Department of Defense
Fiscal Year (FY) 2019 Budget Estimates

February 2018

Chemical and Biological Defense Program

Defense-Wide Justification Book Volume 4 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Table of Volumes

Volume 4 Table of Contents

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Chemical Biological Defense Program Overview

The threat posed by chemical, biological, radiological, and nuclear (CBRN) weapons is real and evolving. Sustained use of chemical weapons in the Middle East and the increasing threat of weapons of mass destruction (WMD) on the Korean Peninsula not only illustrate the reality of threats we face, but also undermine the norms that protect civilians and security forces from these weapons. While many of these threats remain within the arsenals of our state and non-state adversaries, the variety of threats is no longer a static list of restricted CBRN materials. The concurrent emergence of dual-use technologies and increased access to shared information are lowering the expertise required to harness these technologies for illicit purposes. Proliferation of technology, increased ease of access, challenges to detecting illicit activity, and our limited ability to anticipate how our adversaries might employ WMD all heighten the risk of unforeseen and unattributable attacks against the U.S. or its allies.

The sustained lethality of the Joint Force and its ability to continue the mission depends on the warfighter's ability to deter, prevent, protect, mitigate, respond to, and recover from CBRN weapons use and effects. The Chemical and Biological Defense Program (CBDP) supplies the materiel solutions to enable countering WMD (CWMD) missions ranging from combat operations to DoD support of domestic incident prevention and response as part of an integrated and layered defense. This 2019 budget request includes $1.36 billion aligned to improve near-term readiness for the highest Department, Joint Service, and Combatant Command CWMD priorities across these mission spaces.

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 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. The 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. The 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. The 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 close multiple capability gaps and provide multi-layered and integrated defenses. Enhanced warning, protection, and countermeasures sustain combat power 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 operational challenges and logistical burdens. Modular and customizable solutions will be effective against a broad range of challenges in varied environments.

- Detectors and Sensors – The CBDP is developing the next generation of suitable, effective, and affordable broad-spectrum CB detection capabilities to address 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 equipment and aircraft. Novel decontamination approaches are focusing on broad applicability to chemicals or biologicals, while minimizing harm to individuals, equipment, and platforms.

FY19 Budget Request Highlights

- The FY 2019 Research, Development, Test and Evaluation (RDT&E) budget request of $1,048 million (M) supports key efforts including:
  - $286 million supporting RDT&E efforts advancing environmental (detectors) and medical surveillance capabilities providing enhanced situational awareness of traditional and non-traditional chemical threats as well as traditional and emerging biological threats.
  - $256 million to continue support of research and development of medical countermeasures (MCMs) vaccines and therapeutics addressing high priority biological threats.
  - $114 million to continue support of research and development of medical countermeasures focused on protecting and treating against traditional and non-traditional chemical agents.
  - $97 million to support critical chemical and biological defense research, development, and test infrastructure and operations.
  - $79 million supporting biosurveillance, warning & reporting, decision support, and modeling and simulation capabilities.
  - $77 million supporting RDT&E for personnel/collective protection and hazard mitigation capabilities against traditional and non-traditional chemical threats as well as traditional and emerging biological threats.
  - $66 million supporting basic research and threat agent sciences advancing fundamental knowledge and experimental research in the life and physical sciences.
  - $37 million supporting concepts development, technology demonstrations, and experimentation capability demonstrations to demonstrate enhanced military operational capability for technologies and equipment.

- The FY 2019 Procurement budget request of $311 million supports key efforts including:

- $91 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.
- $72 million to procure modernized respiratory and ocular protection for ground and air forces.
- $48 million to procure Common Analytical Laboratory Systems providing a modular, scalable and adaptable analytical capability for a variety of operating and environmental conditions.
- $40 million to procure modernized Collective Protection capabilities (Joint Expeditionary Collective Protection and CB Protective Shelters).
- $22 million to procure protective ensembles supporting enhanced protection for the Joint Force, to include 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 capabilities that enhance the flexibility to anticipate, identify, and quickly respond to the challenges. Current DoD efforts strengthen and expand capabilities to prevent, protect against, mitigate, respond to, and recover from CBRN threats and effects as part of an integrated, layered defense, as well as improve the Joint Force ability to find, track, interdict, and eliminate CBRN weapons or emerging threats. These efforts ensure that currently available technologies are produced, procured, and provided and that cutting-edge technologies are harnessed to provide improved capabilities in the future. This is achieved through developing operationally relevant capabilities for the Joint Force that are complementary and holistically reduce identified risks. The CBDP continues to enhance CBRN readiness to counter known and emerging threats and collaborates with interagency and international partners to increase the 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 equipped to complete missions in CBRN environments now and in the future, preserving the security and freedom of our nation.

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(Dollars in Thousands)

26 Jan 2018

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Research, Development, Test & Eval, DW	909,946	1,095,642	1,095,642		
Total Research, Development, Test & Evaluation	909,946	1,095,642	1,095,642		

R-119PB: FY 2019 President's Budget (Published Version), as of January 26, 2018 at 11:06:47

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Summary Recap of Budget Activities	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO
Basic Research	43,750	43,898	43,898		
Applied Research	185,864	201,053	201,053		
Advanced Technology Development	130,033	145,359	145,359		
Advanced Component Development And Prototypes	134,682	148,518	148,518		
System Development And Demonstration	275,806	406,789	406,789		
Management Support	107,598	104,348	104,348		
Operational System Development	32,213	45,677	45,677		
Total Research, Development, Test & Evaluation	909,946	1,095,642	1,095,642		
Summary Recap of FYDP Programs					
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Summary Recap of Budget Activities	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Basic Research	42,103		42,103
Applied Research	192,674		192,674
Advanced Technology Development	142,826		142,826
Advanced Component Development And Prototypes	129,886		129,886
System Development And Demonstration	388,701		388,701
Management Support	102,883		102,883
Operational System Development	48,741		48,741
Total Research, Development, Test & Evaluation	1,047,814		1,047,814

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Total Research, Development, Test & Evaluation	909,946	1,095,642	1,095,642		

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7	0601384BP	Chemical and Biological Defense Program	01	43,750	43,898	43,898			U
		Basic Research		43,750	43,898	43,898			
15	0602384BP	Chemical and Biological Defense Program	02	185,864	201,053	201,053			U
		Applied Research		185,864	201,053	201,053			
42	0603384BP	Chemical and Biological Defense Program - Advanced Development	03	130,033	145,359	145,359			U
		Advanced Technology Development		130,033	145,359	145,359			
74	0603884BP	Chemical and Biological Defense Program - Dem/Val	04	134,682	148,518	148,518			U
		Advanced Component Development And Prototypes		134,682	148,518	148,518			
120	0604384BP	Chemical and Biological Defense Program - EMD	05	275,806	406,789	406,789			U
		System Development And Demonstration		275,806	406,789	406,789			
151	0605384BP	Chemical and Biological Defense Program	06	89,172	104,348	104,348			U
152	0605502BP	Small Business Innovative Research - Chemical Biological Def	06	18,426					U
		Management Support		107,598	104,348	104,348			
195	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07	32,213	45,677	45,677			U
		Operational System Development		32,213	45,677	45,677			

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		Advanced Technology Development					145,359		145,359	
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FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

26 Jan 2018

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

Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	Sec
7	0601384BP	Chemical and Biological Defense Program	01				43,898		43,898	U
Basic Research							43,898		43,898	
15	0602384BP	Chemical and Biological Defense Program	02				201,053		201,053	U
Applied Research							201,053		201,053	
42	0603384BP	Chemical and Biological Defense Program - Advanced Development	03				145,359		145,359	U
Advanced Technology Development							145,359		145,359	
74	0603884BP	Chemical and Biological Defense Program - Dem/Val	04				148,518		148,518	U
Advanced Component Development And Prototypes							148,518		148,518	
120	0604384BP	Chemical and Biological Defense Program - EMD	05				406,789		406,789	U
System Development And Demonstration							406,789		406,789	
151	0605384BP	Chemical and Biological Defense Program	06				104,348		104,348	U
152	0605502BP	Small Business Innovative Research - Chemical Biological Def	06							U
Management Support							104,348		104,348	
195	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07				45,677		45,677	U
Operational System Development							45,677		45,677	

R-119PB: FY 2019 President's Budget (Published Version), as of January 26, 2018 at 11:06:47

Chemical and Biological Defense Program
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

26 Jan 2018

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

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Sec
7	0601384BP	Chemical and Biological Defense Program	01	42,103		42,103	U
Basic Research				42,103		42,103	
15	0602384BP	Chemical and Biological Defense Program	02	192,674		192,674	U
Applied Research				192,674		192,674	
42	0603384BP	Chemical and Biological Defense Program - Advanced Development	03	142,826		142,826	U
Advanced Technology Development				142,826		142,826	
74	0603884BP	Chemical and Biological Defense Program - Dem/Val	04	129,886		129,886	U
Advanced Component Development And Prototypes				129,886		129,886	
120	0604384BP	Chemical and Biological Defense Program - EMD	05	388,701		388,701	U
System Development And Demonstration				388,701		388,701	
151	0605384BP	Chemical and Biological Defense Program	06	102,883		102,883	U
152	0605502BP	Small Business Innovative Research - Chemical Biological Def	06				U
Management Support				102,883		102,883	
195	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07	48,741		48,741	U
Operational System Development				48,741		48,741	

R-119PB: FY 2019 President's Budget (Published Version), as of January 26, 2018 at 11:06:47

Chemical and Biological Defense Program
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

26 Jan 2018

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

Line No	Program Element Number	Item	Act	FY 2017 (Base + OCO)	FY 2018 PB Request with CR Adj Base	FY 2018 Total PB Requests* with CR Adj Base	FY 2018 PB Request with CR Adj OCO	FY 2018 Total PB Requests+ with CR Adj OCO	Sec
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Total Chemical and Biological Defense Program				909,946	1,095,642	1,095,642			

R-119PB: FY 2019 President's Budget (Published Version), as of January 26, 2018 at 11:06:47

Chemical and Biological Defense Program
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

26 Jan 2018

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

Line No	Program Element Number	Item	Act	FY 2018 Emergency Requests** Emergency	FY 2018 Less Enacted Div B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req Emergency	FY 2018 Total PB Requests* with CR Adj Base + OCO + Emergency**	FY 2018 Less Enacted DIV B P.L.115-96*** MDDE + Ship Repairs	FY 2018 Remaining Req with CR Adj Base + OCO + Emergency	Sec
Total Chemical and Biological Defense Program							1,095,642		1,095,642	

R-119PB: FY 2019 President's Budget (Published Version), as of January 26, 2018 at 11:06:47

Chemical and Biological Defense Program
FY 2019 President's Budget
Exhibit R-1 FY 2019 President's Budget
Total Obligational Authority
(Dollars in Thousands)

26 Jan 2018

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

Line No	Program Element Number	Item	Act	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Sec
Total Chemical and Biological Defense Program				1,047,814		1,047,814	

Master Program Element Table of Contents (by Budget Activity then Line Item Number)

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

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Appropriation 0400: Research, Development, Test & Evaluation, Defense-Wide

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Master Program Element Table of Contents (Alphabetically by Program Element Title)

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601384BP / *CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	43.750	43.898	42.103	-	42.103	45.311	45.449	45.487	45.490	Continuing	Continuing
LF1: *CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)*	-	29.502	27.996	26.815	-	26.815	29.778	29.866	29.891	29.893	Continuing	Continuing
PS1: *CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)*	-	14.248	15.902	15.288	-	15.288	15.533	15.583	15.596	15.597	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) Strategic 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, 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 1: *Basic Research*	**R-1 Program Element (Number/Name)** PE 0601384BP / *CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	44.800	43.898	43.004	-	43.004
Current President's Budget	43.750	43.898	42.103	-	42.103
Total Adjustments	-1.050	0.000	-0.901	-	-0.901
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	0.293	-			
• SBIR/STTR Transfer	-1.343	-			
• Other Adjustments	0.000	-	-0.901	-	-0.901

Change Summary Explanation

Funding: FY17 (+$0.293M): Reprogramming to support core competencies at the U.S. Army Medical Research Institute for Infectious Diseases.
FY17 (-$1.343M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$0.901M): Application of revised inflation guidance.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
LF1: *CHEMICAL/BIOLOGICAL DEFENSE - LIFE SCIENCES (BASIC RESEARCH)*	-	29.502	27.996	26.815	-	26.815	29.778	29.866	29.891	29.893	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project (LF1) focuses on fundamental efforts to understand living systems' responses 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 2017	FY 2018	FY 2019
Title: 1) Life Sciences	29.502	27.996	26.815
Description: Focuses on fundamental efforts to understand living systems' responses to biological or chemical agents, to support detection, protection, diagnostics, and medical treatment.			
FY 2018 Plans: Continue efforts to understand pathogens, novel threats, and host responses (including human and zoonotic) to prevent/ minimize host injury. Complete, test, and validate primers and probes for filovirus animal model and develop in vitro and in vivo inflammatory response models. Continue to develop robust genetic control architectures for guidance of antimicrobials against bio threats. Evaluate gut-on-a-chip devices for diagnostic capability and build capacity for multiple pathogens. Validate nano-structured material drug delivery in various tissues and measure bio-distribution for optimal therapeutic delivery. Conduct in vivo validation against agent challenge to demonstrate proof of concept. Continue evaluation of role of gene amplification and duplication in the development of multiple drug resistance in bacterial pathogens. Replicate environmental factors of persistence and validate mechanism against animal models. Continue to investigate the influence of glycosylation patterns on biologic stability and begin pharmacokinetic and immunogenicity studies to validate animal model efficacy. Continue to investigate filovirus 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. Begin validation of in silico transport mechanisms of the blood-brain barrier studies, in vitro, and in vivo to screen for potential therapeutic targets. Evaluate gene duplication and amplification as a specific mechanism for antimicrobial resistance and horizontal gene transfer. Begin development of a gene amplification detection system that can identify changes in antimicrobial and multidrug resistance. Investigate novel inhibitory mechanisms that circumvent efflux pumps. Explore the application of microfluidics to examine the host-immune response in the microenvironment and biomarker discover for infection onset and response to therapy. Examine the impact of			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
modulated olfactory, respiratory, and alveolar molecular & cell population variation on uptake of inhaled particulates, progression of toxicological & pathogenic effects. ***FY 2019 Plans:*** Continue efforts to understand pathogens, novel threats, and host responses (including human and zoonotic) to prevent/ minimize host injury. Complete, test, and validate primers and probes for filovirus animal model and develop in vitro and in vivo inflammatory response models. Continue to develop robust genetic control architectures for guidance of antimicrobials against bio threats. Evaluate gut-on-a-chip devices for diagnostic capability and build capacity for multiple pathogens. Continue evaluation of role of gene amplification and duplication in the development of multiple drug resistance in bacterial pathogens. Replicate environmental factors of persistence and validate mechanism against animal models. Continue to investigate the influence of glycosylation patterns on biologic stability and continue pharmacokinetic and immunogenicity studies to validate animal model efficacy. Continue to investigate filovirus 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. Continue validation of in silico transport mechanisms of the blood-brain barrier studies, in vitro, and in vivo to screen for potential therapeutic targets. Evaluate gene duplication and amplification as a specific mechanism for antimicrobial resistance and horizontal gene transfer. Continue development of a gene amplification detection system that can identify changes in antimicrobial and multidrug resistance. Investigate novel inhibitory mechanisms that circumvent efflux pumps. Explore the application of microfluidics to examine the host-immune response in the microenvironment and biomarker discover for infection onset and response to therapy. Examine the impact of modulated olfactory, respiratory, and alveolar molecular & cell population variation on uptake of inhaled particulates, progression of toxicological & pathogenic effects. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	29.502	27.996	26.815

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CB2: *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*	53.726	71.654	67.994	-	67.994	68.078	68.279	68.311	68.307	Continuing	Continuing
• NT2: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)*	59.042	56.187	53.720	-	53.720	52.986	50.200	52.503	52.500	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• TM2: *TECHBASE MED DEFENSE (APPLIED RESEARCH)*	73.096	73.212	70.960	-	70.960	72.997	78.989	81.306	79.218	Continuing	Continuing
• CB3: *CHEMICAL BIOLOGICAL DEFENSE (ATD)*	18.584	18.093	21.698	-	21.698	21.675	21.735	21.740	21.737	Continuing	Continuing
• NT3: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)*	16.055	23.655	22.749	-	22.749	24.219	30.349	31.155	31.150	Continuing	Continuing
• TM3: *TECHBASE MED DEFENSE (ATD)*	88.629	92.846	88.188	-	88.188	93.271	104.285	103.753	97.215	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
PS1: *CHEM/BIO DEFENSE - PHYSICAL SCIENCES (BASIC RESEARCH)*	-	14.248	15.902	15.288	-	15.288	15.533	15.583	15.596	15.597	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 2017	FY 2018	FY 2019
Title: 1) Physical Sciences	14.248	15.902	15.288
Description: Focuses on fundamental scientific phenomena including chemistry, physics, materials science, environmental science, and nanotechnology.			
FY 2018 Plans: Continue to examine the impact of processing parameters in designing large scale membranes, which respond to multiple CB threats via deactivation and conformation 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 to investigate the impact of composition on structure and activity of materials to mitigate chemical and biological threats on CB relevant substrates. 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. Continue investigation of ecological and environmental drivers of Burkholderia pseudomallei virulence and persistence using multiplexed barcoded high throughput sequencing. Continue to examine biomarkers from interstitial fluid and begin microneedle biosensor development to identify protein analytes. Optimize catalytic polyelectrolyte and metal organic framework structures for hydrolysis or oxidation of toxic agents. Evaluate and model self-decontaminating catalytic properties of materials for further testing against real agents. Continue to assess and evaluate the efficacy of short chain fatty acids as a means of inactivating B. anthraces vegetative cells,			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
endospores, and other microorganisms under a variety of environmental conditions and surfaces. Continue to investigate the elementary reactions, fundamental process parameters, and material mechanisms of a new means of neutralizing chemical warfare agents using a single-step, continuous supercritical water oxidation platform. ***FY 2019 Plans:*** Continue to examine the impact of processing parameters in designing large scale membranes, which respond to multiple CB threats via deactivation and conformation 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 to investigate the impact of composition on structure and activity of materials to mitigate chemical and biological threats on CB relevant substrates. 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. Continue investigation of ecological and environmental drivers of Burkholderia pseudomallei virulence and persistence using multiplexed barcoded high throughput sequencing. Continue to examine biomarkers from interstitial fluid and begin microneedle biosensor development to identify protein analytes. Optimize catalytic polyelectrolyte and metal organic framework structures for hydrolysis or oxidation of toxic agents. Evaluate and model self-decontaminating catalytic properties of materials for further testing against real agents. Continue to assess and evaluate the efficacy of short chain fatty acids as a means of inactivating B. anthracis vegetative cells, endospores, and other microorganisms under a variety of environmental conditions and surfaces. Continue to investigate the elementary reactions, fundamental process parameters, and material mechanisms of a new means of neutralizing chemical warfare agents using a single-step, continuous supercritical water oxidation platform. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	14.248	15.902	15.288

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CB2: *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*	53.726	71.654	67.994	-	67.994	68.078	68.279	68.311	68.307	Continuing	Continuing
• NT2: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)*	59.042	56.187	53.720	-	53.720	52.986	50.200	52.503	52.500	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• TM2: *TECHBASE MED DEFENSE (APPLIED RESEARCH)*	73.096	73.212	70.960	-	70.960	72.997	78.989	81.306	79.218	Continuing	Continuing
• CB3: *CHEMICAL BIOLOGICAL DEFENSE (ATD)*	18.584	18.093	21.698	-	21.698	21.675	21.735	21.740	21.737	Continuing	Continuing
• NT3: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)*	16.055	23.655	22.749	-	22.749	24.219	30.349	31.155	31.150	Continuing	Continuing
• TM3: *TECHBASE MED DEFENSE (ATD)*	88.629	92.846	88.188	-	88.188	93.271	104.285	103.753	97.215	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 2: *Applied Research*	**R-1 Program Element (Number/Name)** PE 0602384BP / *CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	185.864	201.053	192.674	-	192.674	194.061	197.468	202.120	200.025	Continuing	Continuing
CB2: *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*	-	53.726	71.654	67.994	-	67.994	68.078	68.279	68.311	68.307	Continuing	Continuing
NT2: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)*	-	59.042	56.187	53.720	-	53.720	52.986	50.200	52.503	52.500	Continuing	Continuing
TM2: *TECHBASE MED DEFENSE (APPLIED RESEARCH)*	-	73.096	73.212	70.960	-	70.960	72.997	78.989	81.306	79.218	Continuing	Continuing

A. Mission Description and Budget Item Justification

Applied 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.

One function of the CBDP S&T Applied Research budget is to preserve critical core competencies in the DoD Service laboratories which includes: United States Army Edgewood Chemical Biological Center (ECBC), United States Army Medical Research Institute of Infectious Diseases (USAMRIID), United States Army Medical Research Institute of Chemical Defense (USAMRICD), United States Army Natick Soldier Systems Center, Naval Research Lab (NRL), Air Force Research Lab (AFRL),

among others. The intent is to maintain strategic partnerships with the DoD Service communities for mission success across the enterprise through collaborative planning and programming maintaining budget assurance.

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).

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	188.715	201.053	194.578	-	194.578
Current President's Budget	185.864	201.053	192.674	-	192.674
Total Adjustments	-2.851	0.000	-1.904	-	-1.904
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	5.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-3.478	-			
• SBIR/STTR Transfer	-4.373	-			
• Other Adjustments	0.000	-	-1.904	-	-1.904

Change Summary Explanation

Funding: FY17 (+$5.000M): Congressional add to Medical Chemical Counter Measures (TM2).
FY17 (-$3.478M): Program reprogrammings to support high priority efforts and CBDP Defense Finance and Accounting System transactions.
FY17 (-$4.373M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$1.804M): Application of revised inflation guidance.
FY19 (-$0.100M): Program adjustments to balance overall portfolio efforts.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CB2: *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*	-	53.726	71.654	67.994	-	67.994	68.078	68.279	68.311	68.307	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project CB2 provides physical science applied research to develop future, multi-disciplinary, and 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 2017	FY 2018	FY 2019
Title: 1) Material Contamination Mitigation	5.333	3.171	7.180
Description: Develop highly effective non-traditional or novel decontamination technologies that integrate with current procedures and support non-material improvements of the overall decontamination effort.			
FY 2018 Plans: Complete agent resistant coatings effort and transition to the Air Force Item manager. Continue chemical hot air decontamination effort to address sensitive equipment, platform interior, and aircraft chemical warfare agent decontaminant needs. Continue responsive coatings efforts to enhance decontaminability as part of the systems approach to achieving efficacy goals. Continue Wide Area Decontamination of Bacillus anthracis projects, focusing on agrochemical approaches. Continue surface science investigations with expanded set of materials, parameters and agents to inform design for the development of the next generation of hazard mitigation technologies to achieve toxicology-based efficacy goals. Continue elimination/bulk chemical warfare agent destruction effort, focusing on neutralization and polymerization of bulk chemical warfare agents. Continue effort to examine how decontamination technologies perform on field assets when contaminated with other than Chemical Agent Standard Analytical Reference Material (CASARM) (laboratory quality/pure) chemical agents. Continue efforts to develop/enhance agent mapping (disclosure/assurance) technologies.			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Complete sorbent decontaminant formulation effort to advanced development for tactical decontamination, complete vapor and complex surface efficacy performance evaluations. Continue surface science investigations with expanded set of materials, parameters and agents focusing on informing design for the development of the next generation of hazard mitigation technologies to achieve toxicology-based efficacy goals. Continue coatings development utilizing new chemical agent resistance method to reduce chemical absorption. Continue Wide Area Decontamination of Bacillus anthracis projects, focusing on subscale formulation testing. Continue chemical hot air decontamination effort including the insertion of aerosolized decontaminants to reduce the time and logistical requirements associated with addressing sensitive equipment, platform interior, and aircraft CWA decontaminant needs in a laboratory environment. Continue effort to examine how decontamination technologies perform on field assets coated with battlefield grime when contaminated with impure weapons-grade representative chemical agents. Continue efforts to develop/enhance agent mapping (disclosure/assurance) technologies, including generating electronic records of contamination locations. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.			
Title: 2) Respiratory and Ocular Protection ***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 TICs. ***FY 2018 Plans:*** Continue novel filtration efforts and develop respirator-helmet integration technologies. Continue closed circuit Self Contained Breathing Apparatus (SCBA) development, and portable integrated air management systems. Initiate multifunctional systems in relevant configurations at scale for respiratory and ocular protection. ***FY 2019 Plans:*** Continue to evaluate improved oxygen and carbon dioxide removal technologies. Continue to evaluate and assemble improved sensor technologies and control systems into SCBA platform. Continue coordination with percutaneous protection to make whole ensemble and extend the available operational time and improve interface with tactical equipment. Continue respirator and helmet integration with emerging filtration technologies and compatible components. Develop and qualify flexible and stretchable materials for all hazard use. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	2.437	3.113	2.464
Title: 3) Percutaneous Protection	5.713	6.333	4.120

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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)** CB2 / *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Develop advanced ensemble prototypes with state-of-the art materials that address the full spectrum of threats and provide a range of solutions optimized for protection, thermal comfort, and mission performance. ***FY 2018 Plans:*** Continue to develop advanced National Fire Protection Association (NFPA) certified fully encapsulated ensemble prototypes with state-of-the art materials that address the full spectrum of threats and provide a range of solutions optimized for protection, thermal comfort, and mission performance. Continue to develop composite and novel multi-functional materials and low thermal burden garment materials which provide site-specific CB protection On Demand. ***FY 2019 Plans:*** Continue the process to mount compounded materials onto fabrics for protection. Continue to conduct fiber and yarn analysis. Continue to develop knit and woven samples for evaluation. Develop respirator and helmet integration, develop and qualify flexible and stretchable materials for all hazard use. Fabricate and test hood/mask interface concepts, perform whole system agent tests. Develop mechanisms at scale, and finalize proof of principle responsive materials. Determine usefulness of metal organic frameworks and other materials for use in fabrics for protective ensembles. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 4) Expeditionary Collective Protection ***Description:*** Develop new technologies for soldiers to determine the remaining chemical vapor service life of their CWA filters. ***FY 2018 Plans:*** Continue systems integration and surveillance of Guard Bed filters and RLIs. Continue fabrication of the photo luminescent RLI satellite cartridge prototypes. ***FY 2019 Plans:*** Continue field testing and sampling of guard bed and Residual Life Indicator (RLI) filters. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	0.093	1.343	0.370
Title: 5) Personnel Contamination Mitigation ***Description:*** Develop new technologies to mitigate 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.	0.160	1.450	0.370

