue to support training efforts at various Joint Senior Leadership schools.</p> <p><i>FY 2017 Plans:</i> Continue to support Joint and Multi-service doctrine development. This includes preparation of various Joint publications which then inform MTTPs. JRO will continue to support COCOM scenario development and controller/evaluator training by providing SMEs to exercises. JRO will continue to support training efforts at various Joint Senior Leadership schools.</p>			
<p><i>Title:</i> 2) SBIR/STTR</p> <p><i>FY 2016 Plans:</i> SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.092	-
Accomplishments/Planned Programs Subtotals	5.065	4.744	3.185

<p>C. Other Program Funding Summary (\$ in Millions) N/A</p> <p>Remarks</p> <p>D. Acquisition Strategy N/A</p> <p>E. Performance Metrics N/A</p>
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)				Project (Number/Name) DW6 / MAJOR RANGE AND TEST FACILITY BASE (MRTFB)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
DW6: MAJOR RANGE AND TEST FACILITY BASE (MRTFB)	-	55.245	51.878	50.639	-	50.639	53.164	52.862	53.039	53.673	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project provides the technical and operational capability for testing Department of Defense (DoD) Chemical and Biological (CB) defense materiel, equipment, and systems from concept through production to include associated special operations Tactics, Techniques and Procedures Development (TTPD) activities at West Desert Test Center (WDTC), a Major Range and Test Facility Base (MRTFB) located at Dugway Proving Ground (DPG). Project provides overhead (institutional) funding required to operate WDTC in compliance with Section 232 of the National Defense Authorization Act (NDAA) for FY03 (Public Law 107-314 - December 2002).

WDTC is the reliance center for all DoD CB defense testing and provides the United States' only combined range, chamber, toxic chemical lab, and bio-safety level-3 (BSL-3) test facility. Total institutional test operating costs are to be provided by the OSD Chemical and Biological Defense Program IAW Program Budget Decision 250 (1996).

WDTC uses state-of-the-art chemical and life sciences test facilities and test chambers to perform CB defense testing of protective gear, decontamination systems, detectors, equipment, and non-materiel CB defense solutions while maintaining safety, security, and surety of chemical agents and biological pathogens. WDTC also provides test ranges, to include fully instrumented outdoor ranges, for TTPD activities and testing with simulants that can be correlated to the laboratory testing with live agents to ensure reliable and repeatable data is generated to support acquisition decisions of CB defense equipment.

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

	FY 2015	FY 2016	FY 2017
Title: 1) WDTC, MRTFB	36.834	29.518	35.856
FY 2015 Accomplishments: Maintained WDTC technical test capability and operations to include institutional civilian labor costs. These civilian personnel ensured the safe and efficient operations of the MRTFB and included safety, security, resource management, surety operations, range control, environmental oversight, workload management, and training. This represented the civilian labor and MRTFB operating costs required to support operations, which could not be directly tied to a single test customer.			
FY 2016 Plans: Maintains WDTC technical test capability and operations to include institutional civilian labor costs. These civilian personnel ensure the safe and efficient operations of the MRTFB and include safety, security, resource management, surety operations,			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) DW6 / MAJOR RANGE AND TEST FACILITY BASE (MRTFB)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
range control, environmental oversight, workload management, and training. This represents the civilian labor and MRTFB operating costs required to support operations, which cannot be directly tied to a single test customer. FY 2017 Plans: Maintains WDTC technical test capability and operations to include institutional civilian labor costs. These civilian personnel ensure the safe and efficient operations of the MRTFB and include safety, security, resource management, surety operations, range control, environmental oversight, workload management, and training. This represents the civilian labor and MRTFB operating costs required to support operations, which cannot be directly tied to a single test customer.				
Title: 2) WDTC, MRTFB FY 2015 Accomplishments: Provided for ongoing sustainment of existing test instrumentation and equipment at WDTC, in support of their operations. Supported annual service contracts for equipment operation, diagnostics, and calibration, as well as routine life-cycle and use-related replacement of existing field, administrative, and analytical instrumentation components and systems. FY 2016 Plans: Provides for ongoing sustainment of existing test instrumentation and equipment at WDTC, in support of their operations. Supports annual service contracts for equipment operation, diagnostics, and calibration, as well as routine life-cycle and use-related replacement of existing field, administrative, and analytical instrumentation components and systems. FY 2017 Plans: Provides for ongoing sustainment of existing test instrumentation and equipment at WDTC, in support of their operations. Supports annual service contracts for equipment operation, diagnostics, and calibration, as well as routine life-cycle and use-related replacement of existing field, administrative, and analytical instrumentation components and systems.		10.454	12.504	7.319
Title: 3) WDTC, MRTFB FY 2015 Accomplishments: Provided WDTC with a dedicated and specially trained, 24-hour, support staff who operated and maintained all critical control systems, such as, highly complex test specific heating, ventilating, and air conditioning (HVAC) systems and decontamination systems within WDTC's Materiel Test Facility (MTF), Combined Chemical Test Facility (CCTF), and Life Sciences Test Facility (LSTF) Complex. FY 2016 Plans: Provides WDTC with a dedicated and specially trained, 24-hour, support staff who operate and maintain all critical control systems, such as, HVAC systems and decontamination systems within WDTC's MTF, CCTF, and LSTF Complex. FY 2017 Plans:		1.687	1.956	1.696

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) DW6 / MAJOR RANGE AND TEST FACILITY BASE (MRTFB)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Provides WDTC with a dedicated and specially trained, 24-hour, support staff who operate and maintain all critical control systems, such as, test specific HVAC systems and decontamination systems within WDTC's MTF, CCTF, and LSTF Complex.				
Title: 4) WDTC, MRTFB		5.298	5.870	4.825
FY 2015 Accomplishments: Supported the WDTC defense mission by funding contractor labor overhead costs. This was the institutional cost of providing contractual effort to this MRTFB including chemical and biological analysis, field support, planning, and report documentation. This provided the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits.				
FY 2016 Plans: Supports the WDTC defense mission by funding contractor labor overhead costs. This is the institutional cost of providing contractual effort to this MRTFB including chemical and biological analysis, field support, planning, and report documentation.				
FY 2017 Plans: Supports the WDTC defense mission by funding contractor labor overhead costs. This is the institutional cost of providing contractual effort to this MRTFB including chemical and biological analysis, field support, planning, and report documentation. Provides the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits.				
Title: 5) NTA TEST		0.972	0.975	0.943
FY 2015 Accomplishments: Accepted delivery of two Secondary Containment Modules (SCM) and initiated integration of synthesis capability, analytical processes, and methods developed through FY14. This capability is critical to facilitate successful transition between science and technology (S&T) and test and evaluation (T&E) for NTA and evolving threats.				
FY 2016 Plans: Supports the verification and validation efforts of infrastructure improvements for programs of record testing. Continues to maintain synthesis capability in other than Class 1 compounds. Continues to support the readiness of test infrastructure, instrumentation, and equipment along with applying current test procedures for other than Class 1 compounds.				
FY 2017 Plans: Maintain synthesis capability of class 1 NTA compounds and other NTA classes in support of program of record test and evaluation. Develop NTA test methods for uniform materials and protective masks. Develop chemical dissemination and challenge monitoring methods for other NTA classes.				
Title: 6) SBIR/STTR		-	1.055	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) DW6 / MAJOR RANGE AND TEST FACILITY BASE (MRTFB)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<i>FY 2016 Plans:</i> SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	55.245	51.878	50.639

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) LS6 / LABORATORY SUPPORT
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
LS6: LABORATORY SUPPORT	-	11.950	10.120	9.339	-	9.339	13.864	13.655	12.949	13.202	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project (LS6) provides for the sustainment and modernization of the DoD laboratory infrastructure capabilities to counter an expanding threat space, exploit advances in technology, and develop and transition chemical and biological (CB) defense equipment and countermeasures to the Warfighter. This laboratory infrastructure project upgrades key systems to the current state-of-the-art capabilities. Key systems include: gas filters, mechanical/electrical, fume hoods, duct work and structural systems. Provides for the initial equipment outfitting of new facilities. Ensures that the necessary surety operations can be conducted effectively and safely in support of Chemical and Biological Defense Program (CBDP) RDTE programs. As a force multiplier, this project will provide more robust capabilities to the CBDP and ensure continuity of operations and environmental compliance.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) LABINF - Edgewood Chemical Biological Center Surety Facility Sustainment</p> <p>FY 2015 Accomplishments: Performed preventative maintenance projects in key surety buildings to assure the efficiency and extend the life of equipment, and reduce the occurrence of unscheduled equipment outages.</p> <p>Modernized aging chemical and biological surety laboratories up to state of the art standards to ensure continued support of CBDP's RDTE programs to include toxic lab demolition, force protection project, water treatment system, high pressure air compressor system and distribution piping.</p> <p>FY 2016 Plans: Perform general facility sustainment and modernization in key surety facilities that support the Chemical Biological Defense Program (CBDP). Provides for gas filter maintenance and changeout, sustainment of critical laboratory systems (fume hoods, exhaust systems, control systems, electrical/mechanical systems, plumbing, emergency backup power), and modernization of key chemical and biological surety laboratories.</p> <p>FY 2017 Plans: Perform general facility sustainment and modernization in key surety facilities that support the CBDP. Provides for gas filter maintenance and change out, sustainment of critical laboratory systems (fume hoods, exhaust systems, control systems, electrical/mechanical systems, plumbing, emergency backup power), and modernization of key chemical and biological surety laboratories.</p>	10.703	8.721	8.839
<p>Title: 2) LABINF - USAMRIID/USAMRICD Infrastructure Support</p>	1.247	1.171	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) LS6 / LABORATORY SUPPORT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Provide laboratory infrastructure support to laboratory operations, facilities sustainment, and regulatory compliance for critical chemical biological defense activities at the U.S. Army Medical Research Institute for Infectious Diseases and the U.S. Army Medical Research Institute for Chemical Defense.</p> <p><i>FY 2016 Plans:</i> Provide laboratory infrastructure support to laboratory operations, facilities sustainment, and regulatory compliance for critical chemical biological defense activities at the U.S. Army Medical Research Institute for Infectious Diseases and the U.S. Army Medical Research Institute for Chemical Defense.</p> <p><i>FY 2017 Plans:</i> Provide laboratory infrastructure support to laboratory operations, facilities sustainment, and regulatory compliance for critical chemical biological defense activities at the U.S. Army Medical Research Institute for Infectious Diseases and the U.S. Army Medical Research Institute for Chemical Defense.</p>			
<p><i>Title:</i> 3) ZSBIR <i>Description:</i> SBIR/STTR</p> <p><i>FY 2016 Plans:</i> SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.228	-
Accomplishments/Planned Programs Subtotals	11.950	10.120	9.339

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MS6: RDT&E MGT SUPPORT	-	28.404	31.385	21.212	-	21.212	39.986	38.516	35.658	36.544	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides management support for the DoD Chemical and Biological Defense Program (CBDP). It includes program oversight and integration of overall non-CBRN Defense Equipment (non-CDE) and CBRN Defense Equipment (CDE) programs by the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs (ASD(NCB)) and defense programs through the Deputy Assistant Secretary of Defense for Chemical and Biological Defense (DASD(CBD)). Funds execution management is provided by DTRA.

The project also provides for the development, coordination and integration of Joint Chemical, Biological, Radiological and Nuclear (CBRN) defense capability requirements, including assistance and support to the Combatant Commanders (COCOMs) and Services to improve CBRN defense related doctrine, education, training, and awareness by the Joint Requirements Office (JRO); preparation of Joint Capability Integration and Development System (JCIDS) documents in accordance with Chairman of The Joint Chiefs of Staff Instruction CJCSI 3170.011 dated 23 January 2015; Joint CBRN Defense Research, Development, and Acquisition (RDA) planning; input to the CBD Annual Report to Congress; and program guidance development by the Program Analysis and Integration Office (PAIO).

The project includes programming support for the Joint Service CB Information System (JSCBIS) which serves as a budgetary and informational database for the DoD CBDP. Also included within the project is financial management services to include fund distribution, execution reporting, and fiscal financial statements.

This project also supports the Chemical, Biological, Radiological and Nuclear Defense (CBRND) Test and Evaluation (T&E) Executive, who is responsible for the planning, balancing, and oversight of test infrastructure and test technology requirements to support Developmental Testing (DT) and Operational Testing (OT) of DoD CBRND systems, as outlined in the RDA Plan. The CBRND T&E Executive oversees the Enterprise processes to develop and sustain standardized T&E methodologies and validated instrumentation and infrastructure to ensure the adequacy of test for CBRND systems in alignment with acquisition milestones and associated decision points. The Joint Test Infrastructure Working Group (JTIWG) program supports T&E Early Involvement; test threat planning; T&E studies; and T&E standards planning and development to support CBRND testing for all Services to include medical T&E efforts.

The CBRND T&E Executive directly supports OSD T&E oversight acquisition programs and provides the mechanism for early T&E involvement in the acquisition process. The CBRND T&E Executive provides the T&E infrastructure investment strategy and coordinates investment planning and T&E capabilities validation among the Joint Service Community to ensure that program needs are met. The CBRND T&E Executive oversees the T&E processes to ensure end to end feedback loops to support to the Warfighter.

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

	FY 2015	FY 2016	FY 2017
Title: 1) JRO MGT	9.411	9.516	5.474

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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<p><i>FY 2015 Accomplishments:</i> Implemented CBRN Defense medical and non-medical capabilities development by representing the Services and COCOMs in JCIDS and acting as their proponent for coordinating and integrating CBRND operational capabilities. Chaired the Countering Weapons of Mass Destruction (CWMD) Working Group for the Protection Functional Capabilities Board (FCB). Served as the Joint Staff focal point for CBRN reports, assessments, meetings, agreements, concepts and studies, Advanced Technology Demonstrations (ATDs), and Joint Capability Technology Demonstrations (JCTDs). Lead the CBDP Enterprise Program Objective Memorandum (POM) development. Prepared various JCIDS documents, including Analysis of Alternatives (AoAs), Information System Initial Capability Documents (IS ICDs), Capability Development Documents (CDDs), and Capability Production Documents.</p> <p><i>FY 2016 Plans:</i> Will implement CBRN Defense medical and non-medical capabilities development by representing the Services and COCOMs in JCIDS and acting as their proponent for coordinating and integrating CBRND operational capabilities. Will chair the CWMD Working Group for the Protection Functional Capabilities Board (FCB). Will serve as the Joint Staff focal point for CBRN reports, assessments, meetings, agreements, concepts and studies, ATDs, and JCTDs. Will lead the CBDP Enterprise POM development. Will prepare various JCIDS documents, including AoAs, IS ICDs, CDDs, and CPDs.</p> <p><i>FY 2017 Plans:</i> Will implement CBRN Defense medical and non-medical capabilities development by representing the Services and COCOMs in JCIDS and acting as their proponent for coordinating and integrating CBRND operational capabilities. Will chair the CWMD Working Group for the Protection FCB. Will serve as the Joint Staff focal point for CBRN reports, assessments, meetings, agreements, concepts and studies, ATDs, and JCTDs. Will lead the CBDP Enterprise POM development. Will prepare various JCIDS documents, including AoAs, IS ICDs, CDDs, and CPDs.</p>			
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<p><i>Title:</i> 2) JTIWG</p> <p><i>FY 2015 Accomplishments:</i> Performed the following activities in support of T&E Executive mission to ensure credible testing and evaluation: T&E Early Involvement; T&E Studies; testing, evaluation and decision support for CBDP systems; support the DOT&E for OSD T&E Oversight; support the NCB in infrastructure planning; input to the POM process; oversee test centers to ensure compliance with OSD policies and regulations; and establishing T&E Standards to support the White House Subcommittee on Standards and other interagency groups.</p> <p>Supported JRO ICTs and OSD and acquisition IPTs by providing technical assistance to structure acquisition programs, planning for Analysis of Alternatives, and developing test scopes.</p>	4.743	5.808	3.716
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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Coordinated involvement of the OTAs and other T&E organizations in T&E infrastructure planning, development, validation, and test execution.</p> <p>Developed threat test support documentation to support DT, DT/OT and OT in which an operational threat must be realistically presented to properly characterize material and doctrine solutions.</p> <p>Provided technical expertise to JPEO-CBD in TEMP development and execution. Reviewed and approved TEMPs. Programs supported include JBTDS; JCAD integration into Stryker Joint Nuclear, Biological, and Chemical Reconnaissance System; NGCD Increments 1 through 3; JECF; CIDAS; JESEW; JPDE-HME; DR-SKO, Stryker NBCRV, RDS, NGDS; JEM; JWARN; CHRP; CALS; all variants of JSAM; and other activities including JUPITR ATD, and Chemical Demilitarization</p> <p>Continued support to JPEO-CBD, JSTO, and WDTC for specific test methodology and test technology needs; technology transition planning for T&E methodologies, resources and infrastructure; and participation in scientific review panels. Provided support to OTAs in coordination of Lead OTA assignment, integration of test planning, issue resolution, and facilitation of OSD approval of test documents.</p> <p>Continued to lead the International T&E methodology development and standardization efforts to support partnering agreements with Australia, Canada, France, Israel, Norway and the UK in order to leverage unique T&E resources and share test costs. Provided T&E infrastructure input to the POM process and supported the Services, JRO, PAIO, and NCB in development and defense of POM and Budget submissions.</p> <p>Provided guidance to the CBDP Enterprise for Non-Traditional Agent (NTA) testing for developmental testing.</p> <p>Participated and supported OSD WIPTs, IIPTs and EEBs.</p> <p>FY 2016 Plans: Continue T&E Executive mission support to ensure credible testing; T&E Early Involvement; T&E Studies; evaluation and decision support for CBDP systems; support the DOT&E for OSD T&E Oversight; and support the NCB in infrastructure planning; input to the POM process; and establishing T&E Standards to support the White House Subcommittee on Standards and other interagency groups. Continue efforts to develop, refine, and/or streamline processes for identifying, assessing, and addressing gaps in T&E capabilities to ensure timely support to acquisition programs. Continue mission to improve the quality and reduce the costs of test planning and execution; eliminate unnecessary redundancies in test infrastructure.</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue direct support of the JRO ICTs and IPTs providing technical assistance to structure acquisition programs, plan for Analysis of Alternatives, and develop test scopes.			
Continue direct coordination of early involvement of the OTAs and other T&E organizations in T&E infrastructure planning, development, and validation.			
Continue development of threat test support documentation to support DT and OT.			
Continue direct support to the JPEO-CBD. Anticipated programs supported include JBTDS; NGCD Increments 1 through 4; UIPE II; JECF; NGDS; JBADS; JCACS ATD; JESEW; JPDE-HME; JEM; JCAD integration in into Stryker Nuclear, Biological, and Chemical Reconnaissance System; JWARN; CALS; all variants of JSAM; and other active acquisition programs including JUPITR ATD.			
Continue support to JPEO-CBD, JSTO, and WDTC for specific test methodology and test technology needs; technology transition planning for T&E methodologies, resources and infrastructure; and participation in scientific review panels.			
Continue to provide guidance to improve TEMPs for acquisition programs; approval of TEMPs; development of threat support documentation; and validation of T&E Capabilities and associated standards.			
Continue supporting OTAs in coordination of Lead OTA assignment, integration of test planning, issue resolution, and facilitation of OSD approval of test documents.			
Continue to lead the International T&E methodology development and standardization efforts to support the Australia, Canadian, UK, and US MOU and other international partnering agreements.			
Provide T&E infrastructure input to the POM process and support the Services, JRO, PAIO, and NCB in development and defense of POM and Budget submissions.			
Develop Aerosol and surface contamination detection and measurement capabilities and transition them for chemical sensing T&E.			
Conduct Red Team, Table Top Exercises (TTXs) and TEMP training for IPTs.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Participate in DT and OT Test Readiness Reviews (TRR) to determine if the testing planning is adequate for execution.</p> <p>FY 2017 Plans: Continue T&E Executive mission support to ensure credible testing; T&E Early Involvement; T&E Studies; evaluation and decision support for CBDP systems; support the DOT&E for OSD T&E Oversight; and support the NCB in infrastructure planning; input to the POM process; and establishing T&E Standards to support the White House Subcommittee on Standards and other interagency groups. Continue efforts to develop, refine, and/or streamline processes for identifying, assessing, and addressing gaps in T&E capabilities to ensure timely support to acquisition programs. Continue mission to improve the quality and reduce the costs of test planning and execution; eliminate unnecessary redundancies in test infrastructure.</p>			
<p>Title: 3) OSD MGT</p> <p>FY 2015 Accomplishments: Perform program reviews/assessments, provide programmatic PPBE oversight/analysis, and provide congressional issue analysis and support. Support financial management services provided by DTRA, such as funding distribution and execution reporting.</p> <p>FY 2016 Plans: Perform program reviews/assessments, provide programmatic PPBE oversight/analysis, and provide congressional issue analysis and support. Support financial management services provided by DTRA, such as funding distribution and execution reporting.</p> <p>FY 2017 Plans: Perform program reviews/assessments, provide programmatic PPBE oversight/analysis, and provide congressional issue analysis and support. Support financial management services provided by DTRA, such as funding distribution and execution reporting.</p>	7.268	9.095	6.922
<p>Title: 4) DFAS EFD ADJUSTMENT</p> <p>FY 2015 Accomplishments: Adjustment to balance to DFAS financial reporting within OSD. This is solely an accounting transaction.</p>	0.660	-	-
<p>Title: 5) PAIO MGT</p> <p>FY 2015 Accomplishments: Developed assessments to support RDA Planning. Provided analytic programmatic support for development of program guidance, the Program, Budget and Execution Reviews, and the President's Budget submissions. Responded to specialized evaluation studies throughout the PPBE process. Provided JSCBIS database management.</p> <p>FY 2016 Plans:</p>	6.322	6.424	5.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / RDT&E MGT SUPPORT
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Develop assessments to support RDA Planning. Provide analytic programmatic support for development of program guidance, the Program, Budget and Execution Reviews, and the President's Budget submissions. Respond to specialized evaluation studies throughout the PPBE process. Provide JSCBIS database management. FY 2017 Plans: Develop assessments to support RDA Planning. Provide analytic programmatic support for development of program guidance, the Program, Budget and Execution Reviews, and the President's Budget submissions. Respond to specialized evaluation studies throughout the PPBE process. Provide JSCBIS database management.			
Title: 6) SBIR/STTR FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.	-	0.542	-
Accomplishments/Planned Programs Subtotals	28.404	31.385	21.212

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)				Project (Number/Name) O49 / JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION PROGRAM			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
O49: JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION PROGRAM	-	3.933	4.111	1.379	-	1.379	4.993	4.669	4.135	4.215	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objectives of the Joint Concept Development and Experimentation (JCDE) program are to support the Joint Requirements Office to develop, coordinate, and execute CBRND studies, experiments, analyses and architecture, in order to develop future operational concepts and support the efficient and effective generation of CBRN requirements.