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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)** CB2 / *CHEMICAL BIOLOGICAL DEFENSE (APPLIED RESEARCH)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: Transition technology data efforts to develop an alternative to Reactive Skin Decontamination Lotion (RSDL). Initiate personnel decontamination efforts to enhance current processes and support mass casualty personnel decontamination warfighter operations, including homeland defense mission. ***FY 2019 Plans:*** Continue personnel decontamination efforts to enhance current processes (kinetics, dwell time, mechanics, etc.) and support mass casualty personnel decontamination warfighter operations to increase throughput and decrease logistics and burden on warfighters, including efficacy studies associated with the homeland defense mission. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 6) Biosurveillance	8.193	9.708	-
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. This effort will be realigned in FY19 to CB2 (Chemical Biological Defense) Threat Surveillance. ***FY 2018 Plans:*** Continue to develop technologies aimed at predicting, forecasting and mitigating biosurveillance events (e.g., data gathering and sharing mechanisms for event-based surveillance; compilation of historical baselines; models of plant and/or animal disease spread; social media data analytics, uncertainty quantification). Develop capabilities to intelligently fuse ubiquitous sensing capabilities (wearables, field deployed diagnostics and autonomous environmental sensing vehicles) for earlier warning. Initiate enhanced data visualization capabilities for both sensor data fusion and predictive disease propagation models. Initiate Integrated Early Warning Ecosystem to provide improved Chemical and Biological Defense (CBD) situational awareness, a common analytical work bench for users, integration and fusion of a wide array of relevant data sources, and decision support tools for the tactical to strategic level command authorities. The intent is to leverage advances gained in the Biosurveillance Ecosystem development for application in the wider Integrated Early Warning domain. This effort will be funded out of both CB2 (Chemical Biological Defense)/Biosurveillance and TM2 (Techbase Med Defense)/Biosurveillance . Efforts in this budget will focus on modeling and simulation and innovative data fusion techniques. ***FY 2018 to FY 2019 Increase/Decrease Statement:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Program/project funding transferred to another funding line.			
Title: 7) Detection ***Description:*** 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, and design for prototype whole pathogen genome sequencing system. This effort will be realigned in FY18 to CB2 (Chemical Biological Defense) Detection Sensor Technologies.	13.249	-	-
Title: 8) Detection Sensor Technologies ***Description:*** Focus of this effort is to develop capabilities to detect and identify chemical and biological threats. This activity can include development of point, remote, or standoff sensors as appropriate, to address both conventional and non-traditional chemical and biological threats. These efforts are being developed to further the detection capability for early warning of contamination exposure to the warfighter. This effort will be realigned in FY18 from CB2 (Chemical Biological Defense) Detection and NT2 (Techbase Non-Traditional Agents Defense) Detection. ***FY 2018 Plans:*** This program realigns FY17 efforts from CB2 (Chemical Biological Defense)/Detection and NT2 (Techbase Non-Traditional Agents Defense)/Detection. Continue concept and technology development for biological and chemical threat early warning detection. Continue development of sample preparation techniques to enhance environmental detection platforms. Initiate the development of detection capabilities for identifying genomic editing events. Continue development of a man worn environmental sensor for detecting exposure to chemical hazards. Continue the development of proteomic detection capabilities. ***FY 2019 Plans:*** Continue concept and technology development for biological and chemical threat early warning detection to include distributed biological reconnaissance capabilities along with the ability to reduce false alarms in a highly complex and chemical saturated environment. Continue development of detection capabilities for identifying genomic editing events. Initiate the development of exploring sensing approaches to provide unattended monitoring of perimeters for rapid defensive positioning to enable early indication of airborne chemical threats. Continue the development of sensors for mobile applications, including development for unmanned systems. Initiate a program to investigate an automated man-out-of-loop remote biological collection and detection system. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	-	26.051	23.270
Title: 9) Hazard Prediction	4.876	4.648	7.253

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
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. ***FY 2018 Plans:*** Continue development to improve urban subsystem, specifically coupling between indoor and outdoor dispersion models for urban releases and initiate field studies for validation of these capabilities. Begin development and enhancement of source-term estimation/source characterization algorithms. Complete research and development of enhancements to the fidelity of the missile intercept modeling capability within the Hazard Prediction and Assessment Capability (HPAC). Initiate research and development of advanced weather modeling techniques. Initiate development of enhancements to human response models for CBRN agent and toxic industrial chemical exposures. Continue development of MSS to improve hazard prediction for urban environments in HPAC, including continuing to upgrade the code to meet CCMI compliance and implementing terrain-following dense gas motions. Complete development of a secondary evaporation model. Initiate development of next generation littoral waterborne modeling system. ***FY 2019 Plans:*** Continue development of coupled indoor and outdoor dispersion models for enhanced hazard prediction in urban environments. Execute a field trial to collect validation data for coupled indoor and outdoor dispersion models and conduct sample analysis for all field trial samples. Continue development of MicroSWIFT/SPRAY (MSS) for improved hazard prediction in urban environments. Continue enhancements to source term estimation and source characterization algorithms. Complete development of a secondary evaporation model. Begin integration of secondary evaporation model with MSS. Begin research and development of mobile applications for CBRN hazard prediction consequence assessment tools. Continue researching new methods for the development of next generation dispersion models such as hybrid Large Eddy Simulation/Gaussian approaches. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 10) Data Analysis	2.489	3.216	2.364
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 Chemical Biological (CB) agents on equipment, personnel, and operations. These chapters are developed by a mix of contractors and labs, employing experts in each subject area. ***FY 2018 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue working on all 20 Chapters of CB-1. Make CB-1 available online. Continue providing access of field trial data sources to transport and dispersion community. ***FY 2019 Plans:*** Continue to develop, revise and integrate CB-1. Continue to host and maintain online accessibility of CB-1 to the Chemical Biological Defense Program (CBDP) community, as well as enhance online capabilities based on user feedback. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Title: 11) Threat Agent Sciences ***Description:*** Supports defensive countermeasure development against CB threats by delivering the scientific data, understanding, and relevant human estimates of the hazards posed to humans by exposure to CB agents. Toxicological and/or infectious-dose information and environmental response supports development and/or enhancement of both operational risk and exposure guidelines; identifies gaps in detection and protection; informs decontamination procedures; and supports the development of medical countermeasures. Knowledge generated from this program is used to inform understanding of hazards, hazard prediction models, and materiel and countermeasure development. ***FY 2018 Plans:*** Continue developing advanced methods for biological agent characterization. Continue to deliver environmental metagenomic information. Continue providing data on fate, persistence, and response of priority biological agents in various environments to reveal latent details on their behavior. Continue developing methods to understand biological agent fate on surfaces and begin developing methods for understanding energetic materials for vulnerability assessments and signature identification and development. Continue defining particle properties and agent-substrate interaction to predict agent behavior and aerosolization to inform hazard assessment. Continue with relevant biological toxicity and infectious dose studies to provide data to inform operational risk and exposure guidelines, response, detection, and protection; and goals for decontamination and medical countermeasures. Continue assessing the impact of environmental factors on threat agent activity (persistence, transport, degradation, resuspension, decontamination, and disinfection). ***FY 2019 Plans:*** Continue developing advanced methods for threat agent characterization. Continue providing data on fate, persistence, and response of priority agents in various environments. Continue developing methods to understand agent fate on surfaces. Continue defining particle properties and agent-substrate interaction to predict agent behavior and aerosolization to inform hazard assessment. Continue studies to provide data to inform operational risk and exposure guidelines, response, detection, and protection; and define goals for the development of decontamination procedures and medical countermeasures. Continue	6.369	4.575	4.425

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
assessing the impact of environmental factors on threat agent activity (persistence, transport, degradation, resuspension, decontamination, and disinfection). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 12) Operational Effects and Planning ***Description:*** Provide tools to enable the assessment and mitigation of impacts at the personnel, system, tactical, operational and strategic levels. Develop and institutionalize consensus-based, scientifically sound data and analytical methods to link CBRN exposures to relevant operational effects and to enhance test and evaluation. ***FY 2018 Plans:*** Complete development of health and human effects modeling capability. Conduct service-specific human performance experiments aimed at better understanding operational risk. Provide objective, quantitative analysis in support of science and technology initiative, material developments, operational guidance, and requirements setting. Develop simulation-based training to enhance senior leader decision making during weapons of mass destruction (WMD) crises. Enhance CBRN operational risk assessment tools for the Navy. This includes the development of models of various ship classes and tools to assess the impact of CBRN use on individual and team tasks. Begin to study the relationships among low level chemical nerve agent exposures, adverse individual health and physiological effects, and degradation on individual military task performance. ***FY 2019 Plans:*** Continue Air Force and Navy service specific human performance studies. Plan and initiate Army and Marine Corps specific operational performance studies. Continue to enhance CBRN operational risk assessment tools for the Navy. Continue efforts to determine the effects of chemical warfare agents (CWA) on individual tasks. Continue studies to determine the toxicity levels of Toxic Industrial Chemicals (TICs). Conduct direct subsurface transport measurement studies and continue modeling contact transfer exposures. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	4.814	8.046	5.675
Title: 13) Threat Surveillance ***Description:*** Integrate disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into chemical and biological threat advanced warning systems, tactical decision aids, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact and biological threat assessment. This effort will be realigned in FY19 from CB2 (Chemical Biological Defense) Biosurveillance and TM2 (Techbase Medical Defense) Biosurveillance.	-	-	10.503

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2019 Plans: Expand the number of pathogens, hosts and vectors incorporated into a robust prediction and forecasting capability. Develop tactical decision aids on mobile applications to identify risks and provide mitigation strategies for chemical and biological threats. Identify new data streams, such as physiological markers, which can be leveraged to support early warning and forecasting. Develop a global area of concern forecasting risk map capability. Conduct studies to determine the validity of using wearable biomonitoring data as indicative and predictive of health status in controlled environments. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Accomplishments/Planned Programs Subtotals	53.726	71.654	67.994

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CB3: *CHEMICAL BIOLOGICAL DEFENSE (ATD)*	18.584	18.093	21.698	-	21.698	21.675	21.735	21.740	21.737	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
NT2: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)*	-	59.042	56.187	53.720	-	53.720	52.986	50.200	52.503	52.500	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 2017	FY 2018	FY 2019
Title: 1) Expeditionary Collective Protection	0.454	-	0.359
Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their CWA filters.			
FY 2019 Plans: Assess baseline novel filtration materials against NTAs and other emerging threats under laboratory conditions. Continue to analyze and characterize the performance of RLI satellite filter cartridges against NTAs and other emerging threats. Continue to collect data to establish correlation or filter bed performance and pre-filter system against NTAs and other emerging threats.			
FY 2018 to FY 2019 Increase/Decrease Statement: Increase due to fact of life change in the program/project.			
Title: 2) Material Contamination Mitigation	1.991	1.939	0.605
Description: Develop highly effective non-traditional or novel decontamination technologies that integrate with current procedures and support non-material improvements of the overall decontamination effort.			
FY 2018 Plans: Continue integrating the full range of NTAs into the material contamination mitigation portfolio. Continue responsive coatings efforts to enhance NTA decontaminability as part of the systems approach to achieving efficacy goals. Continue effort to examine			

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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)** NT2 / *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (APPLIED RESEARCH)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
how decontamination technologies perform on field assets when contaminated with other than CASARM (laboratory quality/pure) NTAs. Continue efforts to develop/enhance NTA mapping (disclosure/assurance) technologies. ***FY 2019 Plans:*** Continue integrating the full range of NTAs and other emerging threats into the material contamination mitigation portfolio. Continue responsive coatings efforts to enhance NTA decontaminability as part of the systems approach to achieving efficacy goals. Continue effort to examine how decontamination technologies perform on field assets that include battlefield grime when contaminated with impure weapons-grade representative NTAs. Continue efforts to develop/enhance NTA mapping (disclosure/assurance) technologies, including generating electronic records of contamination locations. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.			
Title: 3) Personnel Contamination Mitigation ***Description:*** Develop new technologies to mitigate 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. ***FY 2018 Plans:*** Transition technology data developed by efforts to develop an alternative to RSDL, including efficacy data against representative NTAs to Next Generation Personnel Decontamination. Initiate personnel decontamination efforts to enhance current processes and support mass casualty personnel decontamination warfighter operations, including homeland defense mission, including efficacy data against representative NTAs. ***FY 2019 Plans:*** Continue technology data developed by efforts to develop an alternative to RSDL, including efficacy data against representative NTAs in close coordination with concurrent medical testing required to achieve FDA approval. Continue personnel decontamination efforts to enhance current processes and support mass casualty personnel decontamination warfighter operations, including homeland defense mission, including efficacy data against representative NTAs required to achieve FDA approval. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	0.908	1.761	0.359
Title: 4) Respiratory and Ocular Protection	1.419	0.733	1.250

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Development and analysis of design alternatives for chemical and biological air-purifying respirators that provide enhanced protection with lower physiological burden and improved interface with mission equipment. ***FY 2018 Plans:*** Continue to develop and demonstrate upgrades to existing air purification (including respiratory protection) technologies to enable broad spectrum protection and extended filter life. Assess novel filtration materials against new NTAs and compounds of interest. ***FY 2019 Plans:*** Continue development and integration of component and system upgrades to existing air purification (including respiratory protection) technologies to provide protection and extended filter life against emerging threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.			
Title: 5) Chemical Pretreatments - Medical ***Description:*** Develops pretreatments and prophylactics that provide protection against non-traditional agents (NTAs) and emerging chemical threats. Prophylactic medical countermeasures (MCMs) include catalytic and stoichiometric bioscavengers that rapidly bind and detoxify a broad spectrum of NTAs. ***FY 2018 Plans:*** Continue efforts to identify and develop catalytic enzymes for use against selected, priority NTAs. Continue to explore alternative technologies for bioscavenging enzymes to address capability gaps such as immunogenicity, circulatory stability, dosing, shelf-life, and delivery. Initiate development of new platform technologies such as modulation of endogenous protein expression or other innate protective response. Complete investigation of nanotechnology to support prophylactic countermeasures. Continue research projects at the ADMET CoE to improve MCM understanding and facilitate development. ***FY 2019 Plans:*** Continue efforts to develop catalytic enzymes for use against selected, priority NTAs. Continue to explore alternative technologies for prophylaxis to address capability gaps such as immunogenicity, circulatory stability, dosing, shelf-life, and delivery. Complete investigation of nanotechnology to support prophylactic countermeasures. Complete evaluation of Food and Drug Administration (FDA) licensed MCMs for potential pretreatment/prophylaxis against NTAs and emerging chemical threats. Continue research projects at the ADMET CoE to improve MCM understanding and facilitate development. Continue new approaches to identify pretreatment and prophylaxis against multiple classes of NTAs. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	9.467	8.837	8.717

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 6) Chemical Therapeutics - Medical	16.411	20.670	19.272
Description: Investigates common mechanisms of agent injury. Physiological parameters and pathological assessments will be used to establish the general mode and mechanism(s) of toxicity to inform countermeasure development. Develops, assesses, evaluates, and validates therapeutics for treatment resulting from exposure to NTAs and emerging chemical threats. ***FY 2018 Plans:*** Continue pursuit of analogs of therapeutic compounds to treat NTA exposures. Continue to test compounds using high-throughput, in vitro screens. Continue to evaluate licensed FDA therapeutics against selected, priority NTAs. Continue to evaluate compounds at the ADMET CoE to identify leads. Continue to evaluate FDA licensed/approved products for therapeutic applications for countering the deleterious effects of chemical agent exposure. Initiate additional animal studies to support regulatory submission of candidate therapeutics for treatment of the toxic effects of selected, priority NTAs. ***FY 2019 Plans:*** Continue pursuit of analogs of therapeutic compounds to treat NTA exposures. Continue to test compounds using high-throughput, in vitro screens. Continue to evaluate licensed FDA therapeutics against selected, priority NTAs. Continue to evaluate compounds at the ADMET CoE to identify leads. Deliver information on the evaluation of FDA licensed/approved products for therapeutic applications for countering the deleterious effects of an NTA exposure to the advanced developer. Continue animal studies to support regulatory submission of candidate therapeutics for treatment of the toxic effects of selected, priority NTAs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) Detection	9.090	-	-
Description: Primary focus is to assess the potential of multiple technologies to meet the needs to detect the presence of NTAs. This effort will be realigned in FY18 to CB2 (Chemical Biological Defense) Detection Sensor Technologies.			
Title: 8) Modeling & Simulation	1.606	1.722	1.707
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			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
and dispersion, human effects, model Validation and Verification (V&V), scaled testing, casualty estimation, and supporting data management. ***FY 2018 Plans:*** Initiate additional small-scale testing of NTA simulants and provide test data for source term model development. ***FY 2019 Plans:*** Complete development of agent fate modeling for NTAs. Complete expansion of SHARC to model NTAs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 9) Percutaneous Protection ***Description:*** Study and assessment of percutaneous protective technologies. Membrane and composite material ("novel materials"/"multifunctional materials") efforts will continue on in Percutaneous Protection NT3 (Non-Traditional Agents) during FY18. ***FY 2019 Plans:*** Continue development of novel materials and ensembles that provide protection against NTAs and emerging threats. Initiating additional NTA and other emerging threats tests. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.	0.397	-	1.600
Title: 10) Threat Agent Sciences ***Description:*** Provide critical agent characterization (chemical, physical and physiological/toxicological) data on current and emerging threat agents to prepare for surprise, enabling and informing development and testing of NTA defense technology (e.g., detection, decontamination, protection, and hazard assessment). This characterization of new threats informs decision makers and development of Concept of Operations (CONOPs) and Tactics, Techniques and Procedures (TTP); it also provides the basis for countermeasure development and assessment. ***FY 2018 Plans:*** Continue characterizing priority emerging threats to provide critical supportable data to enable countermeasure development and testing as well as inform CONOPs, policies, doctrines and procedures. Continue to build linkages between emerging threat characterization and advanced development capability assessments to better define current capability gaps for emerging	17.299	20.525	19.851

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
threats. Continue evaluating synthesis pathways, physicochemical properties and environmental fate properties for priority threats. Continue assessing the impact of environmental factors and substrate properties on threat agent activity (persistence, transport, degradation, resuspension, etc.). Continue preparing laboratory and operational toxicity estimates for next priority NTAs. Continue to refine and deliver human toxicity estimates for next priority NTAs. Initiate development of medium- to high-throughput laboratory approaches to predict acute systemic toxicity in support of CRISTAL capability. Expand computational and in vitro research efforts concerning ADMET, physical characterization and behavior to support development of the CRISTAL capability. Initiate efforts to integrate the computational and in vitro predictive tools developed for CRISTAL to provide a computational user interface that can accommodate multiple streams of data and provide outputs based on best available information. ***FY 2019 Plans:*** Continue characterizing priority emerging threats to provide critical support data to enable countermeasure development and testing as well as inform CONOPs, policies, doctrines and procedures. Continue to build linkages between emerging threat characterization and advanced development capability assessments to better define current capability gaps for emerging threats. Continue evaluating synthesis pathways, physicochemical properties and environmental fate properties for priority threats. Continue assessing the impact of environmental factors and substrate properties on threat agent activity (e.g. persistence, transport, degradation, resuspension). Continue preparing laboratory and operationally-relevant toxicity estimates for next priority NTAs. Continue to refine and deliver human toxicity estimates for next priority NTAs. Continue development of medium- to high-throughput laboratory approaches to predict acute systemic toxicity. Expand computational and in vitro research efforts concerning ADMET, physical and chemical characterization and behavior. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	59.042	56.187	53.720

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• NT3: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)*	16.055	23.655	22.749	-	22.749	24.219	30.349	31.155	31.150	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
TM2: *TECHBASE MED DEFENSE (APPLIED RESEARCH)*	-	73.096	73.212	70.960	-	70.960	72.997	78.989	81.306	79.218	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 chemical and biological threat agents. Categories for this project include core science efforts in Medical Chemical, Medical Biological, Diagnostics, and Medical Countermeasures. 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) Biosurveillance	4.182	4.171	-
Description: Biosurveillance/Disease Surveillance: Integrate existing disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced warning systems. 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 CBDP partners with civil agencies and Department of Defense (DoD) agencies to provide near real-time information and provide situational awareness, yielding analytical and predictive capabilities for DoD decision makers including CCDRs. This effort will be realigned in FY19 to CB2 (Chemical Biological Defense) Threat Surveillance.			
FY 2018 Plans: 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. Continue new efforts to explore utilizing ensemble approaches to disease forecasting. Initiate Integrated Early Warning Ecosystem to provide improved CBD situational awareness, a common analytical work bench for users, integration and fusion of a wide array of relevant data sources, and decision support tools for the tactical to strategic level command authorities. The intent is to leverage advances gained in the Biosurveillance Ecosystem development for application in the wider Integrated Early Warning domain. This effort will be funded out of both CB2 (Chemical Biological Defense)/			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Biosurveillance and TM2 (Techbase Med Defense)/Biosurveillance . Efforts in this budget will focus on medical and diagnostic data and analytics. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 2) Chemical Diagnostics ***Description:*** Focuses on developing state-of-the-art laboratory/fieldable methods that detect exposure to CWA/NTA 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. This effort will be realigned in FY19 to TM2 (Techbase Med Defense) Medical Diagnostics. ***FY 2018 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 for organophosphate (OP) nerve agents generating butyrylcholinesterase (BChE). Complete the development of confirmatory assays for discovered markers. Initiate assay verification studies and investigations to mature chemical diagnostic assays for use in forward field settings or at point-of-need. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	0.163	3.482	-
Title: 3) Diagnostic Assays ***Description:*** Development and verification of rapid, sensitive, and specific tests for the identification of Biological Warfare Agents (BWA) 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. This effort will be realigned in FY19 to TM2 (Techbase Med Defense) Medical Diagnostics. ***FY 2018 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 and/or agent biomarkers. Complete efforts and initiate verification studies on integrating identification of antimicrobial resistance into future diagnostic systems. Initiate the investigation for designing biomarker validation methods and activities. Complete designs and studies on the development of vertical flow immunoassays. Initiate assay development for extremely difficult to detect/diagnosis intracellular pathogens of severe acute systemic febrile illnesses. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	4.268	3.551	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Program/project funding transferred to another funding line.			
Title: 4) Next Generation Diagnostics ***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. This effort will be realigned in FY19 to TM2 (Techbase Med Defense) Medical Diagnostics. ***FY 2018 Plans:*** Continue development of sample preparation techniques to enhance clinical diagnostic platforms. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	4.150	1.392	-
Title: 5) Viral/Bacterial/Toxins Vaccines ***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. ***FY 2018 Plans:*** Complete qualification/validation of well-defined animal models of Burkholderia and Q Fever. Continue analysis of T and B cell antigen-based Q Fever vaccine candidates. Initiate manufacturing and investigative new drug (IND) enabling studies of OMV or other lead Burkholderia candidates based on results in animal models refined toward Animal Rule Licensure use. Down select tularemia vaccine based on efficacy in animals for advancement to clinical studies. Evaluate efficacy of multivalent monoclonal antibody cocktail for protection against multiple serotypes of botulinum neurotoxin in relevant animal models. Evaluate potential animal models for medical countermeasure development against broad spectrum of biological toxins. Continue nonclinical efficacy and clinical safety development of multivalent filovirus vaccine against Zaire ebolavirus, Sudan ebolavirus and Marburgvirus. Continue comparison of homologous and heterologous prime-boost regimens with filovirus candidates. Continue detailed dissection of the immune response following alphavirus and filovirus vaccination by epitope mapping and B-cell antigen receptor (BCR) antibody repertoire analysis. Continue evaluation of immunogenicity and efficacy of nanoparticle adjuvanted VEEV DNA vaccine and the trivalent WEVEE vaccine in NHP. Initiate development of multiplexed VEEV infection biomarker assay. Continue to assess MCM capabilities and strategies to defend against emerging and genetically engineered bioweapon (BW) threat agents. ***FY 2019 Plans:***	16.096	17.629	18.663