Specific lines of effort across the Future Years Defense Program (FYDP) include: qualitatively characterizing emerging CBRN threats and operational risks to the Joint Force; conducting innovative approaches to deal with technical studies; analyzing Concepts of Operations for employing and developing capabilities; and analyzing specific issues that contribute to POM development.

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

	FY 2015	FY 2016	FY 2017
Title: 1) JCDE	3.933	4.036	1.379
FY 2015 Accomplishments: Continued JCDE analysis. Performed Advanced Threat Analysis with several more categories of threat. Determine best representative agents for consideration in requirements and testing. Conducted detailed quantitative analyses to determine detection and challenge levels from key representative solid, dusty, liquid, viral, and bacterial threats. Conduct detailed operational risk analyses to support CDBP leadership decisions. Completed biosurveillance architecture. Completed a new Concept for CBRN Defense to replace the final portion of the 2007 Countering Weapons of Mass Destruction (CWMD) Joint Integrating Concept (JIC).			
FY 2016 Plans: Will continue JCDE analysis. Will continue to perform Advanced Threat Analysis with several more categories of threat. Will update best representative agents for consideration in requirements and testing. Will conduct detailed quantitative analyses to determine detection and challenge levels from key representative threats determined in the FY15 Advanced Threat Studies. Will update detailed operational risk analyses to support CDBP leadership decisions.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) O49 / JOINT CONCEPT DEVELOPMENT AND EXPERIMENTATION PROGRAM
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Will continue JCDE analysis. Will continue to perform Advanced Threat Analysis with several more categories of threat. Will update best representative agents for consideration in requirements and testing. Will conduct detailed quantitative analyses to determine detection and challenge levels from key representative threats determined in the FY15 Advanced Threat Studies. Will update detailed operational risk analyses to support CBDP leadership decisions.			
Title: 2) SBIR/STTR	-	0.075	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	3.933	4.111	1.379

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502BP / <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	15.078	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	15.078
SB6: <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>	-	15.078	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	15.078

A. Mission Description and Budget Item Justification

The overall objective of the CBD SBIR program is to improve the transition or transfer of innovative CBD technologies between DoD components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a biological or chemical environment using passive and active means as deterrents. These technologies include chemical and biological detection; information assessment, which includes identification, modeling, and intelligence; contamination avoidance; and protection of both individual soldiers and equipment.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	15.078	0.000	0.000	-	0.000
Total Adjustments	15.078	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	0.000	-			
• SBIR/STTR Transfer	15.078	-			
• Other Adjustments	0.000	-		-	-

Change Summary Explanation

Funding: FY15 - Funding transferred and applied to SBIR program (+\$15,078K).

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605502BP / <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>				Project (Number/Name) SB6 / <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
SB6: <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>	-	15.078	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0	15.078
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SBIR Program is a Congressionally mandated program established to increase the participation of small business in federal research and development (R&D). Currently, each participating Government agency must reserve 2.5% of its extramural R&D for SBIR awards to competing small businesses. The goal of the SBIR Program is to invest in the innovative capabilities of the small business community to help meet Government R&D objectives while allowing small companies to develop technologies and products which they can then commercialize through sales back to the Government or in the private sector.

The Small Business Technology Transfer (STTR) Program like SBIR, is a Government-wide program, mandated by the Small Business Research and Development Enhancement Act of 1992, PL 102-564. STTR was established in FY94 as a three-year pilot program. In early 1996, the General Accounting Office (GAO) conducted a comprehensive review of the Government-wide STTR Program to determine the effectiveness of the pilot program. Upon review of the GAO report, Congress voted to reauthorize the STTR Program to the year 2000, consistent with the authorization period for the SBIR Program.

STTR was established as a companion program to the SBIR Program and is executed in essentially the same manner; however, there are several distinct differences. The STTR Program provides a mechanism for participation by university, Federally-Funded Research and Development Centers (FFRDCs), and other non-profit research institutions. Specifically, the STTR Program is designed to provide an incentive for small companies and research at academic institutions and non-profit research and development institutions to work together to move emerging technical ideas from the laboratory to the marketplace to foster high-tech economic development and to advance U.S. economic competitiveness. Each STTR proposal must be submitted by a team which includes a small business (as the prime contractor for contracting purposes) and at least one research institution, which have entered into a Cooperative Research and Development Agreement for the purposes of the STTR effort. Furthermore, the project must be divided up such that the small business performs at least 40% of the work and the research institution(s) performs at least 30% of the work. The remainder of the work may be performed by either party or a third party. The budget is separate from the SBIR budget and is significantly smaller (0.15% of the extramural R&D budget vs. 2.5% for the SBIR Program).

The DoD has consolidated management and oversight of the CDBP into a single office within the OSD. The Army was designated as the Executive Agent for coordination and integration of the Chemical and Biological Defense (CBD) program. The executive agent for the SBIR/STTR portion of the program is the Army Research Office-Washington.

The overall objective of the CBD SBIR/STTR program is to improve the transition or transfer of innovative CBD technologies between DoD components and the private sector for mutual benefit. The CBD program includes those technology efforts that maximize a strong defensive posture in a biological or chemical environment using

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605502BP / <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>	Project (Number/Name) SB6 / <i>SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)</i>
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passive and active means as deterrents. These technologies include chemical and biological detection; information assessment, which includes identification, modeling, and intelligence; contamination avoidance; and protection of both individual soldiers and equipment.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: 1) SBIR/STTR Description: Small Business Innovative Research. FY 2015 Accomplishments: SBIR/STTR.	15.078	-	-
Accomplishments/Planned Programs Subtotals	15.078	-	-

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	28.102	33.561	33.361	-	33.361	43.983	49.922	43.703	48.309	Continuing	Continuing
CA7: <i>CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV</i>	-	0.491	4.837	6.113	-	6.113	6.880	6.988	6.986	9.585	Continuing	Continuing
CM7: <i>HOMELAND DEFENSE (OP SYS DEV)</i>	-	1.330	1.915	1.627	-	1.627	2.133	2.081	1.783	4.605	Continuing	Continuing
CO7: <i>COLLECTIVE PROTECTION (OP SYS DEV)</i>	-	0.000	0.000	4.466	-	4.466	4.370	2.853	0.000	0.000	0	11.689
IP7: <i>INDIVIDUAL PROTECTION (OP SYS DEV)</i>	-	2.452	3.214	1.059	-	1.059	1.713	1.947	1.620	1.458	Continuing	Continuing
IS7: <i>INFORMATION SYSTEMS (OP SYS DEV)</i>	-	4.703	7.703	10.357	-	10.357	12.707	13.219	13.967	13.590	Continuing	Continuing
MB7: <i>MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)</i>	-	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing
TE7: <i>TEST & EVALUATION (OP SYS DEV)</i>	-	5.940	4.091	2.594	-	2.594	6.605	6.318	5.416	5.733	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element supports developmental efforts to upgrade systems in the Department of Defense (DoD) Chemical Biological Defense Program that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

Efforts in this program element support the upgrade of fielded CB defense equipment against emerging chemical threat agents and toxic industrial chemicals. Specifically this program includes: (1) the upgrade and modernization of contamination avoidance systems; (2) the upgrade and modernization of homeland defense systems; (3) the upgrade and modernization of collective protection and individual protection systems; (4) the upgrade and modernization of information systems; (5) the Software Support Activity (SSA); (6) the upgrade and modernization of medical systems; and (7) revitalization and technical upgrade of existing instrumentation and equipment at Dugway Proving Ground (DPG).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	28.496	33.561	33.358	-	33.358
Current President's Budget	28.102	33.561	33.361	-	33.361
Total Adjustments	-0.394	0.000	0.003	-	0.003
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	0.000	-			
• SBIR/STTR Transfer	-0.394	-			
• Other Adjustments	0.000	-	0.003	-	0.003

Change Summary Explanation

Funding: N/A

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) CA7 / CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CA7: CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV	-	0.491	4.837	6.113	-	6.113	6.880	6.988	6.986	9.585	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides the technology upgrade and refresh effort for the Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS) with emerging technologies and capabilities which will address and mitigate equipment obsolescence.

The CBRN Dismounted Reconnaissance Systems (CBRN DRS) consists of portable, commercial and Government off-the-shelf equipment which provides personnel protection from current and emerging CBRN hazards through detection, identification, sample collection, decontamination, marking, and hazard reporting for CBRN threats. The system supports Dismounted Reconnaissance, Surveillance, and CBRN Site Assessment missions which enables more detailed and near real-time CBRN information flow for the Warfighter. The program will address emerging CBRN threat requirements in order to provide an enhanced capability for the future.