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue selection of T and B cell antigens for Q Fever vaccine candidates. Continue analysis of candidate Q fever vaccines. Continue down-selection of subunit tularemia vaccine candidates in animal models. Continue development of animal models for medical countermeasure development against aerosolized biological toxins including marine toxins. Continue nonclinical efficacy and clinical safety development of candidate vaccines against Marburgvirus. Evaluate potential for boosting of recombinant vesicular stomatitis virus (rVSV)- based ebolavirus vaccine. Continue detailed immune correlate studies of filovirus vaccines for animal rule licensure including antibody response maturation and passive transfer studies. Continue improvements to delivery mechanism, immunogenicity, efficacy and manufacturing of VEEV DNA vaccine and the trivalent WEVEE vaccine including animal modeling. Initiate development of multiplexed VEEV infection biomarker assay. Continue to assess MCM capabilities and strategies to defend against emerging and genetically engineered bioweapon (BW) threat agents. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 6) Vaccine Platforms and Research Tools	8.048	8.191	9.087
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 2018 Plans:*** Initiate construction and evaluation of hybrid alphavirus E1/E2 antigenic vaccines. Maintain capability and assess biodefense Burkholderia vaccine candidates in the in vitro biomimetic Modular Immune In-vitro Construct (MIMIC) system. Evaluate production and scale-up of trivalent inactivated alphavirus vaccines and use these particles to generate new WEVEE monoclonal antibodies (mAbs). Analyze mAbs for neutralizing activity and map epitopes of strongly neutralizing mAbs. Establish, organize, and sustain the Human Specimen Archive at USAMRIID. Continue in vivo down selection of next generation TLR agonist adjuvants. Initiate evaluation of hybrid antigenic proteins for use in broad spectrum vaccines for alphaviruses. ***FY 2019 Plans:*** Continue evaluation of multivalent hybrid vaccines: structural analysis and performance in the biomimetic Modular Immune In-vitro Construct (MIMIC) system. Maintain capability and continue assessment of Burkholderia and Q fever vaccine candidates in the MIMIC system. Continue MIMIC development for use in evaluation of pulmonary responses to biodefense vaccines. Complete evaluation of production and scale-up of trivalent inactivated alphavirus vaccines and use of these vaccines to generate new WEVEE monoclonal antibodies (mAbs). Analyze mAbs for neutralizing activity and map epitopes of strongly neutralizing mAbs.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Sustain the Human Specimen Archive at USAMRIID. Continue in vivo down selection of next generation Toll Like Receptor agonist adjuvants for use in Q fever and other biodefense vaccines. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Title: 7) Viral Therapeutics ***Description:*** Identify, optimize and evaluate lead candidate therapeutics for efficacy against viral pathogens. ***FY 2018 Plans:*** Continue screening, evaluation and development of novel small molecule inhibitors and monoclonal antibodies effective against filo- and alpha-virus infections in vitro and in vivo. Continue development of small molecule ribonucleoside inhibitors directed against alphaviruses. Develop alphavirus animal models for evaluation of therapeutic countermeasures. Continue optimization of broad-spectrum inhibitors of filovirus infection that antagonize the NPC1-GP interaction. Continue studies to enhance Anti-viral Therapy Against Ebola (Zaire) and Marburg Viruses. Development of an inhalation model of VEEV in the common marmoset. Continue funding small molecule/repurposing efforts. ***FY 2019 Plans:*** Continue screening, evaluation and development of novel small molecule inhibitors and monoclonal antibodies effective against filo- and alpha-virus infections in vitro and in vivo. Continue development of small molecule ribonucleoside viral replication inhibitors directed against alphaviruses. Develop alphavirus animal models for evaluation of therapeutic countermeasures for use with Animal Rule Guidance by the FDA. Continue optimization of broad-spectrum inhibitors of filovirus infection that antagonize NPC1-GP interactions. Continue studies to enhance anti-viral therapies against Ebola (Zaire) and Marburg Viruses. Continue funding small molecule/repurposing efforts. Begin feasibility studies on reducing neuro-inflammation by repurposing existing therapeutics. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	10.284	10.983	7.910
Title: 8) Bacterial Therapeutics ***Description:*** Identify, optimize and evaluate lead therapeutic candidates effective against designated bacterial threat agents. ***FY 2018 Plans:*** Continue the discovery and advancement of non-traditional, as well as traditional, strategies to diversify approaches to identify lead therapeutic candidates against bacterial infection. Continue evaluation of FDA approved and mid to late stage therapeutics for activity against wildtype and multi-drug resistant (MDR) Francisella tularensis, Bacillus anthracis, Yersinia pestis, and	9.389	9.775	10.933

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Burkholderia species. Continue to evaluate reformulation and/or targeted delivery approaches to enhance efficacy of poorly performing or failed drug candidates. ***FY 2019 Plans:*** Continue the discovery and advancement of novel, non-traditional, as well as traditional, strategies to diversify approaches to identify lead therapeutic candidates against bacterial infection. Continue evaluation of FDA approved and mid to late stage therapeutics for activity against wild-type and multi-drug resistant (MDR) Francisella tularensis, Bacillus anthracis, Yersinia pestis, and Burkholderia species. Complete evaluation of reformulation and/or targeted delivery approaches to enhance efficacy of poorly performing or failed drug candidates. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Title: 9) Toxin Therapeutics ***Description:*** Identify, optimize and evaluate therapeutic candidates that are effective against biological toxin agents. ***FY 2018 Plans:*** Perform safety (Good Laboratory Practice-GLP) studies with one SMI; select candidates for IND submission of one SMI and IGF-1 for treatment post BoNT A intoxication. ***FY 2019 Plans:*** Develop single domain monoclonal antibody in small animal studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	0.894	1.000	0.156
Title: 10) Pretreatments, Nerve Agents ***Description:*** Develop pretreatments and prophylactics that provide protection against chemical warfare agents, including organophosphorus nerve agents (OPNA), such as stoichiometric and catalytic scavengers and other entities that rapidly bind and detoxify a broad spectrum of agents. ***FY 2018 Plans:*** Continue efforts developing prophylactic medical countermeasures including bioscavengers. Continue efforts developing prophylactic and pretreatment medical countermeasures, including bioscavengers. Initiate development of animal models for	1.958	0.593	0.549

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
operationally relevant exposures to better support development of pretreatment and prophylactic MCMs and MCM concepts of use including post-exposure pre-symptomatic applications. ***FY 2019 Plans:*** Continue efforts developing prophylactic and pretreatment medical countermeasures. Continue development of animal models for operationally relevant exposures to better support development of pretreatment and prophylactic MCMs and MCM concepts of use including post-exposure pre-symptomatic applications. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 11) Chemical Therapeutics ***Description:*** Focuses on therapeutic strategies to effectively minimize injuries resulting from exposure to CWAs. This effort involves the development of neuroprotectants, anticonvulsants, improved therapies for enzyme reactivation, and investigation of alternate pathways leading to treatment. This effort also includes discovery and development of therapeutic strategies to treat dermal, ocular and respiratory injuries of CWAs. Efforts in this area are 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. ***FY 2018 Plans:*** Continue synthesizing and screening broad spectrum reactivators. Continue testing of BBB penetration. Continue developing computational capabilities using molecular dynamics to predict compound ability to penetrate the BBB. Continue exploring alternate modes of drug encapsulation for delivery across the BBB. Continue development of animal models for operationally relevant threat agent exposure and medical countermeasure efficacy. ***FY 2019 Plans:*** Continue supporting 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 BBB). Continue supporting development and screening for broad spectrum cholinesterase reactivators that work in the brain. Continue development of animal models for operationally relevant threat agent exposure and medical countermeasure efficacy. Initiate efforts to develop therapeutic medical countermeasures to decrease or ameliorate the effects of mustard ocular injury. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	13.664	12.445	10.512
Title: 12) Medical Diagnostics	-	-	13.150

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Description: Make medical diagnostics ubiquitous and comprehensive against chemical and biological threats (including NTAs, pharmaceutical-based agents, and toxins) by advancing diagnostic innovations; investigating emerging technologies; ensuring medical diagnostics rapid adaptation to emerging threats; harvesting and synergizing the immense volume of diagnostic data; and aligning medical diagnostics capabilities with the FDA pipeline and larger commercial supply chain. This effort will be realigned in FY19 from TM2 (Techbase Med Defense) Chemical Diagnostics, TM2 (Techbase Med Defense) Diagnostic Assays, and TM2 (Techbase Med Defense) Next Generation Diagnostics. ***FY 2019 Plans:*** Continue the development of a diagnostic platform to diagnose chemical exposure at the point-of-care. 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 and/or agent biomarkers. Continue assay development for extremely difficult to detect/diagnose intracellular pathogens of severe acute systemic febrile illnesses. Initiate efforts to exploit gene-editing systems for development of robust diagnostic platforms with reduced cold-chain needs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Accomplishments/Planned Programs Subtotals	73.096	73.212	70.960

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• TM3: *TECHBASE MED DEFENSE (ATD)*	88.629	92.846	88.188	-	88.188	93.271	104.285	103.753	97.215	Continuing	Continuing
• MB4: *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*	58.800	83.999	73.090	-	73.090	35.432	26.460	13.317	6.506	Continuing	Continuing
• MC4: *MEDICAL CHEMICAL DEFENSE (ACD&P)*	4.816	5.165	2.790	-	2.790	4.675	3.975	7.098	7.098	Continuing	Continuing
• MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	92.313	136.553	107.815	-	107.815	141.385	170.160	154.262	153.288	Continuing	Continuing
• MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	51.903	47.388	62.092	-	62.092	38.576	40.607	31.746	25.740	Continuing	Continuing
• MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603384BP / *CHEMICAL/BIOLOGICAL DEFENSE (ATD)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	130.033	145.359	142.826	-	142.826	150.168	167.402	167.679	161.133	Continuing	Continuing
CB3: *CHEMICAL BIOLOGICAL DEFENSE (ATD)*	-	18.584	18.093	21.698	-	21.698	21.675	21.735	21.740	21.737	Continuing	Continuing
NT3: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)*	-	16.055	23.655	22.749	-	22.749	24.219	30.349	31.155	31.150	Continuing	Continuing
TM3: *TECHBASE MED DEFENSE (ATD)*	-	88.629	92.846	88.188	-	88.188	93.271	104.285	103.753	97.215	Continuing	Continuing
TT3: *TECHBASE TECHNOLOGY TRANSITION*	-	6.765	10.765	10.191	-	10.191	11.003	11.033	11.031	11.031	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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603384BP / *CHEMICAL/BIOLOGICAL DEFENSE (ATD)*

One function of the CBDP S&T Advanced Technology Development budget is to preserve critical core competencies in the DoD Service laboratories which includes: United States Army Edgewood Chemical Biological Center (ECBC), United States Army Medical Research Institute of Infectious Diseases (USAMRIID), United States Army Medical Research Institute of Chemical Defense (USAMRICD), United States Army Natick Soldier Systems Center, Naval Research Lab (NRL), Air Force Research Lab (AFRL), among others. The intent is to maintain strategic partnerships with the DoD Service communities for mission success across the enterprise through collaborative planning and programming maintaining budget assurance.

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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	127.941	145.359	141.728	-	141.728
Current President's Budget	130.033	145.359	142.826	-	142.826
Total Adjustments	2.092	0.000	1.098	-	1.098
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	5.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-1.099	-			
• SBIR/STTR Transfer	-1.809	-			
• Other Adjustments	0.000	-	1.098	-	1.098

Change Summary Explanation

Funding: FY17 (+$5.000M): Congressional add to Medical Biological Pretreatments (TM3).
FY17 (-$1.099M): Program reprogrammings to support high priority CBDP efforts to include Advanced Development and Manufacturing Antibody Technologies.
FY17 (-$1.809M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$0.902M): Application of revised inflation guidance.
FY19 (+$2.000M): Program adjustments to balance overall portfolio efforts.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CB3: *CHEMICAL BIOLOGICAL DEFENSE (ATD)*	-	18.584	18.093	21.698	-	21.698	21.675	21.735	21.740	21.737	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, protection/ hazard mitigation and detection. 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. Protection/hazard mitigation works to provide technologies that protect from and reduce the impact of both chemical and biological threats and hazards to the Warfighter, weapons platforms, and structures. Detection strives to develop technologies for point and standoff detection and identification of both chemical and biological agents.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) Expeditionary Collective Protection	0.497	0.722	0.106
Description: Develop new technologies for soldiers to determine the remaining chemical vapor service life of their chemical warfare agent (CWA) filters. ***FY 2018 Plans:*** Continue filter bed research to investigate how and if various formulation constituents affect coating chemistry and morphology in filter bed. Continue integration and surveillance of Guard Bed and RLI systems. ***FY 2019 Plans:*** Continue from FY18 CB3 (Chemical Biological Defense)/Expeditionary Collective Protection integration and surveillance of Guard Bed filters and RLI. Continue to pull satellite cartridges and the primary ColPro filter (M98) filters for surveillance testing and assessment. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.			
Title: 2) Material Contamination Mitigation	2.347	1.696	1.912
Description: Develop highly effective non-traditional or novel decontamination technologies that integrate with current procedures and support non-material improvements of the overall decontamination effort. ***FY 2018 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Complete agent resistant coatings effort and transition to the Air Force Item manager. Continue to optimize the decontamination parameters for the hot air biological decontamination effort to address sensitive equipment, platform interior, and aircraft decontamination needs. Continue and develop the laboratory scale test to optimize decontamination parameters for the chemical hot air decontamination effort to address sensitive equipment, platform interior, and aircraft chemical warfare agent decontaminant needs. Continue to optimize parameters for responsive and resistant coatings efforts to enhance decontaminability as part of the systems approach to achieving efficacy goals. Continue Wide Area Decontamination of Bacillus anthracis projects, which focus on maturing the biological spore decontamination in a broadened set of outdoor terrains and materials. ***FY 2019 Plans:*** Complete and transition sorbent decontaminant formulation effort to advanced development for tactical decontamination, complete vapor and complex surface efficacy performance evaluations and technical demonstration to support relevant data development to transition at TRL6. Continue coatings optimization utilizing new chemical agent resistance method to reduce chemical absorption. Continue Wide Area Decontamination of Bacillus anthracis projects, focusing on varied subscale testing environments. Continue to optimize the decontamination parameters for the hot air biological decontamination effort, including the introduction of germinates to address sensitive equipment, platform interior, and aircraft decontamination needs and reduce the time and logistical burden associated with the process. Continue chemical hot air decontamination effort including the insertion of aerosolized decontaminants to reduce the time and logistical requirements associated with addressing sensitive equipment, platform interior, and aircraft chemical warfare agent decontaminant needs in a relevant environment. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.			
Title: 3) Percutaneous Protection ***Description:*** Develop advanced ensemble prototypes with state-of-the art materials that address the full spectrum of threats and provide a range of solutions optimized for protection, thermal comfort, and mission performance. The FY18 Percutaneous Protection efforts are expected to continue for 2 years. ***FY 2018 Plans:*** Continue development of Level A/B All Hazards ensembles. Develop and scale up novel materials for protection, emerging SCBA technologies, and novel rebreather technologies. Continue to develop biofeedback parameters for enhanced cooling systems. Initiate the development of biocidal fabrics for personal protection in warfighter ensembles. Continued materials development for multifunctional materials with focus on additional materials development and completing performance evaluations. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.384	0.687	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Decrease due to fact of life change in the program/project.			
Title: 4) Respiratory and Ocular Protection ***Description:*** Develop novel filtration media that are lighter weight and lower burden while capable of protecting against a broader range of challenges that includes toxic industrial chemicals (TICs). ***FY 2018 Plans:*** Continue to develop new add-on technologies for SCBA and hybrid system respirators. Continue to demonstrate performance envelop of existing air purification technologies towards emerging threats. Continue to develop nano-structured porous materials for air purification. ***FY 2019 Plans:*** Continue to acquire and assemble Closed Circuit Self Contained Breathing Apparatus (CC-SCBA) subsystems into a hybrid technology prototype system. Build and test Full-Spectrum Respiratory Protection System (FSRPS) prototypes that include all sensors and control technology solutions. Continue to scale up nano-structured porous materials for air purification. Continue to conduct performance evaluation and demonstration of FSRPS prototypes. Continue to assess novel filtration materials against new emerging threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	2.031	1.136	1.975
Title: 5) 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. This effort will be realigned in FY19 to CB3 (Chemical Biological Defense) Threat Surveillance. ***FY 2018 Plans:*** Complete biosurveillance capabilities aimed at analyzing and facilitating sharing of sequence data, predicting areas of disease reemergence, and visualizing pathogen dynamics in support of the Global Biosurveillance Portal. Initiate the development of analytic applications to acquire, synthesize and interrogate multiple sources of data (open source information, medical diagnostic	2.286	2.532	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
devices, wearable technology, environmental sensors, unmanned platforms and genomic sequences) to provide high confidence in the prediction and early warning of chemical or biological events. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 6) Detection ***Description:*** Advance and mature technologies and capabilities to detect and identify chemical and biological threats to the point of transitioning to customers for advanced development. This activity can include development of point, remote, or standoff sensors as appropriate, to address both chemical and biological threats. These efforts develop transitionable detection capabilities for early warning of contamination exposure to the warfighter. ***FY 2018 Plans:*** Complete the development of genomic sequencing based platforms protocols for comprehensive identification and characterization for field forward capabilities. ***FY 2019 Plans:*** Complete the development of sample preparation techniques to enhance environmental detection platforms. Continue the development of proteomic detection capabilities, to include expansion into the methodologies to detect novel threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	3.935	3.235	6.122
Title: 7) Hazard Prediction ***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 toxic industrial materials. ***FY 2018 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. Initiate littoral validation studies for next phase of waterborne transport models. ***FY 2019 Plans:*** Continue performance optimization and high fidelity enhancements for transport and dispersion models, particularly for urban environments. Continue configuration management of science and technology prototype for transition of upgraded capabilities to	2.750	3.551	5.782

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Joint Effects Model (JEM). Continue upgrading science and technology prototype to Common CBRN Modeling Interface (CCMI) architecture. Complete validation and verification (V&V) studies for high fidelity source term algorithms. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 8) Data Analysis ***Description:*** Develop CBRN 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. ***FY 2018 Plans:*** Continue to provide CBRN defense community access to CB-1. ***FY 2019 Plans:*** Complete the digitization effort at the United Stated Army Heritage and Education Center and make the digitized documents accessible through CB-1s online portal. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	0.240	0.029	0.103
Title: 9) 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 Chemical Biological Radiological and Nuclear (CBRN) incidents on decision-making. Focus areas include consequence management, population modeling, and knowledge management. ***FY 2018 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 settings. Complete verification and validation of Joint Expeditionary Collective Protection System Performance model and initiate transition of these efforts to the Joint Expeditionary Collective Protection (JECP) program. ***FY 2019 Plans:***	4.114	4.505	2.027

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue Decontamination and Individual Protection SPM integration and advanced development. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 10) Threat Surveillance ***Description:*** Integrate disparate military and civilian datasets, investigate methodologies to appropriately integrate open source data into advanced chemical and biological threat warning systems, tactical decision aids, and leverage and enhance advanced epidemiological models and algorithms for disease prediction, forecasting, impact and biological threat assessment. This effort will be realigned in FY19 from CB3 (Chemical Biological Defense) Biosurveillance and TM3 (Techbase Med Defense) Biosurveillance. ***FY 2019 Plans:*** Identify sources for pathogen data and develop tools to mine data sources (PubMed, Google Books, online journals) to create a comprehensive human, animal, and plant pathogen database. Link pathogen database to disease ontologies and develop the capability for automatic pathogen updates from newly published data. Enhance the Biosurveillance Ecosystem (BSVE) framework to support the rapid integration of multiple data sources, tools, algorithms, and services that support chemical and biological defense. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	3.671
Accomplishments/Planned Programs Subtotals	18.584	18.093	21.698

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	49.313	29.211	35.094	-	35.094	27.908	20.208	16.131	17.518	Continuing	Continuing
• DE4: *DECONTAMINATION SYSTEMS (ACD&P)*	0.500	9.900	7.477	-	7.477	6.281	9.374	9.539	19.240	Continuing	Continuing
• IS4: *INFORMATION SYSTEMS (ACD&P)*	4.989	5.941	0.854	-	0.854	0.291	0.075	0.071	0.068	Continuing	Continuing
• TE4: *TEST & EVALUATION (ACD&P)*	11.747	9.157	6.581	-	6.581	5.170	5.165	3.549	3.549	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
NT3: *TECHBASE NON-TRADITIONAL AGENTS DEFENSE (ATD)*	-	16.055	23.655	22.749	-	22.749	24.219	30.349	31.155	31.150	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 2017	FY 2018	FY 2019
Title: 1) Expeditionary Collective Protection ***Description:*** Develop new technologies for soldiers to determine the remaining chemical vapor service life of their CWA filters.	0.200	-	-
Title: 2) Material Contamination Mitigation ***Description:*** Develop highly effective non-traditional or novel decontamination technologies that integrate with current procedures and support non-material improvements of the overall decontamination effort. ***FY 2018 Plans:*** Continue development and optimization of the full range of NTAs into the material contamination mitigation portfolio. Integrate NTA testing into hot air decontamination effort to address sensitive equipment, platform interior, and aircraft NTA decontaminant needs. Continue responsive coatings development and optimization to enhance NTA decontaminability as part of the systems approach to achieving efficacy goals. Continue optimization efforts to develop/enhance NTA mapping (disclosure/assurance) technologies. ***FY 2019 Plans:*** Continue responsive coatings optimization against emerging threats under relevant environmental conditions and identifying potential battlefield interferants. Continue development and optimization of the full range of NTAs, including other emerging threats into the material contamination mitigation portfolio under relevant environmental conditions. Continue to integrate NTA	0.400	1.115	0.128

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
testing into hot air decontamination effort to address sensitive equipment, platform interior, and aircraft NTA decontaminant needs in a relevant environment and identifying potential battlefield interferants. Continue optimization efforts to develop/enhance NTA mapping (disclosure/assurance) technologies in simulated relevant environments. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.			
Title: 3) Personnel Contamination Mitigation ***Description:*** Develop new technologies to mitigate 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. ***FY 2018 Plans:*** Transition technology data developed by efforts to develop an alternative to RSDL, including efficacy data against representative NTAs and continue effort to develop a new personnel contamination mitigation formulation (decontaminant). Initiate personnel decontamination efforts to enhance current processes and support mass casualty personnel decontamination warfighter operations, including homeland defense mission, including efficacy data against representative NTAs. ***FY 2019 Plans:*** Continue personnel decontamination efforts to enhance current processes including efficacy data against representative NTAs and emerging threats in relevant environments and identifying battlefield interferants. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	0.300	0.807	0.354
Title: 4) Respiratory and Ocular Protection ***Description:*** Development and analysis of design alternatives for chemical and biological air-purifying respirators that provide enhanced protection with lower physiological burden and improved interface with mission equipment. ***FY 2018 Plans:*** Continue to develop closed circuit SCBA and novel respirator technologies against NTA challenges. ***FY 2019 Plans:*** Continue to acquire and assemble CC-SCBA subsystems into a hybrid technology prototype system. Build and test FSRPS prototypes that include all sensors and control technology solutions. Continue to scale up nano-structured porous materials for	0.350	0.357	1.811

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
air purification. Continue to conduct performance evaluation and demonstration of FSRPS prototypes. Continue to assess novel filtration materials against new emerging threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.			
Title: 5) Pretreatments - Medical ***Description:*** Develop pretreatments and prophylactics that provide protection against NTAs and emerging chemical threats. Prophylactic scavengers should rapidly detoxify a broad spectrum of compounds of interest (COIs). ***FY 2018 Plans:*** Initiate preclinical studies for adeno associated virus expressed BuChE. Continue to explore whether organophosphorus nerve agents (OPNA) scavengers administered as a post-exposure therapy (either pre- and/or post-symptomatic) affords desired protection. Continue efforts to determine whether co-administration of standard therapy, in conjunction with OPNA scavengers, is substantially more effective after onset of signs of intoxication. ***FY 2019 Plans:*** Initiate studies to support clinical development of prophylaxis for selected NTAs if warranted based upon data from FY18 proof-of-concept studies. Continue efforts to develop two organophosphorus nerve agents (OPNA) scavenger enzymes to meet requirements of a prophylactic medical countermeasure. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.842	5.164	5.043
Title: 6) Therapeutics - Medical ***Description:*** Efforts in this area advance the understanding of mechanisms of action for NTAs and emerging chemical threats by probable routes of field exposure and seek to refine effectiveness of therapeutics to advance therapeutic development. Physiological parameters and pathological assessments will be used to establish the general mode and mechanisms of toxicity required for therapeutic development. ***FY 2018 Plans:*** Continue to enable technologies to deliver therapeutics to the brain. Continue evaluating novel therapeutics using high-throughput in vitro screens. Continue lead optimization on novel therapeutic compounds. Continue validating animal models for use in NTA exposure studies. ***FY 2019 Plans:***	1.053	3.175	3.118

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue investigating technologies to deliver therapeutics to the brain. Continue evaluating novel therapeutics using high-throughput in vitro screens. Continue optimization on novel therapeutic compounds. Continue validating animal models for use in NTA exposure studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) Detection ***Description:*** Detection Non-Traditional Agents (NTA): Focuses on technologies to provide NTA detection capabilities. ***FY 2018 Plans:*** Continue the advanced development and rapid prototyping of chemical sensors for persistent sensing and chemical reconnaissance applications. Complete and transition the developed low-cost chemical detection capability utilized for identification of liquid threats. ***FY 2019 Plans:*** Complete the advanced development and rapid prototyping of chemical sensors for persistent sensing and chemical reconnaissance applications. Complete the development of a man worn environmental sensor for detecting exposure to chemical hazards. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	10.153	11.840	11.283
Title: 8) Modeling & Simulation ***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. ***FY 2018 Plans:*** Continue system performance model integration and development for program-wide exploitation for decontamination. ***FY 2019 Plans:*** Continue system performance model integration and development for program-wide exploitation for decontamination. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.208	0.238	0.236

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 9) Percutaneous Protection ***Description:*** Develop advanced ensemble prototypes with state-of-the art materials that address the full spectrum of threats and provide a range of solutions optimized for protection, thermal comfort, and mission performance. The FY18 NT3 Percutaneous Protection efforts are expected to continue for 2 years. ***FY 2018 Plans:*** Initiate evaluation of multifunctional systems for protection in relevant configurations at scale. Continue integration, engineering, and scaling of CB relevant multifunctional materials and garment configurations. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	0.855	0.157	-
Title: 10) Test & Evaluation ***Description:*** Develop test and evaluation technologies and processes in support of NTA activities. ***FY 2018 Plans:*** Continue rapid prototyping and evaluation of chemical detection platforms. ***FY 2019 Plans:*** Complete the rapid prototyping and evaluation of chemical detection platforms, specifically addressing vapor passive sensing, identification of liquid chemical threats, and the detection of solids. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.694	0.802	0.776
Accomplishments/Planned Programs Subtotals	16.055	23.655	22.749