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

	FY 2015	FY 2016	FY 2017
Title: 1) CBRN DRS	0.491	3.244	6.113
FY 2015 Accomplishments: Initiated market analyses on emerging technologies for potential upgrades to the system. Initiated obsolescence management activities for existing fielded components.			
FY 2016 Plans: Continue market analyses on emerging technologies for potential upgrades to the system. Continue obsolescence management activities for existing fielding components.			
FY 2017 Plans: Continue market analyses on emerging technologies for potential upgrades to the system. Continue obsolescence management activities for existing fielding components. Continue purchasing components for testing. Continue testing of potential candidates. Initiate changes to product baseline.			
Title: 2) CBRN DRS	-	1.500	-
FY 2016 Plans: Initiate testing of potential candidates (10 components at approximately \$100,000 each)			
Title: 3) SBIR/STTR	-	0.093	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CA7 / CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	0.491	4.837	6.113

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

N/A

Remarks

D. Acquisition Strategy

CBRN DISMOUNTED RECONNAISSANCE SYSTEMS

The Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS) program uses a government-off-the-shelf (GOTS)/commercial-off-the-shelf (COTS) non-developmental item (NDI) single step acquisition approach to full capability. This strategy employs an NDI acquisition concept to establish a simplified management framework to translate mission needs and emerging technology capabilities into a stable, affordable, and well-managed acquisition program. CBRN DRS systems will be produced using a workshare approach between Organic assets and Contractor workforce.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CA7 / CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CBRN DRS - HW C - Product Development	C/CPFF	TBD : TBD	0.000	0.000		1.000	Mar 2016	1.552	Mar 2017	-		1.552	Continuing	Continuing	0.000
Subtotal			0.000	0.000		1.000		1.552		-		1.552	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CBRN DRS - ES C - Market Analysis	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.301	Jun 2015	1.350	Jan 2016	1.486	Jan 2017	-		1.486	Continuing	Continuing	0.000
CBRN DRS - ES C - Obsolescence Management	MIPR	TBD : TBD	0.000	0.000		0.950	Jan 2016	0.980	Dec 2016	-		0.980	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.093	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.000	0.301		2.393		2.466		-		2.466	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CBRN DRS - OTE S - Candidate Testing	MIPR	Various : TBD	0.000	0.000		0.500	Mar 2016	1.075	Mar 2017	-		1.075	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.500		1.075		-		1.075	-	-	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CA7 / CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

CBRN DRS - Test components to replace
obsolete items and insert new technologies



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CA7 / CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBRN DRS - Test components to replace obsolete items and insert new technologies	2	2015	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CM7: HOMELAND DEFENSE (OP SYS DEV)	-	1.330	1.915	1.627	-	1.627	2.133	2.081	1.783	4.605	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

The Weapons of Mass Destruction Civil Support Team (WMD CST) Program supports the fielded system upgrade and ongoing assessment and acquisition of commercial off-the-shelf (COTS) and Government off-the-shelf (GOTS) analytical detection, protection, decontamination and sampling equipment for survey in order to expand/enhance the operational capabilities of the (57) WMD CST Teams.

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

	FY 2015	FY 2016	FY 2017
Title: 1) WMD CST - Component Test and Evaluation	0.688	1.078	1.115
<p>Description: General system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system. This element also includes costs of the detailed planning, conduct, support, data reduction, and reports from such testing, as well as hardware items that are consumed or planned to be consumed in the conduct of such operations.</p> <p>FY 2015 Accomplishments: Completed test and evaluation of GC Mass Spectrometer and validates critical reagents in support of fielded capabilities within the Analytical Laboratory System (ALS).</p> <p>FY 2016 Plans: Provides system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system. This element also includes costs of the detailed planning, conduct, support, data reduction, and reports from such testing, as well as hardware items that are consumed or planned to be consumed in the conduct of such operations.</p> <p>FY 2017 Plans: Provides system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system. This element also includes costs of the detailed planning, conduct, support, data reduction,</p>			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
and reports from such testing, as well as hardware items that are consumed or planned to be consumed in the conduct of such operations.			
<p>Title: 2) WMD CST - System Engineering and Program Management</p> <p>Description: System engineering and technical control, as well as the business management of the system/program.</p> <p>FY 2015 Accomplishments: Provided system engineering and technical control, as well as the business management of the system/program. It encompasses the overall planning, direction, and control of the definition, development, and production of the system, including functions of logistics engineering and integrated logistics support (ILS) management (e.g., maintenance support, facilities, personnel, training, testing, and activation of the system).</p> <p>FY 2016 Plans: Provides system engineering and technical control, as well as the business management of the system/program. It encompasses the overall planning, direction, and control of the definition, development, and production of the system, including functions of logistics engineering and integrated logistics support (ILS) management (e.g., maintenance support, facilities, personnel, training, testing, and activation of the system).</p> <p>FY 2017 Plans: Provides system engineering and technical control, as well as the business management of the system/program. It encompasses the overall planning, direction, and control of the definition, development, and production of the system, including functions of logistics engineering and integrated logistics support (ILS) management (e.g., maintenance support, facilities, personnel, training, testing, and activation of the system).</p>	0.642	0.800	0.512
<p>Title: 3) SBIR/STTR</p> <p>FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.037	-
Accomplishments/Planned Programs Subtotals	1.330	1.915	1.627

C. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

D. Acquisition Strategy
WMD - CIVIL SUPPORT TEAMS (WMD CST)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) CM7 / <i>HOMELAND DEFENSE (OP SYS DEV)</i>

The Weapons of Mass Destruction Civil Support Team Program (WMD-CST) is a COTS based program that supports the evaluation of advancements in CBRN commercial off the shelf (COTS)/government-off-the-shelf (GOTS) equipment against the current technology baseline of equipment fielded to the (57) WMD CST Teams. As such, the program establishes a time phased modernization plan to integrate and incorporate proven advancements in commercially available technology into the CST operating mission set based on highest priority capability requirements and availability of resources.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WMD CST - ES C - SEPM	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.373	0.304	Mar 2015	0.400	Mar 2016	0.000		-		0.000	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.037	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.373	0.304		0.437		0.000		-		0.000	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WMD CST - OTH T C - CBRN COTS Component	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.128	0.688	Mar 2015	1.078	Mar 2016	1.115	Mar 2017	-		1.115	Continuing	Continuing	0.000
Subtotal			1.128	0.688		1.078		1.115		-		1.115	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WMD CST - PM/MS SB - CBRN COTS	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.297	0.338	Mar 2015	0.400	Mar 2016	0.512	Mar 2017	-		0.512	Continuing	Continuing	0.000
Subtotal			0.297	0.338		0.400		0.512		-		0.512	-	-	0.000

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		1.798	1.330	1.915	1.627	1.627	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program							Date: February 2016			
Appropriation/Budget Activity 0400 / 7			R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)			Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

WMD CST - Upgrade Fielded Systems	[REDACTED]																											
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / HOMELAND DEFENSE (OP SYS DEV)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
WMD CST - Upgrade Fielded Systems	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CO7 / COLLECTIVE PROTECTION (OP SYS DEV)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CO7: COLLECTIVE PROTECTION (OP SYS DEV)	-	0.000	0.000	4.466	-	4.466	4.370	2.853	0.000	0.000	0	11.689
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The efforts funded by this appropriation will improve fielded chemical and biological protection capabilities for Joint Expeditionary Collective Protection (JECP). In FY17-18, this funding will develop a leakage test capability that will allow the Warfighter to validate the integrity of collective protection / Filtration systems. In FY17-19, this funding will also integrate newly developed filtration material into existing M98 filter sets. These new filters will provide the Warfighter with improved protection against toxic industrial chemicals and toxic industrial materials while maintaining performance characteristics against Chemical Warfare Agents and meeting military standards. Additionally, these improvements can serve a dual purpose by providing improvements to other Collective Protection Systems such as the Chemical and Biological Protective Shelter, Shipboard Collective Protection Systems, Fixed Site Collective Protection Systems, M20A1 Simplified Collective Protection Equipment, and the Collectively Protected Field Hospitals.

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

	FY 2015	FY 2016	FY 2017
Title: 1) JECP Field Leakage Test Capability	-	-	0.296
Description: Improve field leakage test capability, simulate test methods and field operator procedures.			
FY 2017 Plans: Initiate development of leakage test capability. Evaluate potential simulant test methods. Down select designs and develop field operator procedures.			
Title: 2) JECP Filtration Improvements	-	-	4.170
Description: Improve M98 filter set capability.			
FY 2017 Plans: Initiate design and development of improved M98 filter set capability to meet chemical / biological (CB) and toxic industrial chemical (TIC) / toxic industrial material (TIM) requirements. Initiate preliminary testing and procure CB/TIC/TIM materials for testing.			
Accomplishments/Planned Programs Subtotals	-	-	4.466

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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C. Other Program Funding Summary (\$ in Millions)

Remarks

D. Acquisition Strategy

JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)

Strategy based on evolutionary development, based on a family of systems approach. After MS B, awarded competitive Cost Plus Incentive Fee (CPIF) contract to Science Applications International Corporation (now Leidos) in 2008 to build prototypes subjected to robust engineering developmental testing and Operational Assessment during the Engineering and Manufacturing Development (EMD) phase. After MS C, awarded a Firm Fixed Price (FFP) option to Leidos in September 2013 for Low Rate Initial Production (LRIP) systems to support formal Developmental Testing (DT) and Multi-Service Operational Test & Evaluation (MOT&E) events. In addition, a Fixed Price Incentive Firm Target (FPIF) option was awarded to Leidos in January 2014 to perform non-recurring engineering (NRE) and logistic product development associated with the LRIP system configurations. A post MS C Milestone Decision Authority Acquisition Decision Memorandum, dated March 2014, separated the program into two phases. Phase two systems will be developed as engineering changes to phase one systems. A business case analysis (BCA) will be conducted to determine the best strategy for full rate production. Following a successful Full Rate Production (FRP) decision for phase one systems implement recommendations from the BCA. Phase two systems will undergo limited developmental and operational testing and then pursue a MS C full rate production decision. BA7 funding develops incremental improvements to fielded systems.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - HW S - Field Leakage Test Capability Development	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.000	0.000		0.000		0.296	Nov 2016	-		0.296	0.000	0.296	0.000
JECP - HW C - Improved M98 Filter Set Development	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.600	Nov 2016	-		0.600	0.000	0.600	0.000
JECP - HW C - Improved M98 Filter Set Manufacturability Development	MIPR	Pine Bluff Arsenal : Pine Bluff, AR	0.000	0.000		0.000		0.400	Nov 2016	-		0.400	0.000	0.400	0.000
JECP - HW C - Improved M98 Fitter Set Design Improvements	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.300	Nov 2016	-		0.300	0.000	0.300	0.000
Subtotal			0.000	0.000		0.000		1.596		-		1.596	0.000	1.596	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JECP - ES S - Systems Engineering Oversight	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.406	Nov 2016	-		0.406	0.000	0.406	0.000
Subtotal			0.000	0.000		0.000		0.406		-		0.406	0.000	0.406	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JECP - Field Leakage Tester Development																												
JECP - Field Leakage Tester Development Testing																												
JECP - Field Leakage Tester Limited User Test																												
JECP - Improved M98 Filter Set Development																												
JECP - Improved M98 Filter Set Developmental Testing																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CO7 / COLLECTIVE PROTECTION (OP SYS DEV)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JECP - Field Leakage Tester Development	1	2017	2	2018
JECP - Field Leakage Tester Development Testing	1	2018	1	2018
JECP - Field Leakage Tester Limited User Test	2	2018	2	2018
JECP - Improved M98 Filter Set Development	1	2017	2	2018
JECP - Improved M98 Filter Set Developmental Testing	1	2017	3	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IP7: INDIVIDUAL PROTECTION (OP SYS DEV)	-	2.452	3.214	1.059	-	1.059	1.713	1.947	1.620	1.458	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for filter modernization and enhancements against Toxic Industrial Chemicals (TICs) and Toxic Industrial Materials (TIMs) on the Joint Service General Purpose Mask (JSGPM). These upgrades will be provided for fielded Protection systems to enhance respiratory and ocular protection. They are currently being developed by the Joint Science and Technology Office (JSTO) as a synthetic nano-structured material focused on TIC removal and expected to transition to the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) in FY16.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) JSGPM</p> <p>Description: Advanced Respiratory Protection Initiative (ARPI) - M61 Filter Modernization</p> <p>FY 2015 Accomplishments: Received layered bed filters for testing concepts, continued ongoing layered bed and media testing in operationally relevant environments, and awarded competitive delivery orders to two vendors for layered bed filters to support advanced technology and manufacturing readiness levels.</p> <p>FY 2016 Plans: Complete CoZZAT prototype development and conduct Product Qualification Testing (PQT). Begin developing the second technology transition effort, Metal Organic Framework (MOF) Media, an engineered media that is a porous crystalline compound made up of metal ions and organic bridging molecules (ligands) for targeted removal of chemicals. It is currently being developed by JSTO as a synthetic nano-structured material focused on TIC removal.</p> <p>FY 2017 Plans: Continue maturation of CoZZAT filters. Begin MOF filter bed design analysis and initial prototype builds as technology transitions from JSTO.</p>	2.452	3.151	1.059
<p>Title: 2) SBIR/STTR</p> <p>FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.063	-
Accomplishments/Planned Programs Subtotals	2.452	3.214	1.059