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	49.313	29.211	35.094	-	35.094	27.908	20.208	16.131	17.518	Continuing	Continuing
• DE4: *DECONTAMINATION SYSTEMS (ACD&P)*	0.500	9.900	7.477	-	7.477	6.281	9.374	9.539	19.240	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• IP4: *INDIVIDUAL PROTECTION (ACD&P)*	4.517	5.145	4.000	-	4.000	2.000	2.000	3.000	0.000	0.000	20.662
• MC4: *MEDICAL CHEMICAL DEFENSE (ACD&P)*	4.816	5.165	2.790	-	2.790	4.675	3.975	7.098	7.098	Continuing	Continuing
• TE4: *TEST & EVALUATION (ACD&P)*	11.747	9.157	6.581	-	6.581	5.170	5.165	3.549	3.549	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
TM3: *TECHBASE MED DEFENSE (ATD)*	-	88.629	92.846	88.188	-	88.188	93.271	104.285	103.753	97.215	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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) Assays and Reagents	16.099	25.878	-
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. This effort will be realigned in FY19 to TM3 (Techbase Med Defense) Medical Diagnostics.			
FY 2018 Plans: Continue efforts and studies on host response biomarker classifiers. Continue the development and production of thermostable reagents. Continue the development of assays and technologies for biological and chemical 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 (biomedical) informatics. Continue evaluating optimization and enhancement of updated bioinformatics platform in the field including efforts in the ROK. Initiate investigations to maturate chemical and/or NTA diagnostic assays for use in forward field settings or at point-of-need. Initiate efforts to integrate or converge platform technologies to detect antimicrobial resistance/multidrug resistant (AMR/ MDR) microbes at the single molecular level. Initiate incorporation of stability and pre-clinical studies for diagnostic assays in development to further support pre-EUA submissions.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Program/project funding transferred to another funding line.			
Title: 2) Bacterial Therapeutics ***Description:*** Identify, optimize and evaluate potential therapeutic compounds effective against bacterial threat agents. ***FY 2018 Plans:*** Initiate multiple efforts to advance candidate therapeutics, with a focus on non-traditional candidates, through preclinical evaluation toward IND and phase I clinical studies. Establish optimal dosing regimen of novel orally-delivered therapeutic in models of B. pseudomallei infection. Continue strategy to engage industry in the development of therapeutics for BWA indications through the evaluation of late development and/or FDA approved compounds for efficacy in pivotal Good Laboratory Practices Non-Human Primate (GLP NHP) models against aerosolized challenge of Yersinia pestis, Bacillus anthracis, or Francisella tularensis in support of submission of a supplemental New Drug Application (sNDA) under the Animal Rule. ***FY 2019 Plans:*** Continue multiple efforts to advance candidate therapeutics, with a focus on non-traditional candidates, through preclinical evaluation toward IND and phase I clinical studies. Complete optimization of dosing regimen and formulation of a novel orally-delivered therapeutic in models of B. pseudomallei infection. Continue strategy to engage industry in the development of therapeutics for Biowarfare agent indications through the evaluation of late development and/or FDA approved compounds for efficacy in pivotal Good Laboratory Practices Non-Human Primate (GLP NHP) models against aerosolized challenge of Yersinia pestis, Bacillus anthracis, or Francisella tularensis in support of submission of a supplemental New Drug Application (sNDA) under the Animal Rule. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	10.913	19.386	21.286
Title: 3) Bacterial/Toxin Vaccines ***Description:*** Evaluate the best single agent bacterial and toxin vaccines and pretreatments for effectiveness against aerosol challenge in large animal models. ***FY 2018 Plans:*** Complete initial T cell and B cell antigen discovery for Q Fever vaccine design and testing. Continue evaluation of live attenuated Tularemia vaccine candidates. Evaluate efficacy of mucosal delivery of ricin monoclonal antibody against ricin toxin in relevant animal model. Evaluate efficacy of next generation anthrax vaccine in combination with Protective-antigen (PA)-based vaccine in relevant animal models. Identify mechanism of immunity of next generation anthrax vaccine. Continue evaluation and manufacturing development of Burkholderia Outer Membrane Vesicle (OMV) vaccine. Complete botulinum toxin mAb	15.378	17.724	17.891

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
manufacturing development and release assay development. Manufacture product for clinical trials. Initiate new manufacturing and formulation studies and continue IND enabling preclinical animal modeling and GLP safety evaluation of bot mAb's. ***FY 2019 Plans:*** Complete validation of T cell and B cell epitopes and antigens for Q Fever vaccine design and testing. Complete down-selection of live attenuated Tularemia vaccine candidates for advancement into manufacturing and clinical development. Continue manufacturing development and investigative new drug (IND) enabling studies of Outer Membrane Vesicle (OMV) and other lead Burkholderia candidates based on results in animal models. Continue development of human monoclonal antibodies to ricin toxin selected from vaccinated volunteers. Continue evaluation of efficacy and conjugate production and formulation of capsule conjugate anthrax vaccine in combination with Protective-antigen (PA)-based vaccine. Define correlate of immunity of next generation CPS conjugate anthrax vaccine. Continue evaluation and manufacturing development of Burkholderia OMV vaccine. Continue animal-rule efficacy studies of multivalent monoclonal antibody cocktail for protection against A and B serotypes of botulinum neurotoxin in relevant animal models. Complete botulinum toxin mAb manufacturing and formulation development and release assay qualification and validation including reference standards. Complete botulinum toxin mAb manufacture and prepare IND. Initiate formulation development and efficacy studies of pentavalent mAb product against botulinum intoxication targeting serotypes ABCDE. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 4) 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. This effort will be realigned in FY19 to CB3 (Chemical Biological Defense) Threat Surveillance. ***FY 2018 Plans:*** Devices will continue to be tested at the OCONUS sites and data will be submitted to the BSVE and DTRA for analysis. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	4.552	4.326	-
Title: 5) Diagnostic Device Platforms	17.130	8.482	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
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. This effort will be realigned in FY19 to TM3 (Techbase Med Defense) Medical Diagnostics. ***FY 2018 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. Continue genomic-based and proteomic-based comprehensive identification and characterization platform development for field forward capabilities. Continue high sensitivity immunoassay and protein detection platforms for clinical samples. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 6) Neurologic Therapeutics ***Description:*** Focuses on therapeutic strategies to effectively minimize neurologic injuries resulting from exposure to CWA. This effort involves the development of neuroprotectants, anticonvulsants, and improved therapies for brain enzyme reactivation. Supports eventual FDA licensure of new compounds or to identify licensed products for use in the treatment of chemical warfare casualties. ***FY 2018 Plans:*** Continue optimizing real-time microdialysis system. Continue using proof-of-concept in vivo experiments to measure neuroprotective effects of known and novel compounds. Continue maintaining the ADMET CoE to ensure capability for development and supporting regulatory science to facilitate FDA licensure of chemical therapeutics. ***FY 2019 Plans:*** Employ optimized real-time microdialysis system to support therapeutic candidate analysis and development. Continue using proof-of-concept in vivo experiments to measure neuroprotective effects of known and novel compounds. Continue maintaining the ADMET CoE to ensure capability for development and supporting regulatory science to facilitate FDA licensure of chemical therapeutics. Initiate advanced development of lead therapeutic candidates. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	0.350	0.397	1.884
Title: 7) Vaccine Platforms and Research Tools	7.610	2.948	2.976

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
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 2018 Plans:*** Continue identification of bio-physiologic markers of alphavirus infection in NHPs. Continue development of OMV and nanoparticle vaccine platforms targeting Burkholderia and Francisella. Initiate development of native conformation membrane protein expression and presentation system. Select Venezuelan equine encephalitis virus (VEEV) and Eastern equine encephalitis virus (EEEV) formulations for advancement to next round of clinical studies. ***FY 2019 Plans:*** Continue development of methods for evaluation of non-lethal symptomology and biomarkers of alphavirus infection in NHPs. Continue development of OMV and nanoparticle vaccine platforms targeting Burkholderia, Francisella and Yersinia. Continue development of native conformation membrane protein expression and presentation system. Continue advancement of manufacturing and formulation for Venezuelan equine encephalitis virus (VEEV) and Eastern equine encephalitis virus (EEEV) for entry to clinical studies. Continue IND enabling studies with new formulation and delivery method for VEEV, EEV and WEEV vaccine. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 8) Viral Therapeutics ***Description:*** Identify, optimize and evaluate potential therapeutic candidates effective against designated viral threat agents. ***FY 2018 Plans:*** Initiate small molecule and monoclonal antibody selection and evaluation in large NHP models for pan-ebola/ pan-filovirus and alphaviral therapeutic applications. Test efficacy of hemofiltration for treatment of cytokine-induced shock from filoviral infection. Continue monoclonal antibody development for broad spectrum capabilities. ***FY 2019 Plans:*** Continue small molecule and monoclonal antibody selection and evaluation in NHP models for pan-ebola/pan-filovirus and alphaviral therapeutic applications. Continue monoclonal antibody development for broad spectrum capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	11.097	7.495	5.350

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Decrease due to fact of life change in the program/project.			
Title: 9) Viral Vaccines	5.500	6.210	6.269
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. ***FY 2018 Plans:*** Continue manufacturing and formulation development for Alphavirus (WEVEE) vaccines. Continue assay development for Western, Eastern, and Venezuelan Equine Encephalitis Virus vaccines. Finalize manufacturing and assay development for vesicular stomatitis virus (VSV) trivalent Filovirus vaccine. Continue nonclinical and clinical safety development of trivalent filovirus vaccine covering Zaire Ebolavirus, Sudan Ebolavirus and Marburg Marburgvirus. Finalize animal model validation for filovirus vaccine licensure. ***FY 2019 Plans:*** Continue manufacturing and formulation development and initiate efficacy and safety studies for advanced Alphavirus (WEVEE) vaccines. Continue manufacturing and assay development for vesicular stomatitis virus (VSV) trivalent Filovirus vaccine with new manufacturer. Complete licensure development of Zaire ebolavirus vaccine. Continue development of an rVSV vaccine for Marburgvirus. Advance correlate of immunity validation for filovirus vaccines. Begin evaluation of candidate vaccines against arenavirus infection. Evaluate ability of candidates to elicit sterilizing immunity in the mucosa. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 10) Medical Diagnostics	-	-	32.532
Description: Make medical diagnostics ubiquitous and comprehensive against chemical and biological threats (including NTAs, pharmaceutical-based agents, and toxins) by advancing diagnostic innovations; investigating emerging technologies; ensuring medical diagnostics rapid adaptation to emerging threats; harvesting and synergizing the immense volume of diagnostic data; and aligning medical diagnostics capabilities with the Food and Drug Administration (FDA) pipeline and larger commercial supply chain. This effort will be realigned in FY19 from TM3 (Techbase Med Defense) Assays and Reagents and TM3 (Techbase Med Defense) Diagnostic Device Platforms. ***FY 2019 Plans:*** Complete high sensitivity immunoassay and protein detection platforms for clinical samples. Continue the development of assays and technologies for biological and chemical 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			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
pathogen discovery and/or detection in clinical samples. Complete efforts and studies on host response biomarker classifiers (viral versus bacterial). Continue the development of a chemical diagnostic platform to diagnose exposure to chemical agents for use in forward field settings or at the point-of-need. Continue incorporation of stability and pre-clinical studies for diagnostic assays in development to further support FDA pre-Emergency Use Authorization submissions. Initiate independent verification of sequencing protocols. Continue incorporation of stability and pre-clinical studies for diagnostic assays in development to further support pre-Emergency Use Authorization (EUA) submissions. Continue multi-echelon diagnostic testing and assessments of novel point of need medical diagnostics in low resource settings and austere environments. Initiate efforts to integrate or converge platform technologies to detect antimicrobial resistance/multidrug resistance. Initiate the investigation for designing biomarker verification/validation methods and activities. Initiate efforts to investigate the use of machine learning to develop diagnostic assays and/or predict assay erosion.			
FY 2018 to FY 2019 Increase/Decrease Statement: Program/project funding transferred from another funding line.			
Accomplishments/Planned Programs Subtotals	88.629	92.846	88.188

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• MB4: *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*	58.800	83.999	73.090	-	73.090	35.432	26.460	13.317	6.506	Continuing	Continuing
• MC4: *MEDICAL CHEMICAL DEFENSE (ACD&P)*	4.816	5.165	2.790	-	2.790	4.675	3.975	7.098	7.098	Continuing	Continuing
• MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	92.313	136.553	107.815	-	107.815	141.385	170.160	154.262	153.288	Continuing	Continuing
• MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	51.903	47.388	62.092	-	62.092	38.576	40.607	31.746	25.740	Continuing	Continuing
• MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / *CHEMICAL/BIOLOGICAL DEFENSE (ATD)*	Project (Number/Name) TT3 / *TECHBASE TECHNOLOGY TRANSITION*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
TT3: *TECHBASE TECHNOLOGY TRANSITION*	-	6.765	10.765	10.191	-	10.191	11.003	11.033	11.031	11.031	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project TT3 validates high-risk/high-payoff technologies, concepts-of-operations, and a Joint Combat Developer 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 2017	FY 2018	FY 2019
Title: 1) Experiment & Technology Demonstrations	6.765	10.765	10.191
Description: Project TT3 validates high-risk/high-payoff technologies and concepts-of-operations through the use of the Advanced Technology Demonstration (ATD), Rapid Military Utility Assessment (RMUA) processes and Demonstration Concept Development and Experimentation on initiative. Advanced Technology Demonstrations (ATDs) are Chemical Biological Defense Program (CBDP) efforts designed to demonstrate the maturity and potential of advanced technologies across the Sense/Shape/Shield/Sustain spectrum for enhanced military operational capability or cost effectiveness. The RMUA is a formal development and experimentation process with the Maneuver Support Center of Excellence (MSCOE) and the Joint Combat Developer that enables both material and non-material solutions through the identification and integration of innovative CB technologies. These new capabilities are demonstrated via an agile, short-timeline (6-12 month) to enable transition of mature technologies to Advanced Component Development and Prototype programs. The Demonstration Concept Development and Experimentation effort validates technology requirements and scopes future ATD programs with Warfighter stakeholders, including Combat Developers and Service representatives. This project addresses enterprise priority areas of Early Warning and Integrated & Layered Defense.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Initiate situational understanding at the tactical level for the comprehensive early warning ATD. Continue S&T integration activities for CB sensor technologies onto mobile platforms as part of the second phase of the comprehensive early warning ATD. Begin integration of wearable sensors as Phase 3 of the comprehensive early warning ATD. Continue transition activities with JPEO early warning ECD. Continue to conduct rapid military utility assessments and field experiments to assess early technology capability contributions, in collaboration with the CBDP Joint Combat Developer. Initiate Warfighter Integration activities through baseline demonstrations and assessments in support of Integrated & Layered Defense. ***FY 2019 Plans:*** Continue situational understanding at the tactical level and initiate situational understanding at the operational level for the comprehensive IEW ATD. Continue S&T integration activities for CB sensor technologies onto mobile platforms as part of the second phase of the comprehensive early warning ATD. Demonstrate integration of wearable sensors as part of the comprehensive early warning ATD. Demonstrate prototype end-to-end early warning capability at an OCONUS area of responsibility. Continue transition activities with advanced development and associated JPM program efforts supporting the CBDP IEW focus area. Continue to conduct RMUAs and field experiments to assess early technology capability contributions, in collaboration with the CBDP Joint Combat Developer. Continue Demonstration Concept Development and Experimentation activities in support of Early Warning and Integrated & Layered Defense. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	6.765	10.765	10.191

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 2019 Chemical and Biological Defense Program	Date: February 2018
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)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	134.682	148.518	129.886	-	129.886	81.757	67.257	52.705	53.979	Continuing	Continuing
CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	-	49.313	29.211	35.094	-	35.094	27.908	20.208	16.131	17.518	Continuing	Continuing
DE4: *DECONTAMINATION SYSTEMS (ACD&P)*	-	0.500	9.900	7.477	-	7.477	6.281	9.374	9.539	19.240	Continuing	Continuing
IP4: *INDIVIDUAL PROTECTION (ACD&P)*	-	4.517	5.145	4.000	-	4.000	2.000	2.000	3.000	0.000	0.000	20.662
IS4: *INFORMATION SYSTEMS (ACD&P)*	-	4.989	5.941	0.854	-	0.854	0.291	0.075	0.071	0.068	Continuing	Continuing
MB4: *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*	-	58.800	83.999	73.090	-	73.090	35.432	26.460	13.317	6.506	Continuing	Continuing
MC4: *MEDICAL CHEMICAL DEFENSE (ACD&P)*	-	4.816	5.165	2.790	-	2.790	4.675	3.975	7.098	7.098	Continuing	Continuing
TE4: *TEST & EVALUATION (ACD&P)*	-	11.747	9.157	6.581	-	6.581	5.170	5.165	3.549	3.549	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

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 emphasizes 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 chemical and 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 (DHHS) 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 DoD'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 (CBRN) Defense systems.

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

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	138.187	148.518	103.731	-	103.731
Current President's Budget	134.682	148.518	129.886	-	129.886
Total Adjustments	-3.505	0.000	26.155	-	26.155
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.686	-			
• SBIR/STTR Transfer	-2.819	-			
• Other Adjustments	0.000	-	26.155	-	26.155

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
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 (-$0.686M): Funding reprogrammed to BA5 to support critical program efforts in that BA.
FY17 (-$2.819M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (+$26.155M): Adjustments to continue advanced development efforts seeking FDA approval for MCMs against priority biological threats from Plague, Botulinum, and Filoviruses. Continue efforts to develop diagnostics for unmet biological threats, chemical and radiological exposures, and to provide capability to lower echelons of care.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	-	49.313	29.211	35.094	-	35.094	27.908	20.208	16.131	17.518	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Contamination Avoidance 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, Concept of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTPs). Individual efforts are: (1) CBRN Sensor Integration on Robotics Platforms (C-SIRP), (2) Enhanced Capability Demonstration (ECD) Integrated Early Warning (IEW), (3) Enhanced Capability Demonstration (ECD) Joint Chemical Biological Radiological Nuclear Advanced Capability Sets (JCACS), (4) Manned Mounted Platform Radiological Detection System, (5) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA), (6) Wearable Chemical Agent Detector (WCAD) (formerly NGCD 4), (7) Biosurveillance (BSV), (8) Chemical Biological Radiological Nuclear, Dismounted Reconnaissance Sets 2 (CBRN DRS 2), (9) Next Generation Chemical Detector (NGCD), transitions to Aerosol-Vapor Chemical Agent Detector (AVCAD) (formerly NGCD 1), Proximate Chemical Agent Detector (PCAD) (formerly NGCD 2), Multiphase Chemical Agent Detector (MPCAD) (formerly NGCD 3), and WCAD (formerly NGCD 4), and (10) Non-Traditional Agent (NTA) Defense.

The CBRN Sensor Integration on Robotic Platforms (C-SIRP) is a new start in FY19 that will focus on modular CBRN sensor solutions to enhance Unmanned Air Systems (UAS)/Unmanned Ground Systems (UGS) programs of record (PORs) with capabilities to provide situational awareness across multiple echelons of command in order to enable freedom of maneuver and action on the battlefield. C-SIRP will emphasize integration of commercial off the shelf (COTS) and government off the shelf (GOTS) CBRN sensors for identified unmanned platforms PORs within Program Executive Office Aviation (PEO-AVN) and Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS).

The Enhanced Capability Demonstration Integrated Early Warning (ECD IEW) will integrate advanced technologies and currently fielded capabilities to provide equipment capability sets and situational understanding decision tools to protect against and mitigate CBRN effects when operating in a contaminated environment. The Joint Force requires tactical, enhanced, and integrated Chemical Biological Radiological and Nuclear (CBRN) detection, protection, contamination mitigation, contamination characterization, situational awareness, and hazard understanding early warning capability and decision tools to provide operational commanders time and space to mitigate Weapons of Mass Destruction (WMD) effects. ECD IEW will demonstrate these capabilities by enabling Joint operators to locate, track, identify, characterize, sample, digitally report, protect against, and mitigate CBRN threats by merging situational awareness to create understanding during all phases of operations.

The Joint Force requires enhanced and integrated Chemical Biological Radiological Nuclear (CBRN) protection, contamination mitigation, contamination characterization, and situational awareness capability sets to mitigate the effects of Weapons of Mass Destruction (WMD). The Enhanced Capability Demonstration (ECD) Joint Chemical Biological Radiological Nuclear Advanced Capability Sets (JCACS) is a new start in FY18 that will demonstrate these capabilities by enabling Joint

operators to locate, identify, characterize, sample, digitally report, protect against, and mitigate CBRN threats. The ECD JCACS will integrate advanced technologies to provide capability sets of equipment and situational awareness tools to protect against and mitigate the effects of contamination during WMD interdiction and site characterization missions.

The Mounted Manned Platform Radiological Detection System (MMPRDS) provides ruggedized, networkable detectors with a wide operating range of detection, including prompt neutron/gamma, for integration into vehicles, fixed sites, and ships. It replaces the obsolescent UDR-13 and AN/VDR-2 for mounted operations, providing warning and situational awareness for crews and personnel, and enables mounted RN surveillance and reconnaissance for platforms such as the NBCRV.

The Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA) as a FY18 new start is a ticket based sensor to provide chemical detection and identification capability to the Warfighter. ROSETTA provides improved hazard detection sensitivity, increases the number of chemicals detected and lowers false alarm rate with an array of reactive colorimetric dyes printed on a detector ticket. The ROSETTA program will complete the development and testing of the new detector ticket to update the currently fielded M256A2 kit. The M256A2 technical data package will be updated with an engineering change proposal (ECP) to create a new M256A3 kit.

The Wearable Chemical Agent Detector (WCAD), (formerly NGCD 4), is a wearable CWA, NTA, and TIC vapor detector. This detector will improve detection, consequence management and reconnaissance, and weapons of mass destruction interdiction capabilities to protect general forces.

Biosurveillance (BSV) programs provide 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 eleven requirements documents and through Combatant Commander (COCOM) identified needs. BSV supports Joint US Forces Korea (USFK) Portal and Integrated Threat recognition (JUPITR) ATD, and JUONS CC-0557 which find, demonstrate, transition, and transfer the best operational concepts and technology solutions in support of a holistic approach to countering CB threats from the laboratory to operational use and theater confirmation of a CB 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 CB 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 global-BSP, Next Generation Diagnostic System (NGDS), Joint Biological Tactical Detection System (JBTDS) and CALS. JUPITR system serves as the baseline configuration for ECD IEW. Systems used in Operational Demonstration will be left behind with a two year sustainment plan for continuing use. Live agent test of AED units support the Joint Project Manager for Nuclear Biological Chemical Contamination Avoidance business case analysis for maritime and fixed site Point Biological Detection.

The CBRN Dismounted Reconnaissance System (CBRN DRS) supports Dismounted Reconnaissance, Surveillance, and CBRN Sensitive Site Assessment missions which enables more detailed and near real-time CBRN information flow for the Warfighter. The CBRN DRS Inc 2 will provide additional capability (beyond what

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

is in CBRN DRS 1) to the follow-on technical forces to conduct more in-depth dismounted CBRN reconnaissance, sensitive site assessment, characterization of WMD/hazardous materials, events, or accidents, and sensitive site exploitation/elimination. CBRN DRS Inc 2 will provide more sensitive and reliable detection and identification of CBRN threats, enhanced personal protective equipment (PPE) for longer duration missions, and increased situation awareness through networked communications of the hazard. The CBRN DRS Inc 2 configurations will be tailored to meet individual Service mission tasks.

The Next Generation Chemical Detector (NGCD) consists of several detection systems for vapor and aerosol monitoring (NGCD1), locating of liquid and solids on surfaces (NGCD 2), sampling of multiple phases of matter (NGCD 3), and initial assessment of wearable chemical vapor detection technology (NGCD 4). NGCD will detect and identify non-traditional agents, chemical warfare agents (CWA), 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. The scope of the project includes detection of chemicals a few feet away from the detector as well as at the sampling point of the detector. Additional tasks will ruggedize and test a system for nontraditional agent detection for special purpose units. The NGCD program divides into separate programs starting in FY19: Aerosol & Vapor Chemical Agent Detector (AVCAD) formerly NGCD 1, Proximate Chemical Agent Detector (PCAD) formerly NGCD 2, Multi-Phase Chemical Agent Detector (MPCAD) formerly NGCD 3, and Wearable Chemical Agent Detector (WCAD) formerly NGCD 4.

The NTA Defense program supports chemical and biological (CB) defense acquisition programs throughout entire acquisition process to address emerging threat , including investigating pharmaceutical based threats requirements across the full spectrum of commodities. Dedicated initiatives and projects transition information, technologies, and capabilities into acquisition options/efforts (Programs of Record, Enhanced Capability Demonstrations (ECD), 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 provides essential enablers such as threat understanding; operational impacts of performance trades; and comprehensive, integrated, and defense in depth concepts against emerging threats. The program supports the JPEO portfolio which targets capabilities to reduce operational and tactical risk from technology gaps inherent from emerging threats.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) NGCD Test ***Description:*** Test Events for NGCD 1, 2, and 3	5.791	-	-
Title: 2) NGCD ***Description:*** NGCD 1 - Smiths Detection Contract	0.393	-	-
Title: 3) NGCD ***Description:*** NGCD 1 - Signature Science Contract	0.247	-	-
Title: 4) NGCD ***Description:*** NGCD 1 - Chemring Chemhound Contract	0.257	-	-
Title: 5) NGCD	1.782	-	-

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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)** CA4 / *CONTAMINATION AVOIDANCE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: NGCD 2 - Chemring Trace Contamination Surface Detector Contract			
Title: 6) NGCD ***Description:*** NGCD 2 - FLIR/NOMADICS Contract	1.976	-	-
Title: 7) NGCD ***Description:*** NGCD 2 - ChemImage Contract	0.551	-	-
Title: 8) NGCD ***Description:*** NGCD 3 - Bruker Contract	0.898	-	-
Title: 9) NGCD ***Description:*** NGCD 3 - Chemring MARS Contract	0.858	-	-
Title: 10) NGCD ***Description:*** NGCD 3 - Battelle Contract	1.612	-	-
Title: 11) NGCD ***Description:*** Management Services for NGCD 1, 2, 3 and 4 ***FY 2018 Plans:*** Continue Government and contracted Integrated Product Development Team, program management, systems engineering and IPT support (NGCD 4 only; transition NGCD 1-3 to BA5). FY 18-22 POM was first year to break out capabilities ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	8.322	1.037	-
Title: 12) NGCD 4 Wearable Technology Assessment ***Description:*** Initiate assessment of the current state of wearable detector technology to transition technology from S&T.	3.459	-	-
Title: 13) NGCD 3 ***Description:*** MRI Global Contract - Testing of revised NGCD 3 System.	1.689	-	-
Title: 14) NGCD Support for Joint CBRN Advanced Capability Sets (JCACS)	3.935	-	-

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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)** CA4 / *CONTAMINATION AVOIDANCE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Procurement of technologies and integration, test preparation and initiation, and System Engineering Support. Transitions to ECD JCACS funding line in FY18.			
Title: 15) NGCD - Urgent Support for Counter ISIL ***Description:*** Evaluate integration of CBRN sensors for counter ISIL.	4.795	-	-
Title: 16) CBRN Sensors for Robotics Platforms - JCACS ECD ***Description:*** Initiate modeling studies for unmanned CBRN missions and CBRN sensor integration. Support COCOM CBRN robotics tasks.	0.400	-	-
Title: 17) Wearable Chemical Agent Detector (WCAD) ***Description:*** Wearable Chemical Agent Detector (WCAD) Program Management ***FY 2019 Plans:*** Continue from NGCD 4 Government and contracted Integrated Product Development team, program management, systems engineering and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.738
Title: 18) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - Biological Identification Capability Sets (BICS). ***FY 2019 Plans:*** Develop and train for BICS under the BSV USFK JUPITR ATD in support of Camp Humphreys. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	0.116	-	0.879
Title: 19) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - Assessment of Environmental Detectors (AED). ***FY 2019 Plans:***	0.957	-	1.472

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Develop and train for AED under the BSV USFK JUPITR ATD in support of Camp Humphreys. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Title: 20) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - Early Warning (EW). ***FY 2019 Plans:*** Develop and train for EW under the BSV USFK JUPITR ATD in support of Camp Humphreys. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	3.381	-	2.458
Title: 21) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - Biosurveillance Portal (BSP). ***FY 2019 Plans:*** Develop and train for BSP under the BSV USFK JUPITR ATD in support of Camp Humphreys. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	0.164	-	0.591
Title: 22) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - residual capability and operational demonstration test support. ***FY 2018 Plans:*** Continue to provide residual capability (through contractor logistics support) and operational demonstration test support for AED, EW, BSP and BICS for Busan Pier 8 JUPITR ATD. Complete Camp Humphreys JUPITR system deployment. ***FY 2019 Plans:*** Continue to provide residual capability (through contractor logistics support) and operational demonstration test support for AED, EW, BSP and BICS for Busan Pier 8 JUPITR ATD. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	3.500	8.768	3.500

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Decrease due to change in program/project technical parameters.			
Title: 23) BSV ***Description:*** Biosurveillance Joint United Forces Korea Portal and Integrated Threat Reduction (JUPITR) Advanced Technology Demonstration (ATD) - ATD efforts. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	0.538	-	1.240
Title: 24) C-SIRP ***Description:*** Integration of CBRN sensor payloads on identified unmanned air and ground platform programs of record, and provide sensor data for integrated early warning remote sensing and decision support requirements. ***FY 2019 Plans:*** Initiate integration efforts for unmanned ground and air platforms, complete mission modeling efforts. Initiate size, weight, and power trade studies for sensor integration. Purchase developmental test articles. Complete unmanned technology demonstration. Provide support to test events requiring robotic platforms, support IEW remote sensing data requirements, and provide program management support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is new start effort in FY 2019.	-	-	5.000
Title: 25) CBRN DRS Inc 2 ***Description:*** Provide requirements analysis and market assessment in support of CBRN Dismounted Reconnaissance Set, Kits, and Outfits Increment 2. Funds will be used to assist capability developers in scoping requirements, decompose requirements into specifications, assess the commercial market, identify changes in commercial products required to meet the required capability needs, and procure and test candidates as required. ***FY 2018 Plans:*** Initiate Engineering Design Testing (EDT), and complete Preliminary Design Review (PDR). ***FY 2019 Plans:***	-	0.985	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Assess potential materiel solutions to meet requirement capabilities, and continue to provide program management support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.			
Title: 26) ECD IEW ***Description:*** Early Warning capability integration for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2018 Plans:*** Initiate Early Warning capability integration for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2019 Plans:*** Continue Early Warning capability integration for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	-	3.098	4.775
Title: 27) ECD IEW ***Description:*** Early Warning capability RDT&E test article procurement and assessment for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2018 Plans:*** Initiate Early Warning capability RDT&E test article procurement and assessment for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2019 Plans:*** Continue Early Warning capability RDT&E test article procurement and assessment for remote CBRN and Non-CBRN sensors, robotic platforms, unattended sensors, and decision support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	-	2.500	1.500
Title: 28) JCACS ECD ***Description:*** The JCACS ECD will identify solutions for CBRN dismounted reconnaissance/ sensitive assessment mission capability gaps. Commodity areas include protection, contamination mitigation, characterization and situational awareness.	-	9.433	9.146

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
The demonstration will acquire one or more candidate solutions and perform technical and operational testing on the candidate equipment. Equipment meeting required performance thresholds may be provided to warfighters for extended evaluations. ***FY 2018 Plans:*** Purchase test articles, initiate tests and test preparation on the equipment list, support residual materiel. ***FY 2019 Plans:*** Identify a final equipment set. Finalize technical testing. Perform new equipment training and conduct an operational demonstration. For equipment meeting the required performance thresholds, provide to the warfighter for an extended demonstration. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 29) MMPRDS - Program Management ***Description:*** Provide Program Management Support. ***FY 2018 Plans:*** Initiate Government program management and Integrated Product Team (IPT) support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	0.177	-
Title: 30) MMPRDS - System Engineering ***Description:*** Provide system engineering support to the MMPRDS program. ***FY 2018 Plans:*** Provide system engineering support for the program. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	0.219	-
Title: 31) NTA Defense ***Description:*** Technology Assessments ***FY 2018 Plans:***	0.167	1.657	0.590

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
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. Continue characterization testing to meet current and anticipated capability needs of JPEO programs of record. Leveraging of previous investment in Design of Experiment and detection algorithms to support program testing and risk reduction. ***FY 2019 Plans:*** Continue to identify commercial off the shelf and maturing technologies, perform characterization testing against current and anticipated capability needs, including pharmaceutical based threats for JPEO programs of record. Leveraging of previous investment in Design of Experiment and detection algorithms to support program testing and risk reduction. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 32) NTA Defense ***Description:*** Threat Understanding/ECD Front End Analysis ***FY 2019 Plans:*** Initiate the study of operational threat presentation, explore the technology for anticipated program capability requirements, and targeted S&T investment to enable future programs. Assist programs of records identify and update testing methodology and support evaluations of materiel solutions against advanced threats, including pharmaceutical based threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.476	-	0.650
Title: 33) NTA Defense Program Management ***Description:*** NTA Defense ***FY 2019 Plans:*** Continue Government Integrated Product Team program management, systems engineering, and IPT Support to all JPEO programs and external partners. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	0.990	-	1.010
Title: 34) NTA Defense support for Threat Agent Characterization ***Description:*** The International Novel Threat Agent Characterization Trials project consists of laboratory and field experiments to characterize the properties of emerging chemical threats.	1.449	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Title: 35) NTA Defense ***Description:*** Systems Engineering ***FY 2018 Plans:*** Conduct mission modeling and incorporate emerging technology to refine advanced threat investment strategies. ***FY 2019 Plans:*** Continue to conduct engineering, modeling and simulation of emerging technology to address the advanced and pharma based threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.436	0.472	0.450
Title: 36) NTA Defense ***Description:*** Strategic Coordination ***FY 2018 Plans:*** Initiate transition to CB-1 Effects Manual Update and maintain NTA Library. ***FY 2019 Plans:*** Maintain and update NTA Library for use by the Joint Services, DoD and other governmental partners. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.174	0.370	0.100
Title: 37) ROSETTA ***Description:*** Provide system engineering design. ***FY 2018 Plans:*** Initiate development of colorimetric sensor. ***FY 2019 Plans:*** Continue development of colorimetric sensor.	-	0.350	0.350
Title: 38) ROSETTA ***Description:*** Management Services	-	0.145	0.145

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Initiate Government strategic planning, systems engineering, and program management. ***FY 2019 Plans:*** Continue Government strategic planning, systems engineering, and program management.			
Accomplishments/Planned Programs Subtotals	49.313	29.211	35.094

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CA5: *CONTAMINATION AVOIDANCE (EMD)*	66.654	127.499	145.653	-	145.653	91.812	48.108	35.941	42.465	Continuing	Continuing
• JF0100: *JOINT CHEMICAL AGENT DETECTOR (JCAD)*	7.547	4.253	3.500	-	3.500	0.000	0.000	0.000	0.000	0.000	15.300
• JX0300: *BIOSURVEILLANCE (BSV)*	2.600	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.600
• MC0100: *JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)*	7.451	0.500	0.000	-	0.000	0.000	0.000	7.655	5.741	Continuing	Continuing
• MC0101: *CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)*	90.445	94.424	91.081	-	91.081	59.972	45.924	44.072	46.674	Continuing	Continuing
• MX0001: *JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)*	0.000	0.000	0.000	-	0.000	46.724	68.825	75.502	81.656	Continuing	Continuing

Remarks

D. Acquisition Strategy

NEXT GENERATION CHEMICAL DETECTOR (NGCD)

BA4: NGCD used Full and Open competition to award TMRR contracts. In FY18 NGCD 4 awarded a wearable technology assessment (WTA) contract to provide brassboard and breadboard prototypes for Government evaluation.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

BA5: In FY18 NGCD 1, 2, and 3 will use for Full and Open competition to award EMD contracts with production options under the NGCD funding line. In FY19 the NGCD program divides into separate programs. These contracts will continue in FY19 under the separate programs, AVCAD, PCAD, MPCAD funding lines. U.S. Special Operations Command (USSOCOM) awarded a contract with production options for Special Purpose (SP) Sets, Kits and Outfits (SKO) and JCAD Chemical Explosive Detector (CED). The JCAD CED was initiated under NCGD effort to develop a modification kit for the JCAD to address NTA and threats of interests going to the SP SKO and Special Purpose Units (SPU).

WEARABLE CHEMICAL AGENT DETECTOR (WCAD)

Wearable Chemical Agent Detector (WCAD), (formerly NGCD 4), awarded a Wearable Technology Assessment (WTA) contract to provide brassboard and breadboard prototypes for Government evaluation.

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. These capabilities will transition as residuals from the Biosurveillance Joint United States Force Korea (USFK) Portal and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD). The JUPITR system 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, EMBD, NGDS, JBTDS & CALS).

CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (C-SIRP)

C-SIRP will utilize a rapid acquisition approach for the integration of CBRN capabilities to match the flexibility in needs of the unmanned platforms based on their operational modes summary/mission profiles (OMS/MPs). A rapid acquisition approach, along with a flexible integration standard, utilizing common interface standards for hardware and software will be critical in the rapid turnaround capabilities needed for this CBRN defense capability.

CBRN DISMOUNTED RECONNAISSANCE SYSTEMS

CA4 The Chemical Biological Radiological Dismounted Reconnaissance Systems (CBRN DRS) Inc 2 program will provide an Advanced Capabilities Set (ACS) for use by Joint Technical Forces in sensitive site assessment, exploitation and elimination missions in conjunction with their existing baseline CBRN DRS Inc1 system. The ACS will be comprised of Government (GOTS) and commercial off-the-shelf (COTS) equipment to the greatest extent possible. Requirements analysis will support Materiel Development Decision and provide guidance for the Analysis of Material Approaches (AoMA) to identify potential solutions. Efforts will culminate in an approved Capabilities Development Document and a Milestone B. Contracting efforts will be initiated under the Joint Enterprise Research, Development, Acquisition and Production contract mechanism. The contract will cover a base period of performance for development/integration with options for Low-Rate and Full Rate Production (FRP).

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

CA7 The Chemical Biological Radiological 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 a 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, well-managed acquisition program. CBRN DRS systems will be produced using a workshare approach between Organic assets and Contractor production facilities.

ENHANCED CAPABILITY DEMO INTEGRATED EARLY WARNING (ECD IEW)

The Enhanced Capability Demonstration Integrated Early Warning (ECD IEW) will conduct an analysis of alternatives and leverage the DTRA IEW ATD to procure developmental equipment for experimentation and demonstration to reduce risk and inform supporting materiel solutions, CONOPS TTPs, Non-CBRN sensors, and requirements to provide operational commanders time and space for freedom to maneuver and action. The ECD IEW will utilize Table Top Exercises (TTX), Operational Demonstrations, and other test events to provide cross commodity equipment sets evaluation leading to the operational deployment to a unit to be determined, with two years of sustainment, further requirements development, CBDP program of record insertion, and concepts of employment.

ENHANCED CAPABILITY DEMONSTRATION JOINT CBRNE ADV CAPABILITY SETS (ECD JCACS)

The Enhanced Capability Demonstration (ECD) Joint Chemical Biological Radiological Nuclear Advanced Capability Sets (JCACS) is an ECD that requires various equipment to be evaluated during User Feedback Events (UFE) and other test events. The acquisition strategy uses existing task-order contracts (including support contracts) and existing supply contracts from Programs of Record to acquire the equipment and technical support required for the effort. Additionally, JCACS will utilize other Government Agencies and Federally Funded Research and Development Centers to provide development, testing and technical support.

MOUNTED MANNED PLATFORM RADIOLOGICAL DETECTION SYSTEM (MMPRDS)

The Mounted Manned Platform Radiological Detection System (MMPRDS) leverages technology transitioning from the Defense Threat Reduction Agency-Nuclear Technologies (DTRA/NT) to expedite technology maturation. DTRA/NT-developed systems will provide component-level test data in support of Milestone B. In Engineering Manufacturing Development (EMD), MMPRDS exterior-mounted and interior-mounted vehicle sensors will be updated and delivered for use in joint evaluation with the NBCRV Sensor Suite Upgrade program, which will support Milestone C. Based on market research, available COTS solutions for interior-mounted vehicle sensors may result in further acquisition streamlining for a portion of the solution set.

NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)

The NTA Defense program initiatives transition information, technologies, and capabilities into existing and future acquisition programs (PORs, ECD/ACDs, and Accelerated Acquisition) and utilize a variety of contract mechanisms (full and open competition, existing task order contracts within DoD, and DLA).

REACTIVE CHEMISTRY ORTHOGONAL SURFACE AND ENVIRONMENTAL THREAT TICKET ARRAY (ROSETTA)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA) will use a streamlined acquisition strategy. This approach is based on technology that will transition from Science and Technology Efforts and industry. It will be developed using a Full and Open competition to award multiple development contracts. An Engineering Change Proposal (ECP) will be prepared to update the M256A2 kits to the new M256A3 kits. Full and Open Competition will also be used for the M256A3 Production Contract.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - HW S - JCACS	MIPR	Various : Various	0.000	2.369	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #1 (NGCD 1)	C/CPIF	Smiths Detection : Edgewood, MD	2.325	0.393	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #2 (NGCD 1)	C/CPIF	Signature Science : Austin, TX	10.493	0.247	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #3 (NGCD 1)	C/CPIF	Chemring Chemhound : Charlotte, NC	5.934	0.257	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #1 (NGCD 2)	C/CPIF	Chemring TCSD : Charlotte, NC	5.607	1.782	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #2 (NGCD 2)	C/CPIF	FLIR/Nomadics : Stillwater, OK	8.929	1.976	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #3 (NGCD 2)	C/CPIF	ChemImage : Pittsburgh, PA	8.450	0.551	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #1 (NGCD 3)	C/CPIF	Bruker Detection Corp. : Billerica, MA	5.362	0.898	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #2 (NGCD 3)	C/CPIF	Chemring MARS : Charlotte, NC	7.478	0.858	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype System Design #3 (NGCD 3)	C/CPIF	Battelle Memorial Institute : Columbus, OH	7.248	1.612	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 3 Prototype	C/CPIF	MRIGlobal : Kansas City, MO	0.000	1.689	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - WCAD WTA Assessment	C/CPIF	Battelle Memorial Institute : Aberdeen, MD	0.000	3.459	May 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
C-SIRP - HW C - Product Integration	MIPR	Various : Various	0.000	0.000		0.000		1.500	Dec 2018	-		1.500	Continuing	Continuing	0.000
ECD JCACS - HW C - Product Development	MIPR	Various : Various	0.000	0.000		4.770	Mar 2018	1.705	Mar 2019	-		1.705	Continuing	Continuing	0.000
NTA DEFENSE - HW S - International Novel Threat Agent Characterization Trials (INTACT)	C/CPFF	Various : Various	0.000	1.449	Apr 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Technology Assessments	MIPR	Various : Various	0.000	0.167	Mar 2017	1.246	Mar 2018	0.590	Dec 2018	-		0.590	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Strategic Coordination	MIPR	Various : Various	0.000	0.174	Mar 2017	0.257	Mar 2018	0.100	Dec 2018	-		0.100	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Systems Engineering	MIPR	Various : Various	0.000	0.436	Mar 2017	0.330	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - NHW S - Threat Understanding	MIPR	Various : Various	0.000	0.476	Mar 2017	0.000		0.650	Dec 2018	-		0.650	Continuing	Continuing	0.000
ROSETTA - HW S - Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.350	Feb 2018	0.350	Oct 2018	-		0.350	Continuing	Continuing	0.000
		Subtotal	61.826	18.793		6.953		4.895		-		4.895	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - ES S - Joint Service T&E/SE IPT	MIPR	Various : Various	4.051	1.391	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - TD/D C -BSP - JACCS/BSP integration development	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	3.798	0.251	Jan 2017	0.538	Jan 2018	0.892	Jan 2019	-		0.892	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSV - ES S - Assessment of Environmental Detectors	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	2.402	1.461	Jan 2017	1.745	Jan 2018	2.223	Jan 2019	-		2.223	Continuing	Continuing	0.000
BSV - TD/D C - Biological Identification Capability Sets sustainment assays	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	4.467	0.177	Nov 2016	0.856	Jan 2018	1.326	Jan 2019	-		1.326	Continuing	Continuing	0.000
BSV - ES S - Early Warning sustainment costs for software package	MIPR	Various : Various	2.368	5.161	Jan 2017	4.534	Jan 2018	3.709	Jan 2019	-		3.709	Continuing	Continuing	0.000
C-SIRP - ES C - Market Surveys	Various	Various : Various	0.000	0.000		0.000		0.565	Dec 2018	-		0.565	Continuing	Continuing	0.000
C-SIRP - ES C - Modeling and Simulation	Various	Various : Various	0.000	0.000		0.000		1.250	Dec 2018	-		1.250	Continuing	Continuing	0.000
CBRN DRS - ES C - Inc 2 Market Analysis	Various	Various : Various	0.000	0.000		0.000	Dec 2017	0.150	Dec 2018	-		0.150	Continuing	Continuing	0.000
ECD IEW - Acquisition, Integration and decision tool demonstration	C/CPFF	TBD : TBD	0.000	0.000		2.500	Jan 2018	2.175	Jan 2019	-		2.175	Continuing	Continuing	0.000
ECD IEW - System Integration	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.500	Jan 2018	1.000	Jan 2019	-		1.000	Continuing	Continuing	0.000
MMPRDS - ES C - Engineering Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.219	Oct 2017	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - ES C - OPETS Support	C/CPFF	Patricio Enterprises : Inc., Woodbridge, VA	0.000	0.149	Feb 2017	0.000		0.200	Feb 2019	-		0.200	Continuing	Continuing	0.000
		Subtotal	17.086	8.590		10.892		13.490		-		13.490	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - DTE S - JCACS	MIPR	Various : Various	0.000	0.473	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - Blind Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.780	4.000	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - OTHT SB - MIL-STD 810	MIPR	West Desert Test Center : Dugway, UT	0.000	0.400	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSV - DTE S - Developmental Testing, Operational Assessment, Busan Event	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	1.269	1.225	Jan 2017	0.000		0.750	Jan 2019	-		0.750	Continuing	Continuing	0.000
C-SIRP - DTE C - Developmental Testing	MIPR	Various : Various	0.000	0.000		0.000		0.750	Apr 2019	-		0.750	Continuing	Continuing	0.000
CBRN DRS - DTE - Inc 2 Test and Evaluation	MIPR	Various : Various	0.000	0.000		0.835	Nov 2017	0.300	Nov 2018	-		0.300	Continuing	Continuing	0.000
ECD IEW - IEW TTX & OP DEMOs	MIPR	Various : Various	0.000	0.000		1.000	Jan 2018	1.500	Jan 2019	-		1.500	Continuing	Continuing	0.000
ECD JCACS - DTE - Test and Evaluation	MIPR	Various : Various	0.000	0.000		3.100	Apr 2018	5.758	Apr 2019	-		5.758	Continuing	Continuing	0.000
		Subtotal	3.049	6.098		4.935		9.058		-		9.058	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - PM/MS C - C-SIRP Development	MIPR	Various : Various	0.000	0.400	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS S - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO,	25.182	8.322	Nov 2016	1.037	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
NGCD - PM/MS S - JCACS	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	1.093	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS S - Counter ISIL	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	4.795	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
WCAD - PM/MS S - Wearable Chemical Agent Detector (WCAD)	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.738	Dec 2018	-		0.738	Continuing	Continuing	0.000
BSV - PM/MS S - BMO Labor & Travel Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.504	0.306	Nov 2016	0.454	Jan 2018	0.735	Jan 2019	-		0.735	Continuing	Continuing	0.000
BSV - PM/MS S - ECBC ATD Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.641	0.075	Jan 2017	0.641	Jan 2018	0.505	Jan 2019	-		0.505	Continuing	Continuing	0.000
C-SIRP - PM/MS C - Program Management	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.935	Dec 2018	-		0.935	Continuing	Continuing	0.000
CBRN DRS - PM - Inc 2-PM/MS-Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.150	Dec 2017	0.050	Dec 2018	-		0.050	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ECD IEW - IEW - PM/ MS S - Labor and Travel Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.750	Jan 2018	0.500	Jan 2019	-		0.500	Continuing	Continuing	0.000
ECD IEW - IEW - PM/MS S - ECBC Matrix Govt labor	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.500	Jan 2018	0.750	Jan 2019	-		0.750	Continuing	Continuing	0.000
ECD IEW - IEW - PM/MS S - ECBC ECD Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.348	Jan 2018	0.350	Jan 2019	-		0.350	Continuing	Continuing	0.000
ECD JCACS - PM-Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		1.563	Dec 2017	1.683	Dec 2018	-		1.683	Continuing	Continuing	0.000
MMPRDS - PM/MS C - Program Management	MIPR	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.000		0.177	Oct 2017	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - PM/MS S - Program Management Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.841	Nov 2016	0.666	Dec 2017	1.260	Dec 2018	-		1.260	Continuing	Continuing	0.000
ROSETTA - PM/MS C - ROSETTA	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.145	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
ROSETTA - PM/MS C - ROSETTA #2	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO,	0.000	0.000		0.000		0.145	Oct 2018	-		0.145	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
		Subtotal	26.327	15.832		6.431		7.651		-		7.651	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	108.288	49.313		29.211		35.094		-		35.094	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

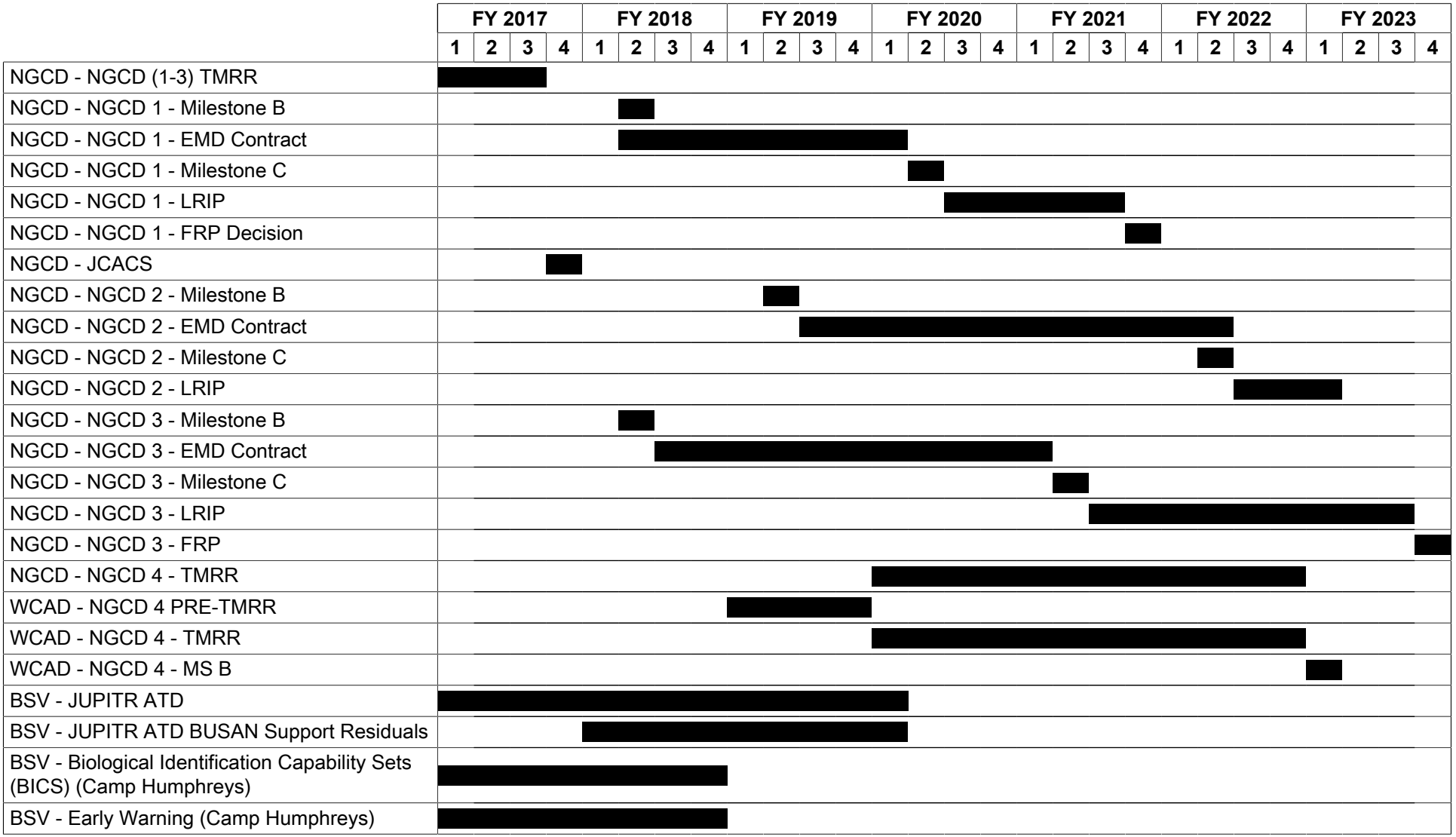

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** CA4 / *CONTAMINATION AVOIDANCE (ACD&P)*