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• JI0003: JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)	63.346	60.777	55.118	-	55.118	48.982	0.000	0.000	0.000	0	228.223

Remarks

D. Acquisition Strategy

JS GENERAL PURPOSE MASK (JSGPM)

The JSGPM Advanced Respiratory Protection Initiative (ARPI) effort is using the two M61 filter contracts awarded to 3M and Avon to develop improved filters for the JSGPM. There is a continual technology refreshment CLIN on both contracts that allow for filter development tasks to be awarded. The tasks can be competed between the two awardees or awarded to both to ensure competition on future spares and delivery orders. As filter technologies transition from the Defense Threat Reduction Agency (DTRA) and Joint Science and Technology Office (JSTO), the technologies will be matured from system/subsystem prototyping demonstration technologies at Technology Readiness Level (TRL) 6 to actual system "mission proven" through successful mission operations in a mission environment at TRL 9. In addition to the maturing of the technology, the Manufacturing Readiness Level (MRL) of the media and the layered bed design requires maturing to an MRL level 9. The complexity of maturing all these different items requires an evolutionary approach with one prototype iteration governing the approach on the next iteration. With the criticality of the filter, the production transition to the new improved filter has to be done with a high degree of confidence with risks mitigated to a low level.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - HW C - Filter Prototypes #1 (CoZZAT)	C/FFP	AVON Protection Systems Inc. : Cadillac, MI	0.000	0.486	Sep 2015	0.625	Jan 2016	0.287	Jan 2017	-		0.287	Continuing	Continuing	0.000
JSGPM - HW C - Filter Prototypes #2 (CoZZAT)	C/FFP	3M Canada : Brockville Ontario, CN	0.000	0.338	Sep 2015	0.600	Jan 2016	0.287	Jan 2017	-		0.287	Continuing	Continuing	0.000
JSGPM - HW C - Layered Bed Filters for Concept Testing (CoZZAT)	C/CPFF	AVON Protection Systems Inc. : Cadillac, MI	0.000	0.165	Dec 2014	0.000		0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.000	0.989		1.225		0.574		-		0.574	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - ES C - System Filter Bed Design Analysis (CoZZAT)	MIPR	Various : TBD	0.270	0.357	Dec 2014	0.487	Dec 2015	0.200	Jan 2017	-		0.200	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.063	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.270	0.357		0.550		0.200		-		0.200	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSGPM - DTE C - System Filters (CoZZAT)	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.400	Jan 2015	0.725	Jan 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.000	0.400		0.725		0.000		-		0.000	-	-	0.000

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program			Date: February 2016
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSGPM - Bed Design Analysis (CoZZAT)	██████																											
JSGPM - TD Contract Award (CoZZAT)	██████																											
JSGPM - Prototype Development (CoZZAT)	████████████████████																											
JSGPM - Product Qualification Testing (CoZZAT)													██████															
JSGPM - ECP Production (CoZZAT)													██████															
JSGPM - Bed Design Analysis (MOF)									██████																			
JSGPM - Prototype Development (MOF)									████████																			
JSGPM - Prototype Testing (MOF)													██████████████															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JSGPM - Bed Design Analysis (CoZZAT)	1	2015	2	2015
JSGPM - TD Contract Award (CoZZAT)	2	2015	3	2015
JSGPM - Prototype Development (CoZZAT)	2	2015	2	2017
JSGPM - Product Qualification Testing (CoZZAT)	1	2018	2	2018
JSGPM - ECP Production (CoZZAT)	3	2018	4	2018
JSGPM - Bed Design Analysis (MOF)	2	2017	4	2017
JSGPM - Prototype Development (MOF)	3	2017	1	2018
JSGPM - Prototype Testing (MOF)	2	2018	1	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
IS7: INFORMATION SYSTEMS (OP SYS DEV)	-	4.703	7.703	10.357	-	10.357	12.707	13.219	13.967	13.590	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for the upgrade and modernization of fielded Information Systems including the Joint Effects Model (JEM) and the Joint Warning and Reporting Network (JWARN). This project also provides for the Software Support Activity (SSA).

Efforts included in this project are: (1) Joint Effects Model (JEM); (2) the Joint Warning and Reporting Network (JWARN); and (3) Software Support Activity (SSA).

JEM and JWARN utilize the Joint Capabilities Integration and Development System (JCIDS) Manual prescribed Information Technology Box (IT Box) construct for managing requirements for the follow-on increments of capability development. The "IT Box" is an acquisition approach and methodology regarding how software systems should be developed and fielded. It is a process that differs from the way DoD acquires hardware systems. The acquisition approach uses the Information Systems Initial Capabilities Document (IS ICD) to describe the required operational capabilities for the entire development effort. These overarching requirements are further broken out into Requirements Definition Packages (RDPs) released over the life of the product instead of a single Capability Development Document released early in the program. "Agile Software Development", a term used frequently through the JPM IS R forms, is a set of industry standard software development methods used in conjunction with the IT Box framework. Agile Software Development promotes adaptive planning, evolutionary development, early delivery, continuous improvement, and encourages rapid and flexible response to change. The Agile methodology is an alternative to traditional program management, typically used in software development. It helps teams respond to unpredictability through incremental, iterative work cadences, known as sprints. Agile methodologies are an alternative to waterfall, or traditional sequential development.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 Interim to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MSB) decision by the Milestone Decision Authority that covers the entire program. MS B is followed by a series of supporting Build Decisions (BDs) associated with each RDP as they are released. The supporting BDs will ensure incorporation of mature technology and development efforts culminating in incremental deliveries of capability to Joint and Service Command and Control (C2) architectures. Instead of a single Milestone C decision and fielding event for one increment, the program will return to the MDA for more frequent fielding decisions, as often as annually, as portions of capability are determined suitable and operationally effective. These multiple fielding efforts are based on providing capabilities with the most value to the operators based on Warfighter priorities/needs, maturation of the technology being incorporated and available resources supporting the effort.

The Software Support Activity (SSA) is a Chem-Bio Defense user developmental support and service organization to facilitate net-centric interoperability of systems in acquisition for the Warfighter. The SSA provides the CBRN Warfighter with Joint Service solutions for Cybersecurity/Information Assurance (CS/IA), Integrated Architectures, Data Management/Modeling, Interoperability Certifications, Verification, Validation and Accreditation (VV&A) to support interoperable and integrated net-centric, service-oriented solutions for CBRN systems. The SSA emphasizes development of reference implementations to guide Government and industry system and

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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software developers to ensure that their products meet common interoperability standards. The latest technologies/products include the definition of a Common CBRN Sensor Integration Standard (CCSI) and the CBRN Data Model. These technologies and direct enablers for the development of CBRN integrated sensor networks and the dissemination of CBRN information across all users. The SSA directly supports Chemical and Biological Defense Program (CBDP) initiatives by providing common service oriented architectures and frameworks for the collection and dissemination of Bio-Surveillance and other critical CBRN information.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) JEM Command and Control (C2) Modernization Efforts</p> <p>FY 2015 Accomplishments: Upgraded the fielded JEM software to adapt to changing Army, Navy, Air Force, Marine Corps, SOCOM, and National Guard C2 host architectures, systems, and standards in order to maintain interoperability and avert cyber threats and vulnerabilities to host C2 systems. Performed test and evaluation of updated JEM software baseline.</p> <p>FY 2016 Plans: Continue to update fielded JEM Increment 1 software due to changing Army, Navy, Air Force, Marine Corps, SOCOM, and National Guard C2 host architectures, systems, and standards in order to maintain interoperability and avert cyber threats and vulnerabilities to host C2 systems. Perform test and evaluation of updated JEM Increment 1 baselines.</p> <p>FY 2017 Plans: Continue to update fielded JEM Increment 1 software due to changing Army, Navy, Air Force, Marine Corps, SOCOM, and National Guard C2 host architectures, systems, and standards in order to maintain interoperability and avert cyber threats and vulnerabilities to host C2 systems. Perform test and evaluation of updated JEM Increment 1 baselines.</p>	0.322	0.986	1.626
<p>Title: 2) JEM Pre-Planned Product Improvement (P3I)</p> <p>FY 2015 Accomplishments: Developed, tested, and integrated science and technology upgrades and model enhancements into previously fielded JEM software in order to improve JEM accuracy and precision. Improved JEM architecture and overall performance through software updates and deficiency resolution.</p> <p>FY 2016 Plans: Test and integrate fielded JEM Increment 1 and Increment 2 software with science and technology upgrades and model enhancements to improve JEM accuracy and precision. Improve JEM Increment 1 and Increment 2 architecture and overall performance through software updates and deficiency resolution. Both Increment 1 and Increment 2 software will be supported until all service C2 systems with Increment 1 software are fielded with Increment 2 software.</p> <p>FY 2017 Plans: Test and integrate fielded JEM Increment 1 and Increment 2 software with science and technology upgrades and model enhancements that improve JEM accuracy and precision. Improve fielded JEM Increment 1 and Increment 2 architecture and</p>	1.053	1.859	3.155