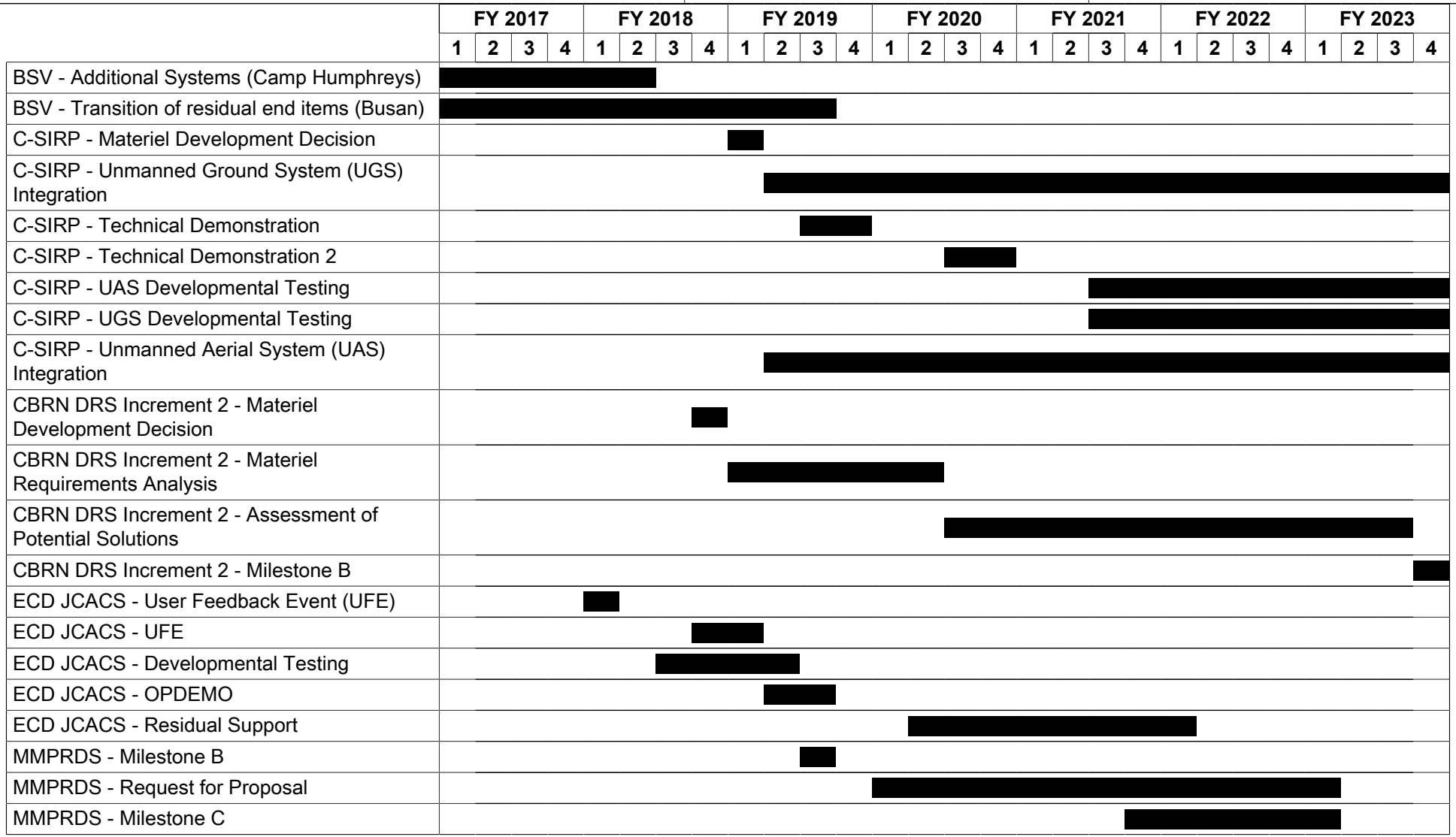

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** CA4 / *CONTAMINATION AVOIDANCE (ACD&P)*

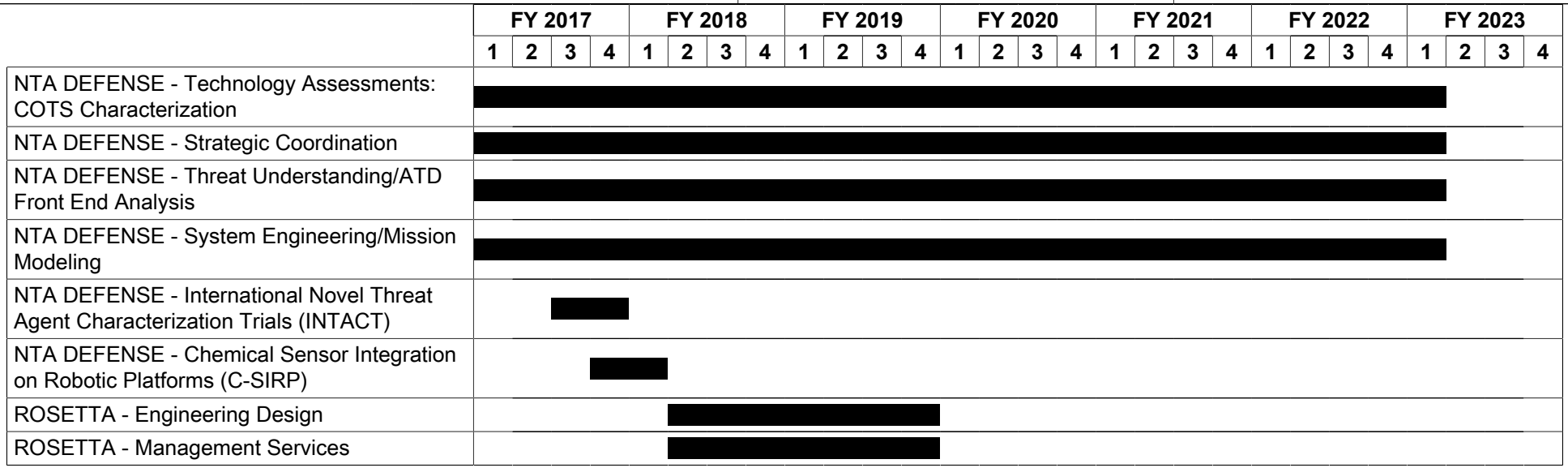

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** CA4 / *CONTAMINATION AVOIDANCE (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NGCD - NGCD (1-3) TMRR	1	2017	3	2017
NGCD - NGCD 1 - Milestone B	2	2018	2	2018
NGCD - NGCD 1 - EMD Contract	2	2018	1	2020
NGCD - NGCD 1 - Milestone C	2	2020	2	2020
NGCD - NGCD 1 - LRIP	3	2020	3	2021
NGCD - NGCD 1 - FRP Decision	4	2021	4	2021
NGCD - JCACS	4	2017	4	2017
NGCD - NGCD 2 - Milestone B	2	2019	2	2019
NGCD - NGCD 2 - EMD Contract	3	2019	2	2022
NGCD - NGCD 2 - Milestone C	2	2022	2	2022
NGCD - NGCD 2 - LRIP	3	2022	1	2023
NGCD - NGCD 3 - Milestone B	2	2018	2	2018
NGCD - NGCD 3 - EMD Contract	3	2018	1	2021
NGCD - NGCD 3 - Milestone C	2	2021	2	2021
NGCD - NGCD 3 - LRIP	3	2021	3	2023
NGCD - NGCD 3 - FRP	4	2023	4	2023
NGCD - NGCD 4 - TMRR	1	2020	4	2022
WCAD - NGCD 4 PRE-TMRR	1	2019	4	2019
WCAD - NGCD 4 - TMRR	1	2020	4	2022
WCAD - NGCD 4 - MS B	1	2023	1	2023
BSV - JUPITR ATD	1	2017	1	2020
BSV - JUPITR ATD BUSAN Support Residuals	1	2018	1	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BSV - Biological Identification Capability Sets (BICS) (Camp Humphreys)	1	2017	4	2018
BSV - Early Warning (Camp Humphreys)	1	2017	4	2018
BSV - Additional Systems (Camp Humphreys)	1	2017	2	2018
BSV - Transition of residual end items (Busan)	1	2017	3	2019
C-SIRP - Materiel Development Decision	1	2019	1	2019
C-SIRP - Unmanned Ground System (UGS) Integration	2	2019	4	2023
C-SIRP - Technical Demonstration	3	2019	4	2019
C-SIRP - Technical Demonstration 2	3	2020	4	2020
C-SIRP - UAS Developmental Testing	3	2021	4	2023
C-SIRP - UGS Developmental Testing	3	2021	4	2023
C-SIRP - Unmanned Aerial System (UAS) Integration	2	2019	4	2023
CBRN DRS Increment 2 - Materiel Development Decision	4	2018	4	2018
CBRN DRS Increment 2 - Materiel Requirements Analysis	1	2019	2	2020
CBRN DRS Increment 2 - Assessment of Potential Solutions	3	2020	3	2023
CBRN DRS Increment 2 - Milestone B	4	2023	4	2023
ECD JCACS - User Feedback Event (UFE)	1	2018	1	2018
ECD JCACS - UFE	4	2018	1	2019
ECD JCACS - Developmental Testing	3	2018	2	2019
ECD JCACS - OPDEMO	2	2019	3	2019
ECD JCACS - Residual Support	2	2020	1	2022
MMPRDS - Milestone B	3	2019	3	2019
MMPRDS - Request for Proposal	1	2020	1	2023
MMPRDS - Milestone C	4	2021	1	2023
NTA DEFENSE - Technology Assessments: COTS Characterization	1	2017	1	2023
NTA DEFENSE - Strategic Coordination	1	2017	1	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NTA DEFENSE - Threat Understanding/ATD Front End Analysis	1	2017	1	2023
NTA DEFENSE - System Engineering/Mission Modeling	1	2017	1	2023
NTA DEFENSE - International Novel Threat Agent Characterization Trials (INTACT)	3	2017	4	2017
NTA DEFENSE - Chemical Sensor Integration on Robotic Platforms (C-SIRP)	4	2017	1	2018
ROSETTA - Engineering Design	2	2018	4	2019
ROSETTA - Management Services	2	2018	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DE4: *DECONTAMINATION SYSTEMS (ACD&P)*	-	0.500	9.900	7.477	-	7.477	6.281	9.374	9.539	19.240	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) Tactical Disablement System (TACDS), and (3) Mass Personnel Decontamination (MPD).

The Contaminated Human Remains System (CHRS) Program is based on capability gaps identified within both the Contamination Mitigation Initial Capabilities Document (ICD), dated March 2011, and the Mortuary Affairs ICD, dated October 2008. The program consists of two capabilities that will allow for the mitigation of chemical, biological and radiological contaminants in order to safely repatriate DOD-affiliated personnel back to the United States for final interment. The 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 Remains Mitigation System (CRMS) to reduce the hazard to warfighters by decontaminating chemical, biological, or radiological contaminated human remains. CRMS was previously known as Contaminated Human Remains Decontamination System (CHRDS). The CHRT is a containment system that 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 CRMS 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 CRMS 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 TACDS will provide the tactical capability to disable (delay, disrupt, degrade) and / or defeat (destroy) small quantities of chemical warfare materials and biological warfare materials in bulk containers and munitions in an hostile operational environment. DoD's Countering Weapons of Mass Destruction (CWMD) Strategy enables early action through pathway defeat, shaping the environment to dissuade actors from pursuing WMD. The strategy also asserts the Department must respond effectively to WMD crises when called upon.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The Mass Personnel Decontamination (MPD) program is an FY19 new start intended to correct capability gaps identified within the Consequence Management Initial Capabilities Document. The program will develop an array of rugged and reliable best-of-breed hardware in a manageably sized, easy to erect, modular system that can be quickly tailored to different Mass Casualty events in order to support decontamination of both ambulatory and non-ambulatory patients.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) CHRS ***Description:*** Contaminated Human Remains Transfer Case (CHRT) Development and Support ***FY 2018 Plans:*** Award contract to CHRT vendor(s) to develop a solution to meet all packaging and transport requirements, conduct System Requirements Review, begin competitive prototyping, and continue product development for both program components. ***FY 2019 Plans:*** Complete Operational Test Agency Milestone Assessment Report (OMAR) and System Verification Review (SVR) in addition to preparations for Full Rate production for CHRT. All additional documentation will be completed to meet Milestone C and it is expected that an Option Award will be executed in order to meet FRP and provide the US Army with required quantities of systems in FY19 and FY20. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to accelerated development effort.	0.140	3.210	1.485
Title: 2) CHRS ***Description:*** Contaminated Remains Mitigation System (CRMS) Technology Development and Support ***FY 2018 Plans:*** Award contract to develop a solution to identify system integrator for CHRDS, conduct System Requirements Review, begin competive prototyping, and continue product development for both program components. ***FY 2019 Plans:*** Begin product development of Contaminated Remains Mitigation System (CRMS)reaching a MS A decision in 1QFY19. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to accelerated development effort.	0.360	4.215	1.973
Title: 3) TACDS ***FY 2018 Plans:*** Prepare Pre-Milestone A acquisition documents. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	-	0.701	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Program/project transitioned to Advanced Development.			
Title: 4) TACDS ***FY 2018 Plans:*** Develop lifecycle sustainment plan. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	0.825	-
Title: 5) TACDS ***FY 2018 Plans:*** Develop a Request for Proposal (RFP) and Statement of Work (SOW) for Technology Maturation and Risk Reduction (TMRR) contract. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	0.825	-
Title: 6) TACDS ***FY 2018 Plans:*** Provide System Engineering and Program Management. ***FY 2019 Plans:*** Provide System Engineering and Program Management. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	0.124	1.487
Title: 7) TACDS ***FY 2019 Plans:*** Collect and evaluate data (TDP & General). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	-	0.849
Title: 8) TACDS ***FY 2019 Plans:***	-	-	0.336

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Conduct system test & evaluation. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.			
Title: 9) TACDS ***FY 2019 Plans:*** Develop system prototypes. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	-	0.853
Title: 10) MPD ***Description:*** MPD Support for MS A ***FY 2019 Plans:*** Begin product development of MPD systems reaching a MS A decision in 1QFY19. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is new start effort in FY 2019.	-	-	0.494
Accomplishments/Planned Programs Subtotals	0.500	9.900	7.477

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• DE5: *DECONTAMINATION SYSTEMS (EMD)*	8.881	15.686	14.049	-	14.049	13.347	15.542	11.493	24.821	Continuing	Continuing
• JD0050: *DECONTAMINATION FAMILY OF SYSTEMS (DFoS)*	4.704	7.285	12.035	-	12.035	13.414	10.869	9.645	10.579	Continuing	Continuing
• JD0070: *JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)*	0.000	4.827	1.000	-	1.000	24.648	2.377	1.364	1.364	Continuing	Continuing

Remarks

D. Acquisition Strategy

CONTAMINATED HUMAN REMAINS SYSTEM (CHRS)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The Contaminated Human Remains System (CHRS) Program product development will consist of the design and prototyping of both a Contaminated Human Remains Transfer Case (CHRT) and a Contaminated Remains Mitigation System (CRMS). Existing efforts under a Joint Urgent Operational Needs Statement has allowed for the acceleration of the CHRT effort, and with additional minor design modifications, developmental and operational testing via two Firm Fixed Priced (FFP) contract awards with two vendors for prototyping and production units in 3QFY18 results in Milestone C decision in FY19, and a Full Rate Production in FY20. The CRMS effort plans for a Milestone A in FY19, and a (FFP) contract award for prototyping and production units in 1QFY20.

TACTICAL DISABLEMENT SYSTEM (TACDS)

(1) Utilizing mature technologies, the TACDS program will take an incremental approach towards the development, integration, test and production of a family of systems (FoS). Developmental efforts in the Technology Maturation and Risk Reduction Phase (TMRR) and the Engineering and Manufacturing Development Phase (EMD) will be contracted through full and open competition. Production and Deployment will also be competed through full and open competition.

MASS PERSONNEL DECON (MPD)

The Mass Personnel Decontamination (MPD) Program will seek a materiel solution to process DoD-affiliated personnel contaminated by chemical, biological, and radiological agents in order to achieve ambulatory and non-ambulatory throughput requirements as dictated by the needs of the Services. The program will develop the equipment, processes and procedures to allow for operational use by all DoD agencies with a competitive/sole source contract for prototyping and production units. Key developmental efforts will include the reduction of current Mass Casualty Decontamination (MCD) System sustainment costs by assessing existing MCD equipment and processes as well as new technology through the use of RFIs, Market Research Analyses and Technology Demonstrations. These efforts will additionally support the development of hazardous waste disposal and the potential integration with a Contaminated Human Remains capability.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - HW S - CHRT	C/FFP	TBD : TBD	0.000	0.000		1.696	Nov 2017	0.500	Dec 2018	-		0.500	Continuing	Continuing	0.000
CHRS - HW S - CRMS	C/FFP	TBD : TBD	0.000	0.000		2.700	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
TACDS - HW S - Prototype Development	C/CPIF	TBD : TBD	0.000	0.000		0.000		0.853	Nov 2018	-		0.853	Continuing	Continuing	0.000
		Subtotal	0.000	0.000		4.396		1.353		-		1.353	Continuing	Continuing	N/A

Remarks

Contaminated Remains Mitigation System (CRMS) previously known as Contaminated Human Remains Decontamination System (CHRDS)

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - TD/D S - IPT and Technical Support	MIPR	Various : Various	0.000	0.376	Jul 2017	1.460	Nov 2017	1.460	Nov 2018	-		1.460	Continuing	Continuing	0.000
TACDS - TD/D S - JPdL-CBD3 support costs	Various	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.849	Jan 2019	-		0.849	Continuing	Continuing	0.000
TACDS - TD/D S - Support Costs	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		2.351	Oct 2017	0.000		-		0.000	Continuing	Continuing	0.000
MPD - ES S - MPD IPT Support	MIPR	Various : Various	0.000	0.000		0.000		0.382	Nov 2018	-		0.382	Continuing	Continuing	0.000
		Subtotal	0.000	0.376		3.811		2.691		-		2.691	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - Developmental Testing - CHRT	Various	TBD : TBD	0.000	0.000		0.250	Feb 2018	0.213	Nov 2018	-		0.213	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - IPT Test Planning - CRMS	Various	TBD : TBD	0.000	0.000		0.000		0.500	Nov 2018	-		0.500	Continuing	Continuing	0.000
CHRS - Technology Demonstration - CRMS	Various	TBD : TBD	0.000	0.000		0.250	Jul 2018	0.000		-		0.000	Continuing	Continuing	0.000
TACDS - DTE C - Prototype Proof of Concept	MIPR	TBD : TBD	0.000	0.000		0.000		0.336	Feb 2019	-		0.336	Continuing	Continuing	0.000
		Subtotal	0.000	0.000		0.500		1.049		-		1.049	Continuing	Continuing	N/A

Remarks

Contaminated Remains Mitigation System (CRMS) previously known as Contaminated Human Remains Decontamination System (CHRDS)

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	0.000	0.124	Sep 2017	1.069	Nov 2017	0.785	Nov 2018	-		0.785	Continuing	Continuing	0.000
TACDS - PM/MS S - Management	MIPR	Various : Various	0.000	0.000		0.124	Oct 2017	1.487	Dec 2019	-		1.487	Continuing	Continuing	0.000
MPD - PM/MS S - Management and Technical Support	MIPR	Various : Various	0.000	0.000		0.000		0.112	Nov 2018	-		0.112	Continuing	Continuing	0.000
		Subtotal	0.000	0.124		1.193		2.384		-		2.384	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.500		9.900		7.477		-		7.477	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

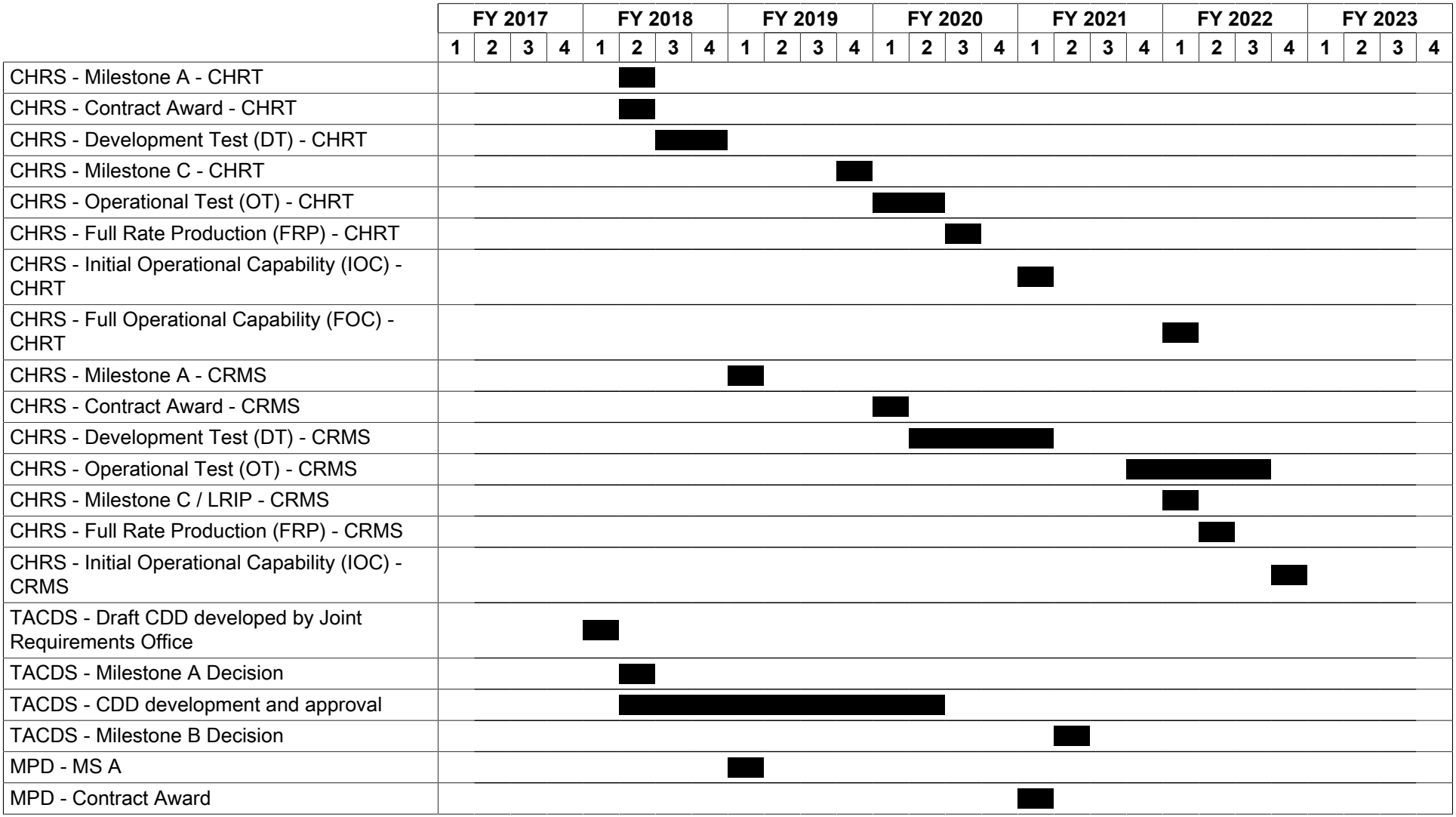

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** DE4 / *DECONTAMINATION SYSTEMS (ACD&P)*

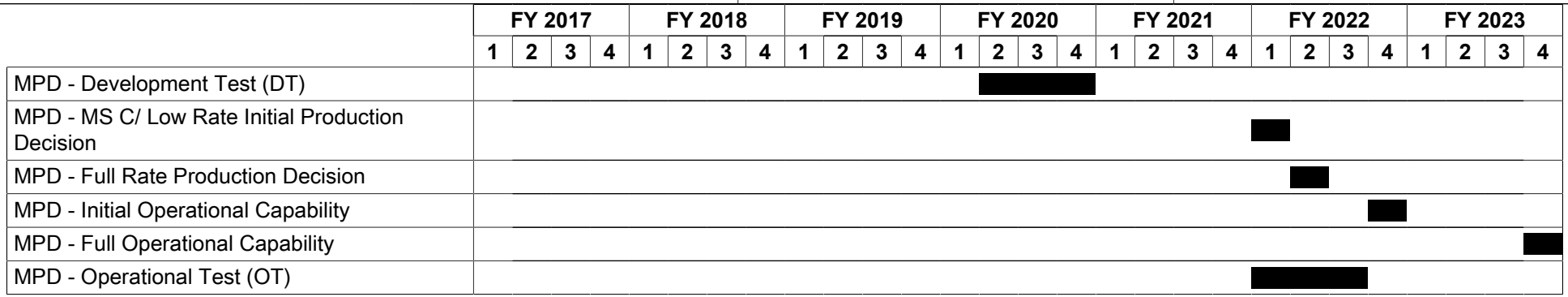

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** DE4 / *DECONTAMINATION SYSTEMS (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CHRS - Milestone A - CHRT	2	2018	2	2018
CHRS - Contract Award - CHRT	2	2018	2	2018
CHRS - Development Test (DT) - CHRT	3	2018	4	2018
CHRS - Milestone C - CHRT	4	2019	4	2019
CHRS - Operational Test (OT) - CHRT	1	2020	2	2020
CHRS - Full Rate Production (FRP) - CHRT	3	2020	3	2020
CHRS - Initial Operational Capability (IOC) - CHRT	1	2021	1	2021
CHRS - Full Operational Capability (FOC) - CHRT	1	2022	1	2022
CHRS - Milestone A - CRMS	1	2019	1	2019
CHRS - Contract Award - CRMS	1	2020	1	2020
CHRS - Development Test (DT) - CRMS	2	2020	1	2021
CHRS - Operational Test (OT) - CRMS	4	2021	3	2022
CHRS - Milestone C / LRIP - CRMS	1	2022	1	2022
CHRS - Full Rate Production (FRP) - CRMS	2	2022	2	2022
CHRS - Initial Operational Capability (IOC) - CRMS	4	2022	4	2022
TACDS - Draft CDD developed by Joint Requirements Office	1	2018	1	2018
TACDS - Milestone A Decision	2	2018	2	2018
TACDS - CDD development and approval	2	2018	2	2020
TACDS - Milestone B Decision	2	2021	2	2021
MPD - MS A	1	2019	1	2019
MPD - Contract Award	1	2021	1	2021
MPD - Development Test (DT)	2	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MPD - MS C/ Low Rate Initial Production Decision	1	2022	1	2022
MPD - Full Rate Production Decision	2	2022	2	2022
MPD - Initial Operational Capability	4	2022	4	2022
MPD - Full Operational Capability	4	2023	4	2023
MPD - Operational Test (OT)	1	2022	3	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
IP4: *INDIVIDUAL PROTECTION (ACD&P)*	-	4.517	5.145	4.000	-	4.000	2.000	2.000	3.000	0.000	0.000	20.662
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, Concept of Operations (CONOPS) and Tactics, Techniques, and Procedures (TTPs).

Efforts included in this project are: (1) the Uniform Integrated Protection Ensemble Increment 2 and the Uniform Integrated Protection Ensemble Family of Systems (UIPE FoS). In FY19, CBRN Uniform Integrated Protection Ensemble Increment 2 (UIPE 2) will transition to CBRN Uniform Integrated Protection Ensemble Family of Systems (UIPE FoS).

UIPE FoS will develop a family of systems that will provide the broad spectrum of users individual percutaneous protective equipment with the ability to operate in a contaminated environment with no or minimal degradation in performance. UIPE FoS will seek to address the broader scope of the UIPE Initial Capabilities Document (ICD), to include protection from operationally relevant traditional, non-traditional, and advanced chemical, biological, radiological, and nuclear/Toxic Industrial Material threats likely to be encountered during joint force operations.

The UIPE Increment 2 is being transitioned to UIPE FoS because the program will have more than one solution to meet the Warfighters needs. This is reflected not only in the name change but in the structure of the program. The program is designed to meet mission area needs, not individual Service needs. There are four Mission Areas: Land, Air, Sea, and Homeland Defense. Each of the Mission Areas has unique mission requirements that the UIPE FoS solutions will seek to fulfill.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) UIPE - Increment 2	3.235	5.145	-
Description: Concept Design Evaluation/Technology Maturation and Risk Reduction ***FY 2018 Plans:*** Initiate and complete Gated Material Test to determine capability solutions that will enter into the Design Phase. Activities scheduled in the Design Phase include: Perform Design Verification Testing, Review Prototype Designs, Detailed Design, and Design Lockdown. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 2) UIPE - Increment 2	1.282	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Develop Tactical Advanced Threat Protective Ensemble (TATPE)			
Title: 3) UIPE FoS	-	-	4.000
Description: Concept Design Evaluation/Technology Maturation and Risk Reduction ***FY 2019 Plans:*** Complete Design Phase activities. Manufacture prototypes for Gated system testing. Conduct early user testing. Update the Business Case Analysis (BCA). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Accomplishments/Planned Programs Subtotals	4.517	5.145	4.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• IP5: *INDIVIDUAL PROTECTION (EMD)*	13.580	14.481	9.953	-	9.953	5.471	4.709	6.556	6.770	Continuing	Continuing
• JI0002: *JS AIRCREW MASK (JSAM)*	33.423	36.782	54.775	-	54.775	60.278	63.806	63.110	44.478	Continuing	Continuing
• JI0003: *JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)*	65.374	48.493	16.927	-	16.927	18.166	0.000	0.000	0.000	0.000	148.960
• MA0401: *CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)*	16.025	10.990	13.064	-	13.064	13.820	12.424	13.805	8.906	Continuing	Continuing

Remarks

D. Acquisition Strategy

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)

The UIPE Increment 2 will use an evolutionary acquisition strategy to develop a family of systems that will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional CBRN threats. The acquisition strategy allows for multiple decision points throughout product development, which

provides flexibility to accelerate mature commercial-off the-shelf/non-developmental item solutions and fully develop less mature solutions. The family of systems will be developed based on Service mission profiles with the goal being to minimize operational burden and provide improved fit, function, and integration with the current Warfighter kits compared to legacy systems. Pre-Milestone A activities included the exploration of available state of the art technologies through market research, Requests for Information, and a challenge competition; shaping realistic requirements by exploring trade space of novel technologies; and identified protection offered by non-chemical biological (CB) combat gear. The Technology Maturation and Risk Reduction (TMRR) phase will reduce technology, engineering, integration, and life-cycle cost risk. During this phase, the program will focus on forming mission profile areas designed to narrow the focus of solutions designed specifically for a certain Warfighter functional area. Early testing will aide in deciding what is possible for each mission profile area and feed information into the trade space analysis. Developmental/Operational Testing will assess the ability of the solution to meet requirements, demonstrate system technical performance in accordance with the operational requirements, and demonstrate performance in realistic conditions. An Other Transaction Authority (OTA) contracting approach will be used to procure informational white papers during the TMRR phase, prototypes, and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTA or a more traditional contracting vehicle.

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE FAMILY OF SYSTEMS (UIPE FOS)

The UIPE Family of Systems (FoS) will use an evolutionary acquisition strategy to develop a family of systems that will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional CBRN threats. The family of systems will be developed based on Service mission profiles (Land, Sea, Air and Homeland Defense) with the goal being to minimize operational burden and provide improved fit, function, and integration with the current Warfighter kits compared to legacy systems. Pre-Milestone A activities included the exploration of available state of the art technologies through market research, Requests for Information, and a challenge competition; shaping realistic requirements by exploring trade space of novel technologies; and identified protection offered by non-chemical biological (CB) combat gear. The Technology Maturation and Risk Reduction (TMRR) phase will reduce technology, engineering, integration, and life-cycle cost risk. During this phase, the program will focus on forming mission profile areas designed to narrow the focus of solutions designed specifically for a certain Warfighter functional area. Early testing will aide in deciding what is possible for each mission profile area and feed information into the trade space analysis. Developmental/Operational Testing will assess the ability of the solution to meet requirements, demonstrate system technical performance in accordance with the operational requirements, and demonstrate performance in realistic conditions. An Other Transaction Authority (OTA) contracting approach will be used to procure informational white papers during the TMRR phase, prototypes, and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTA or a more traditional contracting vehicle. Once Milestone B is achieved for the Family of Systems each mission profile will be broken out onto their own budget lines.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE - HW SB - Tactical Advanced Threat Protective Ensemble (TATPE)	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.416	0.523	Oct 2016	0.000		0.000		-		0.000	0.000	0.939	0.000
UIPE - HW SB - TATPE Design Development/ Configuration	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.100	Oct 2016	0.000		0.000		-		0.000	0.000	0.100	0.000
UIPE - HW S - Design Concept Development	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.403	Nov 2016	0.000		0.000		-		0.000	0.000	0.403	0.000
UIPE FOS - HW S - Prototype Development	Various	TBD : TBD	0.000	0.000		0.000		1.000	Nov 2018	-		1.000	0.000	1.000	0.000
		Subtotal	0.416	1.026		0.000		1.000		-		1.000	0.000	2.442	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE - TD/D S - Integrated Product Team (IPT), Program, Engineering, and Technical Support	MIPR	Various : Various	2.263	1.949	Oct 2016	1.809	Nov 2017	0.000		-		0.000	0.000	6.021	0.000
UIPE - TD/D S - Tactical Advanced Threat Protective Ensemble (TATPE) Concept Design/ Engineering	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	1.261	0.153	Oct 2016	0.000		0.000		-		0.000	0.000	1.414	0.000
UIPE - TD/D S - TATPE Engineering Analysis	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.506	Feb 2017	0.000		0.000		-		0.000	0.000	0.506	0.000
UIPE - ES S - Systems Engineering (SRR/PDR)	MIPR	Various : Various	0.000	0.270	Jul 2017	0.000		0.000		-		0.000	0.000	0.270	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS - ES C - ES C - UIPE - TD/D S - Integrated	MIPR	Various : Various	0.000	0.000		0.000		0.546	Nov 2018	-		0.546	0.000	0.546	0.000
UIPE FOS - ES S - UIPE - ES S - Systems	MIPR	Various : Various	0.000	0.000		0.000		0.546	Nov 2018	-		0.546	0.000	0.546	0.000
		Subtotal	3.524	2.878		1.809		1.092		-		1.092	0.000	9.303	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE - DTE S - Design Concept/System Level Testing - Aircrew testing and test planning	MIPR	Various : Various	2.850	0.094	Nov 2016	2.594	Nov 2017	0.000		-		0.000	0.000	5.538	0.000
UIPE FOS - DTE S - UIPE - DTE S - Design	MIPR	Various : Various	0.000	0.000		0.000		1.000	Nov 2018	-		1.000	0.000	1.000	0.000
		Subtotal	2.850	0.094		2.594		1.000		-		1.000	0.000	6.538	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE - PM/MS S - Program Management Support	MIPR	Various : Various	0.976	0.519	Nov 2016	0.742	Jan 2018	0.000		-		0.000	0.000	2.237	0.000
UIPE FOS - PM/MS C - UIPE - PM/MS S	MIPR	Various : Various	0.000	0.000		0.000		0.908	Nov 2018	-		0.908	0.000	0.908	0.000
		Subtotal	0.976	0.519		0.742		0.908		-		0.908	0.000	3.145	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	7.766	4.517		5.145		4.000		-		4.000	0.000	21.428	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

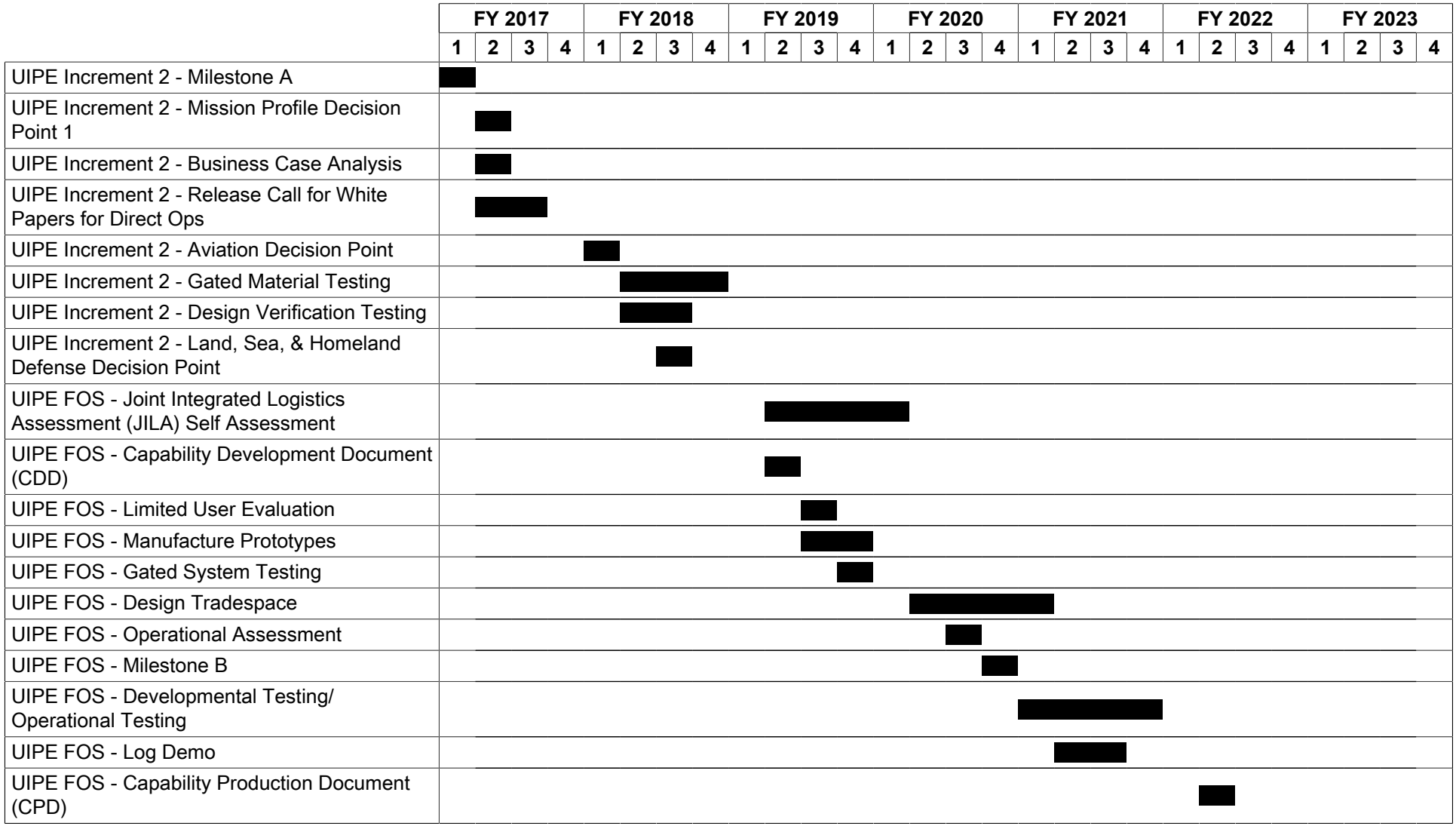

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** IP4 / *INDIVIDUAL PROTECTION (ACD&P)*

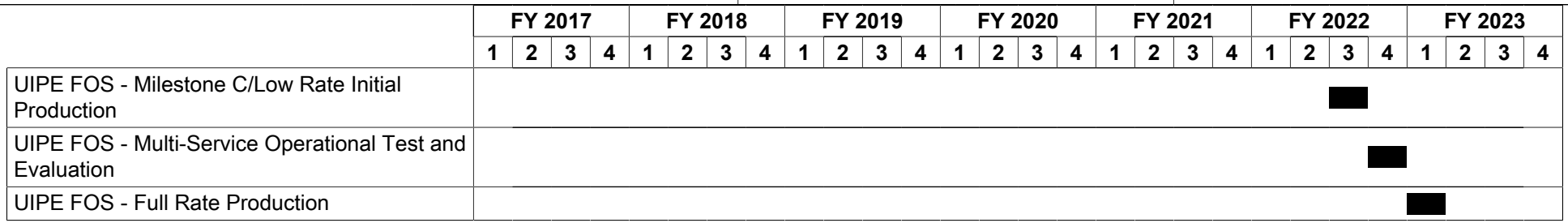

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** IP4 / *INDIVIDUAL PROTECTION (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
UIPE Increment 2 - Milestone A	1	2017	1	2017
UIPE Increment 2 - Mission Profile Decision Point 1	2	2017	2	2017
UIPE Increment 2 - Business Case Analysis	2	2017	2	2017
UIPE Increment 2 - Release Call for White Papers for Direct Ops	2	2017	3	2017
UIPE Increment 2 - Aviation Decision Point	1	2018	1	2018
UIPE Increment 2 - Gated Material Testing	2	2018	4	2018
UIPE Increment 2 - Design Verification Testing	2	2018	3	2018
UIPE Increment 2 - Land, Sea, & Homeland Defense Decision Point	3	2018	3	2018
UIPE FOS - Joint Integrated Logistics Assessment (JILA) Self Assessment	2	2019	1	2020
UIPE FOS - Capability Development Document (CDD)	2	2019	2	2019
UIPE FOS - Limited User Evaluation	3	2019	3	2019
UIPE FOS - Manufacture Prototypes	3	2019	4	2019
UIPE FOS - Gated System Testing	4	2019	4	2019
UIPE FOS - Design Tradespace	2	2020	1	2021
UIPE FOS - Operational Assessment	3	2020	3	2020
UIPE FOS - Milestone B	4	2020	4	2020
UIPE FOS - Developmental Testing/Operational Testing	1	2021	4	2021
UIPE FOS - Log Demo	2	2021	3	2021
UIPE FOS - Capability Production Document (CPD)	2	2022	2	2022
UIPE FOS - Milestone C/Low Rate Initial Production	3	2022	3	2022
UIPE FOS - Multi-Service Operational Test and Evaluation	4	2022	4	2022
UIPE FOS - Full Rate Production	1	2023	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
IS4: *INFORMATION SYSTEMS (ACD&P)*	-	4.989	5.941	0.854	-	0.854	0.291	0.075	0.071	0.068	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) responsible for providing the information architecture and applications for shaping the battlespace against the Chemical, Biological, Radiological and Nuclear (CBRN) threat. 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) the Biosurveillance Portal (BSP); (2) the Joint Effects Model (JEM); (3) the Joint Warning and Reporting Network (JWARN); and (4) the Software Support Activity (SSA).

The BSP program addresses USSOCOM requirements contained in an approved Information Systems Capability Development Document (IS CDD). BSP is a web-based enterprise environment that facilitates 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 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. JEM will also 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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

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 an over-lay 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.

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 2017	FY 2018	FY 2019
Title: 1) BSP	0.389	0.382	0.201
Description: Program Management ***FY 2018 Plans:*** Continue management and oversight of technology development and transition efforts for new technologies and capabilities designed to satisfy BSP requirements. ***FY 2019 Plans:*** Continue management and oversight of technology development and transition efforts for new technologies and capabilities designed to satisfy BSP requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 2) BSP	0.711	0.693	0.361

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Description: Product Development ***FY 2018 Plans:*** Continue prototyping, developing, and evaluating new technologies, models, and tools from both internal and external developers for transition into BSP. Two planned technology transitions from the Tech Base in FY17 and two in FY18. ***FY 2019 Plans:*** Complete remaining efforts for prototyping, developing, and evaluating new technologies, models, and tools from both internal and external developers for transition into BSP as needed. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 3) JEM 2 ***Description:*** Prototyping and Development ***FY 2018 Plans:*** Continue integration of emerging science and technology capabilities received from Advanced Technical Development (ATD) phase and defined in Requirements Definition Package 3 and 4. ***FY 2019 Plans:*** Continue integration of emerging science and technology capabilities received from Advanced Technical Development (ATD) phase and defined in Requirements Definition Package (RDP) 3 and 4. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.594	0.115	0.075
Title: 4) JEM 2 ***Description:*** Test & Evaluation (T&E)	0.169	-	-
Title: 5) JEM 2 ***Description:*** Management Support	0.107	-	-
Title: 6) JEM 2 ***Description:*** Technical Support	0.207	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Title: 7) JWARN 2 ***Description:*** Prototyping ***FY 2018 Plans:*** Continue software prototyping efforts supporting JWARN development for all three Requirements Definition Packages (RDPs). ***FY 2019 Plans:*** Transition capabilities from advanced component development and prototype effort to system development. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.737	0.834	0.022
Title: 8) JWARN 2 ***Description:*** Product Development ***FY 2018 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). ***FY 2019 Plans:*** Complete 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). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.636	1.383	0.037
Title: 9) JWARN 2 ***Description:*** Test and Evaluation (T&E) ***FY 2018 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	0.311	0.744	0.020

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Certification and Accreditation and Joint Interoperability Certification process. Conduct Operational Test and Evaluation (OT&E) of Capability Drop (CD) 1.4 for USA, USMC, USAF and (CD) 2.2 & 2.3 for USA and Joint C2 Host Systems. ***FY 2019 Plans:*** Complete Government developmental testing and analysis of component and subsystem maturity, to include Technology Readiness Assessment(s), of software submitted for evaluation during prototyping. Complete the DOD Information Assurance Certification and Accreditation and Joint Interoperability Certification process. Complete Operational Test (OT) of the JWARN systems (CD 2.1, 2.2, 2.4, & 2.5) capabilities to CBRN-IS and Army, Marine, and Navy. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 10) JWARN 2 ***Description:*** Program Management Support ***FY 2018 Plans:*** Continue to 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. Award Re-compete contract for prime developer. ***FY 2019 Plans:*** Complete the 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 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.292	0.657	0.017
Title: 11) JWARN 2 ***Description:*** Technical Support ***FY 2018 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. ***FY 2019 Plans:***	0.736	1.037	0.027

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Complete the engineering and technical support for JWARN development under the IT BOX construct and Agile Software development processes. Complete the independent system verification, validation, and class type accreditation as required. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 12) SSA ***Description:*** Integrated Architecture ***FY 2018 Plans:*** Continue required modifications to the integrated Architecture on host platforms and document the infrastructure and technical standards, developing an acquisition Cybersecurity/IA strategy. ***FY 2019 Plans:*** Continue required modifications to the integrated Architecture on host platforms and document the infrastructure and technical standards, developing an acquisition Cybersecurity/IA strategy. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.100	0.096	0.094
Accomplishments/Planned Programs Subtotals	4.989	5.941	0.854

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• IS5: *INFORMATION SYSTEMS (EMD)*	24.868	25.677	23.281	-	23.281	22.542	18.221	14.006	7.822	Continuing	Continuing
• IS7: *INFORMATION SYSTEMS (OP SYS DEV)*	10.293	12.203	15.552	-	15.552	16.951	16.492	15.163	13.211	Continuing	Continuing
• G47101: *JOINT WARNING & REPORTING NETWORK (JWARN)*	3.889	0.981	0.502	-	0.502	0.445	0.400	0.375	0.380	Continuing	Continuing
• JC0208: *JOINT EFFECTS MODEL (JEM)*	3.069	0.983	0.911	-	0.911	0.696	0.731	0.746	0.761	Continuing	Continuing
• JS5230: *SOFTWARE SUPPORT ACTIVITY (SSA)*	0.300	0.096	0.094	-	0.094	0.082	0.075	0.071	0.068	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JX0301: *BIOSURVELLENCE PORTAL (BSP)*	1.220	1.171	1.148	-	1.148	1.133	1.018	0.716	0.000	0.000	6.406

Remarks

D. Acquisition Strategy

BIOSURVEILLANCE PORTAL (BSP)

The Biosurveillance Portal (BSP) program will continue to meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. 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 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). There are two planned Production Capability Drops and two Engineering Capability Drops planned in each FY. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD to verify capabilities prior to delivery to the Warfighter. User Feedback Events (UFEs) will be conducted with identified Users to elicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) was achieved in July 2016. A Full Operational Test & Evaluation will be conducted prior to Final Operational Capability to be delivered in 3QFY20.

JOINT EFFECTS MODEL (JEM)

JEM 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.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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.

As part of this strategy a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in March 2017.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The current contractor for JEM 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1, CD 2.2, and CD 2.3 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The contract awarded in March 2017 includes scope for developing the remaining capabilities under the JEM 2.0 contract. The contract utilizes full and open competition and is referred to as the JEM development, modernization and sustainment contract.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in Q4 FY14, and a CD1.1 Fielding Decision and a RDP-2 Build Decision were approved in Q3 FY16. Each subsequent RDP will have a single Build Decision and each CD will have an associated Fielding Decision.

It is anticipated JEM 2 capabilities will transition to CBRN-IS in Fiscal Year 2023.

JOINT WARNING & REPORTING NETWORK (JWARN)

JWARN 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).

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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 JWARN Program will find an appropriate Sensor Connectivity Capability (SCC) 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).

The current contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) and RDP-2 documents. It is anticipated that the JRO will release further RDP-3 and RDP-4 prior to contract completion.

As part of the strategy for a single JWARN integrator, a follow-on contract Request for Proposal (RFP) is targeted for release Q4 FY17 with a targeted award date of Q3 FY18. The follow-on contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

completion. The follow-on contract in FY18 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JWARN follow-on contract will utilize full and open competition and will be referred to as the JWARN software development and maintenance contract.

It is anticipated JWARN 2 capabilities will transition to CBRN IS in Fiscal Year 2023.