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
overall performance through software updates and deficiency resolution. Both Increment 1 and Increment 2 software will be supported until all service C2 systems with Increment 1 software are fielded with Increment 2 software.				
Title: 3) JWARN System Modernization/Update Development		1.674	2.698	3.361
FY 2015 Accomplishments: Completed engineering and development efforts to upgrade existing, operational JWARN Systems in order to maintain interoperability, efficiency and functionality within the targeted C2 systems while utilizing the IT BOX construct and Agile Software development processes.				
FY 2016 Plans: Continue engineering and development efforts to upgrade existing, operational JWARN Systems in order to maintain interoperability, efficiency and functionality within the targeted C2 systems while utilizing the IT BOX construct and Agile Software development processes.				
FY 2017 Plans: Continue engineering and development efforts to upgrade existing, operational JWARN Systems in order to maintain interoperability, efficiency and functionality within the targeted C2 systems while utilizing the IT BOX construct and Agile Software development processes.				
Title: 4) JWARN Program Management Support		0.227	0.499	0.606
FY 2015 Accomplishments: Provided JWARN program financial management, scheduling, planning and reporting support to modernization effort under the IT BOX construct and Agile Software development processes.				
FY 2016 Plans: Continue JWARN program financial management, scheduling, planning and reporting support to modernization effort under the IT BOX construct and Agile Software development processes.				
FY 2017 Plans: Continue JWARN program financial management, scheduling, planning and reporting support to modernization effort under the IT BOX construct and Agile Software development processes.				
Title: 5) JWARN IT BOX Test & Evaluation (T&E)		0.227	0.331	0.403
FY 2015 Accomplishments:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Conducted required Governmental developmental and operational testing on JWARN software updates and modernization efforts under the IT BOX construct and Agile Software testing processes.</p> <p>FY 2016 Plans: Continue required Governmental developmental and operational testing on JWARN software updates and modernization efforts under the IT BOX construct and Agile Software testing processes.</p> <p>FY 2017 Plans: Continue required Governmental developmental and operational testing on JWARN software updates and modernization efforts under the IT BOX construct and Agile Software testing processes.</p>				
<p>Title: 6) SSA Policies, Standards and Guidelines</p> <p>FY 2015 Accomplishments: Supported programs in the Interoperability and Supportability (I&S) certification, Information Support Plan (ISP), and Data and Service Exposure Verification and Registration. Updated existing programs and registered new programs in the Army Portfolio Management Solution/Army Information Technology Registry (APMS/AITR).</p> <p>FY 2016 Plans: Continue to support programs in the Interoperability and Supportability (I&S) certification, Information Support Plan (ISP), and Data and Service Exposure Verification and Registration. Update existing programs and register new programs in the Army Portfolio Management Solution/Army Information Technology Registry (APMS/AITR).</p> <p>FY 2017 Plans: Continue to support programs in the Interoperability and Supportability (I&S) certification, Information Support Plan (ISP), and Data and Service Exposure Verification and Registration. Update existing programs and register new programs in the Army Portfolio Management Solution/Army Information Technology Registry (APMS/AITR).</p>		0.266	0.257	0.254
<p>Title: 7) SSA Integrated Architecture</p> <p>FY 2015 Accomplishments: Provided and updated program of record integrated architectures and provide Net-Centric Policy implementation assistance. Continue to support CCSI updates. Continued to provide CCSI reference implementation. Supported the enterprise tools and common capabilities to ensure relevance across CBRN programs.</p> <p>FY 2016 Plans:</p>		0.247	0.251	0.265

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) IS7 / INFORMATION SYSTEMS (OP SYS DEV)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Continue to provide and update program of record integrated architectures and provide Net-Centric Policy implementation assistance. Continue to support CCSI updates. Continue to provide CCSI reference implementation. Support the enterprise tools and common capabilities to ensure relevance across CBRN programs.</p> <p>FY 2017 Plans: Continue to provide and update program of record integrated architectures and provide Net-Centric Policy implementation assistance. Continue to support CCSI updates. Continue to provide CCSI reference implementation. Support the enterprise tools and common capabilities to ensure relevance across CBRN programs.</p>				
<p>Title: 8) SSA Chemical, Biological, Radiological, Nuclear (CBRN) Data Model</p> <p>FY 2015 Accomplishments: Achieved a mandated net-centric environment by providing enabling tools which include the CBRN Data Model and Data Dictionary, which define Common CBRN semantics and syntax and the CBRN Extensible Markup Language (XML) schemas that define reusable XML types for information exchange throughout the enterprise.</p> <p>FY 2016 Plans: Achieve a mandated net-centric environment by providing enabling tools which include the CBRN Data Model and Data Dictionary, which define Common CBRN semantics and syntax and the CBRN Extensible Markup Language (XML) schemas that define reusable XML types for information exchange throughout the enterprise.</p> <p>FY 2017 Plans: Achieve a mandated net-centric environment by providing enabling tools which include the CBRN Data Model and Data Dictionary, which define Common CBRN semantics and syntax and the CBRN Extensible Markup Language (XML) schemas that define reusable XML types for information exchange throughout the enterprise.</p>		0.253	0.251	0.247
<p>Title: 9) SSA Cybersecurity/Information Assurance (CS/IA)</p> <p>FY 2015 Accomplishments: Maintained proper Cybersecurity/Information Assurance (CS/IA) accreditation of any system within the CBDP portfolio throughout its life-cycle. This included periodic re-accreditation of JPEO CBDP systems.</p> <p>FY 2016 Plans: Continue to maintain proper Information Assurance accreditation of any system within the CBDP portfolio throughout its life-cycle. This includes periodic re-accreditation of JPEO CBDP systems.</p> <p>FY 2017 Plans:</p>		0.434	0.424	0.440

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue to maintain proper Cybersecurity/Information Assurance (CS/IA) accreditation of any system within the CBDP portfolio throughout its life-cycle. This includes periodic re-accreditation of JPEO CBDP systems.			
Title: 10) SBIR/STTR	-	0.147	-
FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.			
Accomplishments/Planned Programs Subtotals	4.703	7.703	10.357

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

N/A

Remarks

D. Acquisition Strategy

JOINT EFFECTS MODEL (JEM)

JEM Increment 2 acquisition will utilize the JROC's "IT Box" construct for software development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and fielding products to the service more frequently than an incremental delivery approach.

As part of this strategy, JEM program office developed and issued a competitive prototyping contract in April 2013 where two offerers were given the same Technical Data Package (TDP), performance Work Statement (PWS), and software requirements and were tasked to deliver a JEM prototype that implements the CCMI architecture. This competitive prototyping strategy was successful and a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in December 2013.

The current contractor for JEM 2.0 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) document. The JRO will release RDPs-2, 3, and 4 over the next three years prior to contract completion. It is anticipated when the contract is re-competed in FY17 that there will be four of five capability drops not yet developed under RDP-2 and two of five under RDP-3. The follow-on contract in FY17 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JEM follow-on contract will utilize full and open competition and will be referred to as the JEM development, modernization and sustainment contract.

The JEM IS ICD describes the notional implementation plan for fielding of future JEM capabilities among five separate JEM Requirement Definition Packages (RDPs). RDP-1 contains the baseline capabilities for software and was approved in June of 2014. Since last report, the numbering scheme for RDPs was rearranged to account for the sequence of approval for each RDP. RDP-2 now defines requirements to integrate baseline capabilities into a version that can be fielded on service C2 systems will be released in RDP-2. RDP-2 will be released following RDP-1 to rapidly allow baseline capabilities to be incorporated into C2 systems. RDP-3 is a notional package that allows the Science and Technology community a venue to use the JEM program to develop a version of the product for S&T and analytical

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) IS7 / INFORMATION SYSTEMS (OP SYS DEV)
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use. Capabilities that are only required for the Science and Technology and analytical communities and not for operational users would be implemented in RDP-3. Capabilities in RDP-3 would not be required to go to Operational Test, as they would not be fielded to operational users. RDP-4 will be released after the completion of RDP-1. This RDP will incorporate emerging capabilities that have reached a sufficient maturity for incorporation into the operationally fielded JEM system, such as ability to model new agents. RDP-5 was added as a mechanism to define requirements for JEM 2.0 through the remainder of its life cycle.

- RDP 1 - Baseline Capabilities: There are 5 planned Capability Drops (CD) within RDP 1.
- RDP 2 - C2 Integration: There are 8 planned Capability Drops (CD) within RDP 2 tied to all the various Strategic and Service C2 Systems
- RDP 3 - Analytical Support: There are 2 planned Capability Drops (CD) within RDP 3.
- RDP 4 - Emerging Capabilities: There are 5 planned Capability Drops (CD) within RDP 4.
- RDP 5 - Modernization and Sustainment: There are 2 Capability Drops (CD) planned per year through the life of the program.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in September 2014. Each subsequent RDP will have an associated Build Decision. Each CD will have an associated fielding decision.

JOINT WARNING & REPORTING NETWORK (JWARN)

JWARN Increment 2 utilizes the JROC's "IT Box" construct for software requirements management and development. The intent is to provide the next generation of capability with current and future technologies, as stated in the IS ICD, in less time and away from an incremental delivery approach. This effort is being executed under a Cost-Plus-Award Term Incentive structure to gain maximum benefit to the Government in maintaining the fielded baseline and future software capability development and was awarded under a full and open competition Request for Proposal (RFP). The JWARN Program will procure a Sensor Connectivity Capability (SCC) (hardware materiel solution) in order to facilitate the transfer of CBRN sensor information from legacy CBRN sensors to DoD networks. This solution will be external to the CBRN Sensors and Service-identified network transmission device(s).

SOFTWARE SUPPORT ACTIVITY (SSA)

The SSA provides enterprise-wide services and coordination across all CBDP programs that contain data or software, or are capable of linking to the Global Information Grid (GIG). The SSA facilitates interoperability, integration, and supportability of existing and developing IT and National Security Systems (NSS). This will be followed by coordination to facilitate the concepts of interoperability, integration and supportability of enterprise-wide services. Next follows work with user communities to develop and demonstrate enterprise-wide common architectures, products and services. The SSA will support the application of the enterprise-wide architectures, products and services into the programs, with verification of compliance with the defined products and services.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JEM - SW S - Increment 1 - Modernization	C/CPAF	Northrop Grumman Corp. : San Diego, CA	5.597	1.375	Mar 2015	2.845	Mar 2016	1.953	Mar 2017	-		1.953	Continuing	Continuing	0.000
JEM - SW S - Increment 2 - Modernization	C/CPAF	General Dynamics Information Technologies : Fairfax, VA	0.000	0.000		0.000		2.828	Apr 2017	-		2.828	Continuing	Continuing	0.000
JWARN - SW S - Increment 1 - Modernization	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	8.178	1.674	Mar 2015	2.408	Mar 2016	0.705	Mar 2017	-		0.705	Continuing	Continuing	0.000
JWARN - SW S - Increment 2 - Modernization	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	0.000	0.000		0.000		2.656	Mar 2017	-		2.656	Continuing	Continuing	0.000
SSA - SW S - Development Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	1.819	0.438	Dec 2014	0.460	Nov 2015	0.463	Dec 2016	-		0.463	Continuing	Continuing	0.000
Subtotal			15.594	3.487		5.713		8.605		-		8.605	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JWARN - ES S - Increment 1 - Modernization	MIPR	Various : TBD	0.000	0.000		0.424	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
SSA - TD/D C - Information Assurance Activities	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.310	0.293	Dec 2014	0.285	Nov 2015	0.279	Dec 2016	-		0.279	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.147	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			2.310	0.293		0.856		0.279		-		0.279	-	-	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JWARN - OTE S - Increment 1 - FOT&E	MIPR	Various : TBD	3.287	0.227	Nov 2014	0.501	Nov 2015	0.000		-		0.000	Continuing	Continuing	0.000
JWARN - OTE S - Increment 2	MIPR	Various : TBD	0.000	0.000		0.000		0.403	Nov 2016	-		0.403	Continuing	Continuing	0.000
SSA - OTHT S - Integration Verification and Valuation (IV&V)	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	1.949	0.469	Dec 2014	0.438	Nov 2015	0.464	Dec 2016	-		0.464	Continuing	Continuing	0.000
Subtotal			5.236	0.696		0.939		0.867		-		0.867	-	-	0.000

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JWARN - PM/MS S - Program management	MIPR	Various : TBD	0.882	0.227	Mar 2015	0.195	Mar 2016	0.606	Mar 2017	-		0.606	Continuing	Continuing	0.000
Subtotal			0.882	0.227		0.195		0.606		-		0.606	-	-	0.000

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			24.022	4.703	7.703	10.357	-	10.357	-	-	0.000

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) IS7 / INFORMATION SYSTEMS (OP SYS DEV)
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SSA - Provide CM Services for Common User Products and Services																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JEM - Operational Systems Development	1	2015	4	2017
JEM - Service C2 Systems Modernization & Upgrades	1	2015	2	2017
JEM - BD 1	1	2015	1	2015
JEM - RDP 2 / Build Decision 2	4	2015	4	2015
JEM - BD 2	4	2015	4	2015
JEM - FD 1	1	2016	1	2016
JEM - RDP 3	1	2016	1	2016
JEM - IOC Standalone	1	2016	1	2016
JEM - BD 3	2	2016	2	2016
JEM - FD 2	4	2016	4	2016
JEM - RDP 4	1	2017	1	2017
JEM - FD 3	4	2017	4	2017
JEM - FD 4	4	2018	4	2018
JEM - Govt DT / OT / V&V	1	2015	4	2020
JEM - Modernization and Update	3	2016	4	2021
JWARN - Information System Initial Capability Document	1	2015	1	2015
JWARN - Baseline Preliminary Design Review (Software)	1	2015	4	2015
JWARN - RDP 1 Approval	1	2015	4	2016
JWARN - RDP 1 Approval #2	1	2015	1	2015
JWARN - MS B	3	2015	3	2015
JWARN - RDP 1 Build Decision	3	2015	3	2015
JWARN - Baseline Critical Design Review (Software)	4	2015	4	2015

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) IS7 / INFORMATION SYSTEMS (OP SYS DEV)
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Events	Start		End	
	Quarter	Year	Quarter	Year
JWARN - RDP 2 Approval & Build Decision	4	2015	4	2015
JWARN - TEMP (Software)	4	2015	4	2015
JWARN - Govt DT / OT / UFEs / OAs / FOTs	4	2015	4	2020
JWARN - RDP 3 Approval & Build Decision	3	2016	3	2016
JWARN - RDP 1 Fielding Decision & IOC Standalone Web	3	2016	1	2017
JWARN - RDP 2 Fielding Decision & IOC	3	2017	1	2018
JWARN - RDP 3 Fielding Decision & IOC	3	2018	2	2019
JWARN - Full Operational Capability (C2 Host System Dependent)	1	2020	3	2020
JWARN - Modernization and Update	3	2016	4	2021
SSA - Provide Information Assurance Site Compliance Testing	1	2015	4	2021
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2015	4	2021
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2015	4	2021
SSA - Sustain CCSI, including investigation, as an industry standard	1	2015	4	2021
SSA - Sustain Common Components products, process and services	1	2015	4	2021
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2015	4	2021
SSA - Provide CM Services for Common User Products and Services	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) MB7 / MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
MB7: MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)	-	13.186	11.801	7.145	-	7.145	9.575	16.516	13.931	13.338	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for the upgrade and modernization of fielded Medical Biological defense equipment/systems including the Joint Biological Agent Identification and Diagnostic System (JBAIDS) and Next Generation Diagnostic Systems (NGDS) suite.

JBAIDS is a commercial off-the-shelf development/production effort started in August 2003 that focused on rapid development and fielding efforts to deliver a critical capability to identify bacterial and viral agents in environmental surveillance and clinical specimen sample types. By 2005, 16 biological warfare (BW) agent surveillance detection kits were fielded along with the first JBAIDS in vitro diagnostic (IVD) assay cleared by the U.S. Food and Drug Administration (FDA). JBAIDS currently has seven IVD kits cleared by the FDA, JBAIDS achieved full operational capability (340 systems delivered all Services) in July 2011. JBAIDS efforts in 2012-2015 focused on adding surveillance food and water pathogen detection assays as well as initiating laptop retrofit and fielding. JBAIDS efforts in FY16 will focus on completing the laptop fielding and continue to develop pre-Emergency Use Authorization (EUA) packages annually for FDA review. JBAIDS efforts in FY17 will focus on sustainment and additional pre-EUA's. This project will be used to oversee the configuration management of the system to include the conduct of annual software security information assurance (IA) updates on fielded software and monitor analyzer/laptop parts obsolescence.

The NGDS is an evolutionary acquisition family of systems to provide increments of capability over time across many echelons of the Combat Health Support System. The mission of the NGDS is to provide Chemical, Biological and Radiological (CBR) threat and infectious disease identification and U.S. Food and Drug Administration (FDA)-cleared diagnostics to inform individual patient treatment as defined in the approved NGDS Capabilities Development Document (CDD) and CBR situational awareness and disease surveillance as defined in the Common Analytical Laboratory (CALs) CDD. NGDS Increment 1 will significantly improve diagnostic capability for deployable combat health support units (Role 3) while also improving operational suitability and affordability by developing FDA cleared biological warfare agent (BWA) and infectious disease in vitro diagnostic (IVD) assays on existing commercial diagnostic device with a well established FDA regulatory history and pipeline of commercial non-BWA infectious disease diagnostic tests. The NGDS Increment 1 program has a streamlined MS A to MS C - Limited Deployment acquisition strategy. BA7 will be used to complete the development of assays initiated during the Technology Maturation and Risk Reduction (TMRR) phase and needed for JBAIDS replacement as well as fund the development of three objective assays (Burkholderia, Alpha Virus, and Orthopox).

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

	FY 2015	FY 2016	FY 2017
Title: 1) Joint Biological Agent Identification and Diagnostic System (JBAIDS)	0.400	0.192	0.200

FY 2015 Accomplishments:

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continued sustainment contract - CLS, refurbishments, software updates, FISMA. FY 2016 Plans: Continue sustainment contract - CLS, refurbishments, software updates, Department of Defense Information Assurance Risk Management Framework (DIARMF). FY 2017 Plans: Continue sustainment contract, software security and RMF FISMA.				
Title: 2) JBAIDS FY 2015 Accomplishments: Continued submissions of Pre-EUA packages to the FDA. FY 2016 Plans: Continue submissions of Pre-EUA packages to the FDA. FY 2017 Plans: Continue submissions of Pre-EUA packages to the FDA.		0.200	0.130	0.200
Title: 3) JBAIDS FY 2015 Accomplishments: Initiated laptop replacement and fielding efforts.		2.517	-	-
Title: 4) JBAIDS FY 2015 Accomplishments: Maintained the Defense Logistics Agency Electronic-Cataloging capability. FY 2016 Plans: Maintain the Defense Logistics Agency Electronic-Cataloging capability. FY 2017 Plans: Maintain the Defense Logistics Agency Electronic-Cataloging capability.		0.100	0.100	0.051
Title: 5) NGDS - Increment 1 FY 2015 Accomplishments: Continue development and FDA clearance of Anthrax, Ebola, Marburg, Plague, Tularemia and Q-Fever IVD assays initiated in BA4. FY 2016 Plans:		9.969	9.145	6.694

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue development of Plague, Tularemia, and Q-Fever IVD assays. <i>FY 2017 Plans:</i> Complete development of Plague, Tularemia, and Q-Fever IVD assays.			
<i>Title:</i> 6) NGDS - Increment 1 <i>FY 2016 Plans:</i> Continue development for pan-Burkholderia IVD panel, Alpha virus and orthopox IVD panel.	-	2.000	-
<i>Title:</i> 7) SBIR/STTR <i>FY 2016 Plans:</i> SBIR/STTR - FY16 - Small Business Innovative Research.	-	0.234	-
Accomplishments/Planned Programs Subtotals	13.186	11.801	7.145

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

N/A

Remarks

D. Acquisition Strategy

JOINT BIO AGENT IDENT AND DIAG SYSTEM (JBAIDS)

JBAIDS is a commercial off-the-shelf capability to identify multiple biological agents and other pathogens of operations concern, to include environmental and FDA cleared in vitro diagnostic assays. JBAIDS also has pre-positioned Emergency Use Authorizations assays for the identification of low probability, high consequence pathogens in clinical samples that can be deployed in the event of a declared health emergency. The program plans to conduct the annual JBAIDS Federal Information Security Management Act (FISMA) software compliance certification in addition to any logistics sustainment issues associated with parts obsolescence. The JBAIDS program will begin to prepare for the Risk Management Framework processes for FY16 information assurance. Additionally, the JBAIDS program office continues to partner with the US Army Medical Institute of Infectious Diseases (USAMRIID), other DoD and US Government laboratories to develop FDA Pre-Emergency Use Authorization (EUA) packages for biological warfare agents (BWA's) that could be used as biological warfare threats to DoD military forces.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS Increment 1 program has a streamlined MS A to MS C - Limited Deployment acquisition strategy. The NGDS Increment 1 is intended to replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17. NGDS Increment 2 will complement NGDS Increment 1 by developing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
0400 / 7	PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	MB7 / <i>MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)</i>

diagnostic capabilities for biological pathogens and toxins and address diagnostics for chemical and radiological exposures, and to provide capability to lower echelons of care.

NGDS Increment 2 will conduct technology development FY14-FY16 prior to MS B. The acquisition strategy and capability to be developed will be informed by the results of the Analysis of Alternatives to be completed 4QFY14. NGDS Increment 2 is intended to be complementary to NGDS Increment 1 to expand the breadth and depth of diagnostics to CBR threats, pre-symptomatic diagnostics, and far forward echelons of care.

The MB7 program will support development, testing, and FDA approval of additional assays after system fielding.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program **Date:** February 2016

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) MB7 / MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NGDS - Increment 1 - HW C - Assay Development	C/CPPF	BioFire Dx : Salt Lake City, UT	0.000	5.969	Jun 2015	9.862	Dec 2015	3.934	Dec 2016	-		3.934	Continuing	Continuing	0.000
Subtotal			0.000	5.969		9.862		3.934		-		3.934	-	-	0.000

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBAIDS - TD/D SB - Software Update & Parts Obsolescence	C/FFP	TBD : TBD	0.612	2.517	Mar 2015	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - ES S - Engineering Support	MIPR	Various : TBD	0.000	0.350	Jun 2015	0.350	Jun 2016	0.350	Jun 2017	-		0.350	Continuing	Continuing	0.000
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.234	Dec 2016	0.000		-		0.000	Continuing	Continuing	0.000
Subtotal			0.612	2.867		0.584		0.350		-		0.350	-	-	0.000

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JBAIDS - OTH S - EUA packages	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.648	0.200	Mar 2015	0.130	Mar 2016	0.200	Mar 2017	-		0.200	Continuing	Continuing	0.000
NGDS - DTE S - Operational Assessment/ MOT&E	MIPR	Various : TBD	0.000	3.300	Jun 2015	0.746	Jan 2016	1.310	Jan 2017	-		1.310	Continuing	Continuing	0.000
Subtotal			0.648	3.500		0.876		1.510		-		1.510	-	-	0.000

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) MB7 / MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JBAIDS - Pre-Emergency Use Authorization Packages	1	2015	4	2020
JBAIDS - Surveillance Assays (Food & Water)	1	2015	3	2015
JBAIDS - Defense Logistics Agency Electronic-Cataloging	1	2015	4	2020
JBAIDS - Contractor Logistics Support, System-Sustainment, Analyzer Refurbishment, FISMA/DIARMF	1	2015	4	2020
JBAIDS - Laptop replacement	2	2015	2	2016
NGDS - Environmental Assay Development	1	2016	3	2016
NGDS - threshold IVD assay development Anthrax, Ebola, Marburg (Plague, Tularemia, Q-Fever)	3	2015	4	2017
NGDS - Objective IVD assay Development (Burkholderia, Alpha Virus, Orthopox)	1	2018	4	2018
NGDS - follow on Assay Development	4	2018	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program										Date: February 2016		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
TE7: TEST & EVALUATION (OP SYS DEV)	-	5.940	4.091	2.594	-	2.594	6.605	6.318	5.416	5.733	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides revitalization of existing instrumentation and technology upgrades to equipment at West Desert Test Center (WDTC), located at Dugway Proving Ground (DPG), a Major Range and Test Facility Base (MRTFB), in support of their Chemical and Biological (CB) test mission. Included in these efforts are (1) the Life Sciences Test Facility (LSTF) at the WDTC, which is the only U.S. laboratory equipped to test for aerosolized bio-safety level-3 (BSL-3) agents, (2) Major Test Chambers (Material Test Facility (MTF) and Building 3445), (3) the CB Test Grid, and (4) the Combined Chemical Test Facility.

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

	FY 2015	FY 2016	FY 2017
<p>Title: 1) WDTC - MRTFB - Life Sciences Test Facility</p> <p>FY 2015 Accomplishments: Provided instrumentation and equipment upgrades to LSTF at the WDTC, in support of the CB Defense mission. Provided for BSL-3 biological laboratory equipment for the LSTF Annex. This equipment was required to re-establish full capability of the LSTF upon completion of the Annex.</p> <p>FY 2016 Plans: Continues to provide instrumentation and equipment to LSTF at the WDTC, in support of the CB Defense mission. Continues to provide for BSL-3 biological laboratory equipment for the LSTF Annex. Also provides for enhanced laboratory referee capability and enhancement of the biological decontamination capability.</p> <p>FY 2017 Plans: Continues to provide instrumentation and equipment to LSTF at the WDTC, in support of the CB Defense mission. Continues to provide for BSL-3 biological laboratory equipment for the LSTF Annex. Provides for enhancement of the biological decontamination capability. Also provides for enhanced laboratory referee capability and management.</p>	2.074	1.221	0.509
<p>Title: 2) WDTC - MRTFB - Major Test Chambers (MTF and Building 3445)</p> <p>FY 2015 Accomplishments: Continued to provide for modernization of existing instrumentation and equipment in the major test chambers at WDTC, in support of the CB Defense mission. These chambers consist of the Materiel Test Facility (MTF), which is a unique test chamber where real-world operations can be tested, and will contain the secondary containment modules (SCMs) for NTA testing and Building 3445 which chambers support filter and collective protection testing. Modernization in the chambers included: (a) Enhancements of an aerosol generation and sampling capability; (b) Upgrades to agent surety monitor and analytical instrumentation (c)</p>	0.756	0.521	0.160

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Characterization of improved and/or articulated testing fixtures; (d) Enhancement of toxic industrial chemical (TIC) detection; and (e) Non-Traditional Agent (NTA) test and detection capability</p> <p>FY 2016 Plans: Provides for modernization of existing instrumentation and equipment in the major test chambers at WDTC, in support of the CB Defense mission. These chambers consist of the following: (1) the MTF, which is a unique test chamber where real-world decontamination operations can be tested; (2) Building 4165, which houses updated surety test facilities and laboratories used for the testing of protective material, decontamination technologies, and detection systems with chemical agents and simulants; and (3) Building 3445 chambers support filter and collective protection testing. Modernization in the chambers includes: (a) Continue enhancements of an aerosol generation and sampling capability; (b) Continue development of the agent fate aerosol capability; (c) Continue upgrades to agent surety monitor and analytical instrumentation; (d) Continuous enhancement of TIC detection; and (e) NTA test and detection capability.</p> <p>FY 2017 Plans: Modernization in the chambers includes: (a) Continue enhancements of an aerosol generation and sampling capability; (b) Additional upgrades to agent surety monitor and analytical instrumentation; (c) Continuous enhancement of TIC detection; and (d) expanded NTA test and detection capability.</p>			
<p>Title: 3) WDTC - MRTFB - CB Test Grid</p> <p>FY 2015 Accomplishments: Continued to enhance existing instrumentation and equipment at multiple test grids (Target S, Downwind, Outdoor Test Grids, etc.) at WDTC, in support of the CB Defense mission. DPG's vast area combined with its remote location allows for all sizes of CB and explosive test events, including large scale TIC release capability, and are supported by state of the art meteorological and referee capability. Continuing modernization efforts included: (1) Development of agent to simulant correlation, dissemination equipment, and monitoring systems for field simulants; (2) Required upgrades to point and standoff field referee systems; (3) Upgrade of communications and data analysis capabilities at command posts; (4) Enhanced aerosol dissemination systems; (5) Upgrade high speed cameras; and (6) Development of in-house capability to calibrate infra-red (IR) cameras to reduce cost and turnaround time. Enhancements to Test Grid provides near real time data analysis and rapid test adaptation to minimize costs and increase effectiveness of testing.</p> <p>FY 2016 Plans: Enhances existing instrumentation and equipment at multiple test grids (Target S, Downwind, Tower Outdoor Test Grids, etc.) at WDTC, in support of the CB Defense mission. DPG's vast area combined with its remote location allow for all sizes of CB and explosive test events, including large scale TIC release capability, and are supported by state of the art meteorological and referee capability. Continuing modernization efforts will include: (1) Continued upgrades to point and standoff field referee systems; (2) Development of agent to simulant correlation, dissemination equipment, and monitoring systems for additional field</p>	0.653	0.621	1.051

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>simulants; (3) Upgrade of grid communications and data analysis capabilities; (4) Enhanced aerosol dissemination systems; (5) Upgrade high speed cameras. Enhancements to Test Grid provides near real time data analysis and rapid test adaptation to minimize costs and increase the effectiveness of field testing.</p> <p>FY 2017 Plans: Continuing modernization efforts will include: (1) Enhancement of point and standoff field referee systems; (2) Upgrade of grid communications and data analysis capabilities; (3) Additional upgrades to enhance optic data collection. Enhancements to Test Grid will provide near real time data analysis and rapid test adaptation to minimize costs and increase the effectiveness of field testing.</p>			
<p>Title: 4) WDTC - MRTFB - Combined Chemical Test Facility</p> <p>FY 2015 Accomplishments: Provided for continued revitalization and upgrade of existing instrumentation and equipment at the Combined Chemical Test Facility (CCTF) at WDTC in support of their chemical test mission. The CCTF tested the capability of detectors, decontaminants, and protective systems to defend against toxic chemical agents. Initiated engineering and design studies for replacement of chemical laboratory fume hoods and hood controllers throughout the chemical labs. Upgraded Small Item Decontamination (SID) fixture. Modernization will result in improved test fixtures which reduce risk to personnel and testing results.</p> <p>FY 2016 Plans: Provide for continued revitalization and upgrade of existing instrumentation and equipment at the CCTF at WDTC in support of their chemical test mission. The CCTF tests the capability of detectors, decontaminants, and protective systems to defend against toxic chemical agents. Modernization results in improved test fixtures which reduce risk to personnel and provide improved test capabilities.</p> <p>FY 2017 Plans: Provides for continued revitalization and upgrade of existing instrumentation and equipment at the CCTF at WDTC in support of their chemical test mission. Installation of chemical laboratory fume hoods continues in FY17. Modernization will result in improved test fixtures which reduce risk to personnel and provide improved test capabilities. Continues efforts to enhance NTA test capability in these fixtures.</p>	2.457	1.649	0.874
<p>Title: 5) SBIR/STTR</p> <p>FY 2016 Plans: SBIR/STTR - FY16 - Small Business Innovative Research.</p>	-	0.079	-
Accomplishments/Planned Programs Subtotals	5.940	4.091	2.594

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)

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

N/A

Remarks

D. Acquisition Strategy

T&E RANGE INSTRUMENT/TECH UPGRADE (T&E UPGRADE)

Test and evaluation Range Instrumentation/Technology Upgrades is a continuing project. It provides for technical upgrades to WDTC capabilities for Chemical and Biological testing of DoD CB materiel, weapons, and weapons systems from concept through production.

E. Performance Metrics

N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Chemical and Biological Defense Program												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
0400 / 7				PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				TE7 / TEST & EVALUATION (OP SYS DEV)								
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
ZSBIR - SBIR/STTR - Aggregated from ZSBIR-SBIR/STTR	PO	TBD : TBD	0.000	0.000		0.079	Dec 2016	0.000				-	0.000	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.079		0.000				-	0.000	-	-	0.000
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
T&E UPGRAD - OTHT S - Technology Upgrades - WDTC, UT	MIPR	West Desert Test Center : Dugway, UT	10.924	5.940	Mar 2015	4.012	Mar 2016	2.594	Mar 2017			-	2.594	Continuing	Continuing	0.000
Subtotal			10.924	5.940		4.012		2.594				-	2.594	-	-	0.000
Project Cost Totals			10.924	5.940		4.091		2.594				-	2.594	-	-	0.000
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
T&E UPGRAD - Enhance Instrumentation & Equipment at Chemical Biological (CB) Test Grids, WDTC	[REDACTED]																											
T&E UPGRAD - LSTF Instrumentation & Equip Upgrades, WDTC	[REDACTED]																											
T&E UPGRAD - Modernization of Major Test Chambers, WDTC	[REDACTED]																											
T&E UPGRAD - Revitalize & Upgrade Instrumentation & Equipment at Combined Chemical Test Facility, WDTC	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Chemical and Biological Defense Program		Date: February 2016
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) TE7 / TEST & EVALUATION (OP SYS DEV)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
T&E UPGRAD - Enhance Instrumentation & Equipment at Chemical Biological (CB) Test Grids, WDTC	1	2015	4	2021
T&E UPGRAD - LSTF Instrumentation & Equip Upgrades, WDTC	1	2015	4	2021
T&E UPGRAD - Modernization of Major Test Chambers, WDTC	1	2015	4	2021
T&E UPGRAD - Revitalize & Upgrade Instrumentation & Equipment at Combined Chemical Test Facility, WDTC	1	2015	4	2021