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - SW S - Software Development	FFRDC	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.687	0.711	Dec 2016	0.693	Dec 2017	0.361	Dec 2018	-		0.361	Continuing	Continuing	0.000
JEM - 2 - SW SB - Prototype development	C/CPFF	General Dynamics Information Technologies : Fairfax, VA	6.141	0.594	Apr 2017	0.115	Apr 2018	0.075	Apr 2019	-		0.075	Continuing	Continuing	0.000
JWARN - 2- SW S - Prototype Dev Follow-On	C/CPAF	TBD : TBD	0.000	0.000		0.000		0.059	Jun 2019	-		0.059	Continuing	Continuing	0.000
JWARN - 2- SW S - Prototype Development	C/CPFF	Northrop Grumman Corp. : Winter Park, FL	8.739	1.373	Dec 2016	2.217	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	15.567	2.678		3.025		0.495		-		0.495	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JEM - 2 - TD/D SB - Engineering support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.065	0.207	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2 ES S - Engineering Support	MIPR	Various : Various	7.413	0.736	Dec 2016	1.037	Dec 2017	0.027	Dec 2018	-		0.027	Continuing	Continuing	0.000
SSA - TD/D C - Engineering Support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	0.290	0.100	Dec 2016	0.096	Dec 2017	0.094	Dec 2018	-		0.094	Continuing	Continuing	0.000
		Subtotal	10.768	1.043		1.133		0.121		-		0.121	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JEM - 2 - OTE S - OT&E	MIPR	Various : Various	2.698	0.169	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2 - OTHT SB - Gov't developmental testing	MIPR	Various : Various	2.785	0.311	Dec 2016	0.744	Dec 2017	0.020	Dec 2018	-		0.020	Continuing	Continuing	0.000
		Subtotal	5.483	0.480		0.744		0.020		-		0.020	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - PM/MS S - Program Management Support	Various	Various : Various	0.373	0.389	Dec 2016	0.382	Dec 2017	0.201	Dec 2018	-		0.201	Continuing	Continuing	0.000
JEM - 2 - PM/MS C - Program Management	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.228	0.107	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2 - PM/MS SB - Program management	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	4.503	0.292	Dec 2016	0.657	Dec 2017	0.017	Nov 2018	-		0.017	Continuing	Continuing	0.000
		Subtotal	7.104	0.788		1.039		0.218		-		0.218	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	38.922	4.989		5.941		0.854		-		0.854	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

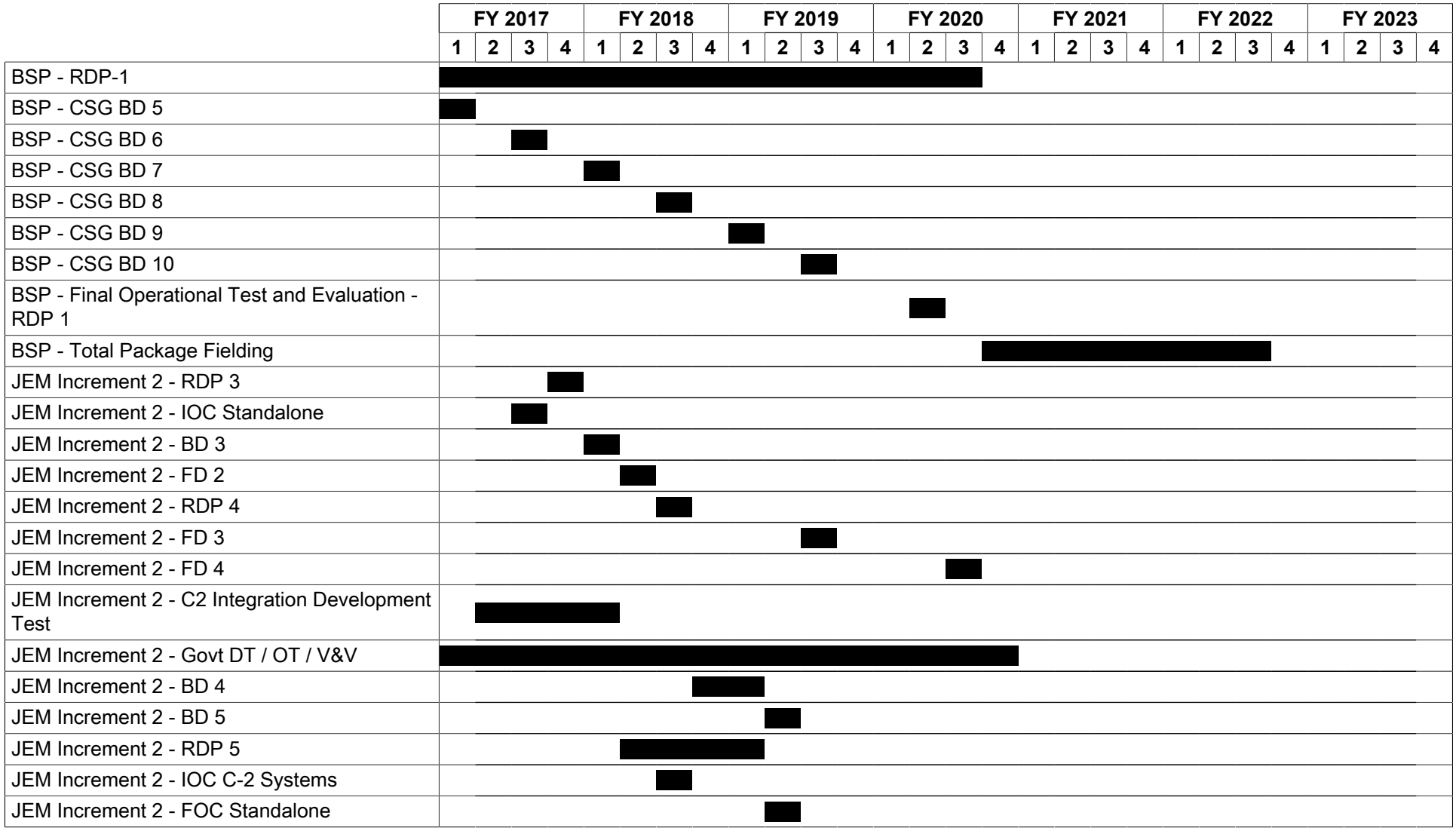

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** IS4 / *INFORMATION SYSTEMS (ACD&P)*

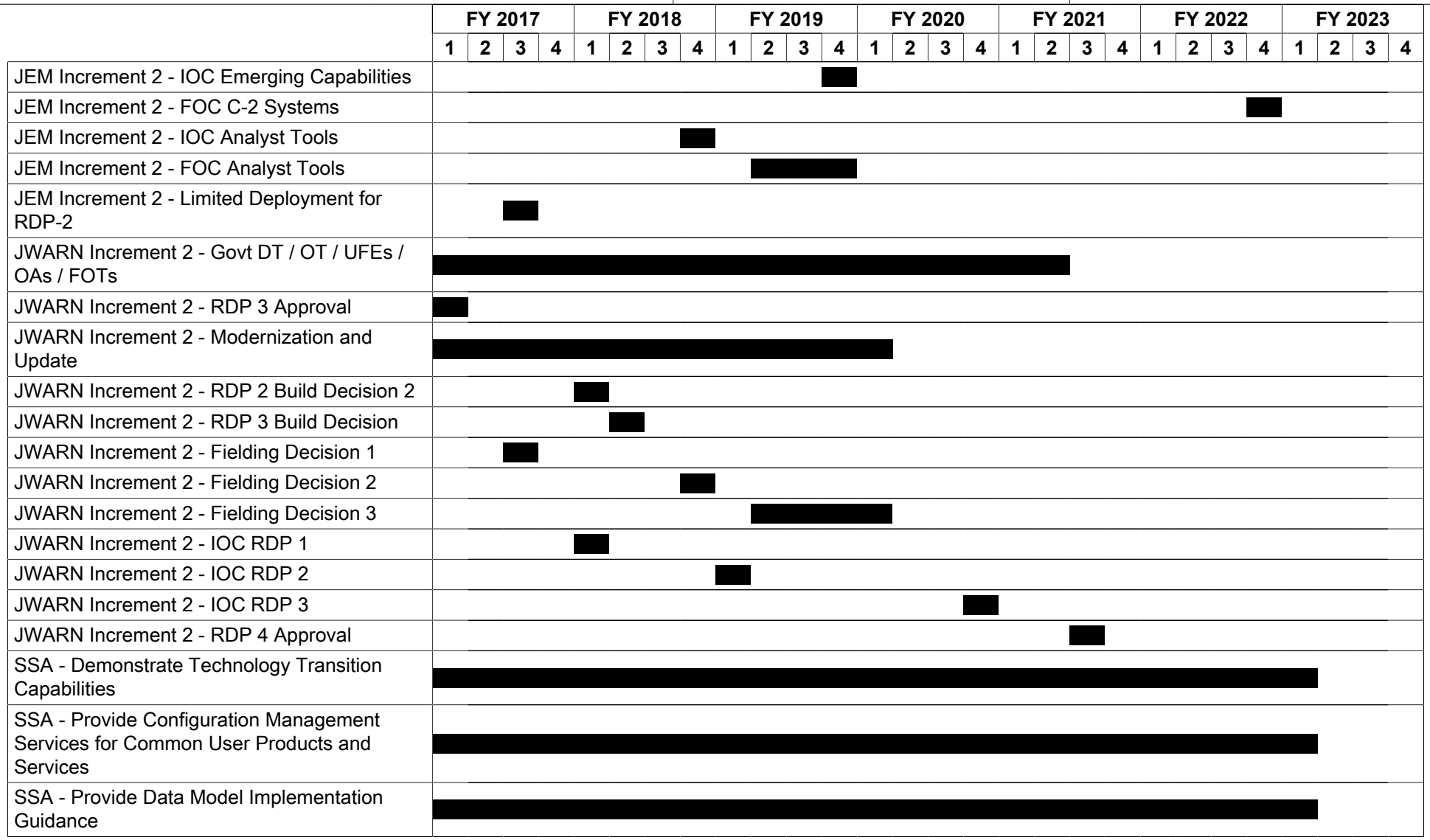

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** IS4 / *INFORMATION SYSTEMS (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BSP - RDP-1	1	2017	3	2020
BSP - CSG BD 5	1	2017	1	2017
BSP - CSG BD 6	3	2017	3	2017
BSP - CSG BD 7	1	2018	1	2018
BSP - CSG BD 8	3	2018	3	2018
BSP - CSG BD 9	1	2019	1	2019
BSP - CSG BD 10	3	2019	3	2019
BSP - Final Operational Test and Evaluation - RDP 1	2	2020	2	2020
BSP - Total Package Fielding	4	2020	3	2022
JEM Increment 2 - RDP 3	4	2017	4	2017
JEM Increment 2 - IOC Standalone	3	2017	3	2017
JEM Increment 2 - BD 3	1	2018	1	2018
JEM Increment 2 - FD 2	2	2018	2	2018
JEM Increment 2 - RDP 4	3	2018	3	2018
JEM Increment 2 - FD 3	3	2019	3	2019
JEM Increment 2 - FD 4	3	2020	3	2020
JEM Increment 2 - C2 Integration Development Test	2	2017	1	2018
JEM Increment 2 - Govt DT / OT / V&V	1	2017	4	2020
JEM Increment 2 - BD 4	4	2018	1	2019
JEM Increment 2 - BD 5	2	2019	2	2019
JEM Increment 2 - RDP 5	2	2018	1	2019
JEM Increment 2 - IOC C-2 Systems	3	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JEM Increment 2 - FOC Standalone	2	2019	2	2019
JEM Increment 2 - IOC Emerging Capabilities	4	2019	4	2019
JEM Increment 2 - FOC C-2 Systems	4	2022	4	2022
JEM Increment 2 - IOC Analyst Tools	4	2018	4	2018
JEM Increment 2 - FOC Analyst Tools	2	2019	4	2019
JEM Increment 2 - Limited Deployment for RDP-2	3	2017	3	2017
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	1	2017	2	2021
JWARN Increment 2 - RDP 3 Approval	1	2017	1	2017
JWARN Increment 2 - Modernization and Update	1	2017	1	2020
JWARN Increment 2 - RDP 2 Build Decision 2	1	2018	1	2018
JWARN Increment 2 - RDP 3 Build Decision	2	2018	2	2018
JWARN Increment 2 - Fielding Decision 1	3	2017	3	2017
JWARN Increment 2 - Fielding Decision 2	4	2018	4	2018
JWARN Increment 2 - Fielding Decision 3	2	2019	1	2020
JWARN Increment 2 - IOC RDP 1	1	2018	1	2018
JWARN Increment 2 - IOC RDP 2	1	2019	1	2019
JWARN Increment 2 - IOC RDP 3	4	2020	4	2020
JWARN Increment 2 - RDP 4 Approval	3	2021	3	2021
SSA - Demonstrate Technology Transition Capabilities	1	2017	1	2023
SSA - Provide Configuration Management Services for Common User Products and Services	1	2017	1	2023
SSA - Provide Data Model Implementation Guidance	1	2017	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MB4: *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*	-	58.800	83.999	73.090	-	73.090	35.432	26.460	13.317	6.506	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 Medical Countermeasures Platform (MCMPT) effort is focused on applying proven platform technologies to streamline medical countermeasure (MCM) delivery to the Force by reducing developmental risks, accelerating schedule to FDA licensure, and reducing development costs. In addition, this effort will employ platform technologies to support a rapid response capability to novel and emerging threats. A platform is a technology that can counter a variety of threat agents using standardized discovery, design, manufacturing, and testing processes to accelerate MCM delivery to the Force. The first platform being established is the Advanced Development and Manufacturing Antibody Technologies (ADAMANT). Efforts will center on leveraging the DOD's Advanced Development and Manufacturing facility. It is a new start in FY18.

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 Medical Countermeasure BSL-4 GLP Test and Evaluation 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.

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 and resulting bio-toxins. The resulting product(s) will be US Food and Drug Administration (FDA)-approved to prevent or minimize effects of MDR bacterial exposures.

The NGDS Family of Systems program provides Chemical, Biological and Radiological (CBR) threat and infectious disease diagnostic capabilities across several echelons of care, as well as for environmental sample analysis as part of the Common Analytical Laboratory System (CALS). The NGDS Increment 1 provides an U.S. Food and Drug Administration (FDA)-cleared reusable, portable biological pathogen diagnostic system to Army, Air Force and Navy deployable Combat Health Support units, to support near real-time patient treatment decision making, force health protection decision making and CBRN situational awareness. 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 Filovirus Vaccine (VAC FILO) Program develops vaccines that will offer protection against the threat of Ebola and Marburg viruses. The program office is prioritizing the development and delivery of a licensed Marburg vaccine while working with Science & Technology to further develop Ebola vaccine candidates to meet the DoD requirement. The current budget supports development of multiple Marburg prototypes to protect against the BW threat through TMRR phase. The DoD anticipates that the Food and Drug Administration (FDA) will approve a vaccine using the Animal Rule, which allows for the demonstration of efficacy in a relevant animal model(s).

The Next Generation Anthrax Vaccine (NGA) program seeks to provide a more robust vaccine for Anthrax, which is a validated bioweapon threat to the Force. The current anthrax vaccine dose schedule requires multiple doses to be fully protective. Health and Human Services is developing a next generation vaccine for post exposure to anthrax. The DoD is seeking to leverage HHS development efforts and initiate preliminary assay development and qualification studies to extend the label to include pre exposure. This effort could potentially lead to an improved dosing schedule for the next generation anthrax vaccine.

The Ricin toxin is a validated bioweapon threat that is lethal, available and easily produced. The Ricin vaccine program (VAC Ricin) supports one DoD vaccine candidate including manufacturing cGMP lots; and the continuation of animal model and assay development studies. The Ricin Vaccine will protect the Warfighter against aerosolized exposure to ricin toxin.

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 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. Services have prioritized the development and delivery of a licensed Venezuelan Equine Encephalitis (VEE) vaccine. In FY19 the VAC WEVEE program will shift to the VAC VEE program.

The Antiviral Therapeutic Program (AV TX) will develop and deliver FDA approved antiviral therapeutics for the warfighter. 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. Developed antiviral therapeutics will be employed after suspected or confirmed exposure to the relevant threat agents and AV TX MCMs will ameliorate the effect of threat agents to the warfighter. In the event of a natural occurring outbreak, antiviral therapeutics can be provided to ensure freedom of operation.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MCMPT	-	0.500	5.477
Description: ADAMANT Rapid Response			
FY 2018 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Initiate development of standardized design capabilities to support a rapid response. ***FY 2019 Plans:*** Continue and ramp up development of standardized design capabilities to support a rapid response. Initiate refinement of the ADAMANT manufacturing process to support a rapid response capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to accelerated development effort.			
Title: 2) MCMPT ***Description:*** ADAMANT BOT A/B ***FY 2019 Plans:*** Initiate Phase 1 clinical trial of ADAMANT BOT A/B to test the intramuscular route of administration and the lypho formulation. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to accelerated development effort.	-	-	3.436
Title: 3) MCMPT ***Description:*** ADAMANT MCM (Optimization Phase) ***FY 2019 Plans:*** Initiate optimization of ADAMANT. Efforts will involve the antigen target identification against a known threat, generation of cell banking, and initiating engineering manufacturing efforts to support delivery of a product MCM. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to accelerated development effort.	-	-	4.601
Title: 4) MCMPT ***Description:*** Vaccine Platform ***FY 2019 Plans:*** Initiate manufacturing efforts for the vaccine platform capability (platform #2). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to accelerated development effort.	-	-	2.398
Title: 5) MCMPT	-	-	3.482

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Program Management ***FY 2019 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to accelerated development effort.			
Title: 6) BSL-4 GLP T&E ***Description:*** Clinical Studies ***FY 2018 Plans:*** Conduct two GLP BSL-4 T&E medical countermeasure non-human primate studies in a safe and secure environment, implement laboratory draw-down and transition to new facility, continue to provide strategic planning, program management, and scheduling for GLP BSL-4 T&E capability. ***FY 2019 Plans:*** Conduct two GLP BSL-4 T&E medical countermeasure non-human primate studies in a safe and secure environment, implement laboratory draw-down and transition to new facility, continue to provide strategic planning, program management, and scheduling for GLP BSL-4 T&E capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	5.444	5.885	7.121
Title: 7) CMDR-B ***Description:*** Medical Countermeasures	2.230	-	-
Title: 8) CMDR-B ***Description:*** Manufacture of Developmental Drug Product ***FY 2018 Plans:*** Complete the manufacture of developmental drug product that will support a Pre-EUA Package for Y. Pestis. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.800	5.162	-

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Decrease due to fact of life change in the program/project.			
Title: 9) CMDR-B ***Description:*** Anti-Bacterial Therapeutics ***FY 2018 Plans:*** Award anti-bacterial therapeutics prototype proposals under the JPM MCS OTA Consortium. ***FY 2019 Plans:*** Execute anti-bacterial therapeutics prototype proposals under the JPM MCS OTA Consortium. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.	-	3.163	8.291
Title: 10) NGDS 2 ***Description:*** Chemical Diagnostic System ***FY 2019 Plans:*** Continue to develop and mature prototypes for Chemical agent diagnostics. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	6.504
Title: 11) NGDS 2 ***Description:*** Immunoassay Diagnostics ***FY 2019 Plans:*** Initiate prototyping for immunoassay diagnostic capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	2.000
Title: 12) NGDS 2 ***Description:*** Chemical Diagnostics ***FY 2018 Plans:***	-	4.950	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Develop and mature prototypes for Chemical Agent Diagnostics. Develop and mature single-use, disposable assays for BW targets. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 13) NGDS 2 ***Description:*** Program Management ***FY 2019 Plans:*** Continue strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	4.380
Title: 14) AV TX ***Description:*** Gilead Filo Candidate ***FY 2018 Plans:*** Initiate dose ranging and additional efficacy studies in non-human primates (NHPs) for the treatment of Filovirus infections. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	19.496	13.077	-
Title: 15) AV TX ***Description:*** Enabling Technology ***FY 2018 Plans:*** Continue studies to identify biomarkers in NHPs exposed to Alpha viruses, and demonstration of relevance of the NHP model. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	1.740	2.756	-
Title: 16) AV TX ***Description:*** Enabling Technology ***FY 2018 Plans:***	1.942	2.213	-

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue refinement of the marmoset model for inhalational Filovirus infections and testing of medical countermeasures (MCM) against infections. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 17) AV TX ***Description:*** Enabling Technology ***FY 2018 Plans:*** Continue pipeline drug screening to identify new candidates and accelerate product development in non-human primates. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	6.716	7.697	-
Title: 18) VAC FILO ***Description:*** Assay Development, Nonclinical Efficacy, and Safety ***FY 2018 Plans:*** Continue clinical and nonclinical immunological testing to establish a correlate of protection for each Marburg vaccine prototype. ***FY 2019 Plans:*** Continue clinical and nonclinical immunological testing to establish a correlate of protection for each Marburg vaccine prototype. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.908	4.646	4.800
Title: 19) VAC FILO ***Description:*** Manufacturing ***FY 2018 Plans:*** Optimize manufacturing processes for each Marburg vaccine prototype. Continue stability testing. ***FY 2019 Plans:*** On going optimization of manufacturing processes for each Marburg vaccine prototype. Continue stability testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	3.518	5.600	2.200

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Decrease due to change in program/project technical parameters.			
Title: 20) VAC FILO ***Description:*** Clinical Trials ***FY 2018 Plans:*** Continue Phase 1 clinical trials for each Marburg vaccine prototype. ***FY 2019 Plans:*** Continue Phase 1 clinical trial for Marburg vaccine prototype; including the development of EBOLA vaccine candidates that meet the DoD requirement. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	2.500	5.000	10.600
Title: 21) VAC FILO ***Description:*** Program Management ***FY 2018 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. ***FY 2019 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.000	2.500	2.800
Title: 22) VAC NGA ***Description:*** NonClinical ***FY 2018 Plans:*** Extend the label to pre-exposure to anthrax ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	1.282	-
Title: 23) VAC RIC	1.149	0.495	-

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Development Activities ***FY 2018 Plans:*** Complete stability testing of GMP material which began in 2014 at University of Nebraska Lincoln and USAMRIID. Finish manufacturing technology transfer to the ADM capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is entering completion and all activities will be closed.			
Title: 24) VAC VEE ***Description:*** Clinical Trials ***FY 2019 Plans:*** Continue Phase I Clinical Trials for competitive prototypes that were initiated under the WEVEE VAC program. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	3.800
Title: 25) VAC VEE ***Description:*** Program Management ***FY 2019 Plans:*** Initiate strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	1.200
Title: 26) VAC WEVEE ***Description:*** NonClinical ***FY 2018 Plans:*** Complete non-clinical safety, efficacy and IND-enabling studies for competitive prototypes. Continue Phase 1 Clinical Trail for the VLP vaccine prototype. Tech transfer manufacturing process for VLP vaccine candidate to the DOD ADM. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	2.994	4.911	-

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Program/project funding transferred to another funding line.			
Title: 27) VAC WEVEE ***Description:*** Manufacturing ***FY 2018 Plans:*** Continue Phase 1 Clinical Trial for Virus Replicon Particle (VRP) candidate. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	2.973	5.182	-
Title: 28) VAC WEVEE ***Description:*** Clinical Trials ***FY 2018 Plans:*** Continue Phase 1 Clinical Trials for competitive prototypes. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	2.000	6.500	-
Title: 29) VAC WEVEE ***Description:*** Program Management ***FY 2018 Plans:*** Continue strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	2.390	2.480	-
Accomplishments/Planned Programs Subtotals	58.800	83.999	73.090

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	92.313	136.553	107.815	-	107.815	141.385	170.160	154.262	153.288	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	Continuing	Continuing
• JM2222: *BIOSCAVENGER (BSCAV)*	0.000	0.000	0.000	-	0.000	0.000	0.000	3.943	3.943	Continuing	Continuing
• JM6677: *ADVANCED ANTICONVULSANT SYSTEM (AAS)*	0.000	0.000	0.360	-	0.360	0.360	2.700	2.700	4.000	Continuing	Continuing
• JM8788: *NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)*	5.095	6.938	5.842	-	5.842	2.919	4.826	2.644	4.704	Continuing	Continuing
• JX0005: *DOD BIOLOGICAL VACCINE PROCUREMENT (VACCINES)*	0.185	0.183	0.183	-	0.183	0.183	0.182	0.182	0.182	Continuing	Continuing
• JX0210: *DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)*	1.005	0.995	0.975	-	0.975	0.972	0.874	0.788	0.764	Continuing	Continuing
• JX0300: *BIOSURVEILLANCE (BSV)*	2.600	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.600

Remarks

D. Acquisition Strategy

MCM PLATFORM TECHNOLOGIES (MCMPT)

The goal of the MCMPT is to rapidly counter a broad-spectrum of threat agents using standardized discovery, design, manufacturing, and testing processes to reduce the MCM development risks. BA5 Efforts will focus on establishing advanced platform technologies within the DoD's Advanced Development Manufacturing (ADM) facility and evaluating that capability through nonclinical and clinical testing. The early stage efforts (BA4) are to develop standardized design capabilities to support a rapid response. Once established, future programs will be able to leverage this capability for the development of specific medical countermeasures. It is anticipated that these efforts will leverage the Other Transactions Authority through the medical OTA consortium.

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

The Medical Countermeasure Systems (MCM) BSL-4 T&E capability continues to utilize and maintain a testing capability at the existing and planned new US Army Medical Research Institute of Infectious Diseases (USAMRIID) facilities. MCM BSL-4 T&E costs support testing of MCMs against threats that require high-level

containment using non-human primates. The period of FY18 and beyond will focus on transition of the capability to the new USAMRIID facility, after which Full Operational Capability (FOC) will be reached.

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 and resulting bio-toxins. To meet the requirement to prevent or minimize the effects from MDR Bacterial exposures, the CMDR-B program will follow an integrated product development process and undergo independent regulatory affairs processes to achieve an FDA approved drug. The CMDR-B program is establishing collaborative relationships with DoD, other USG entities, and commercial partners in order to populate the MDR pipeline which will help reduce program risk, potentially lower program cost, and accelerate delivery of MCMs to the Warfighter. 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 CMDR-B program also has a partnership with DHHS/BARDA to manufacture developmental drug product that will support an Interim Fielding Capability for a plague therapeutic for post-exposure protection and treatment. The CMDR-B program intends to have a Milestone B Decision Review in 1QFY19. Results from the program investment in Non-Human Primate Pivotal efficacy testing, conducted in TMRR phase, in FY17 may result in Technical Readiness Level (TRL) 8 mature candidates being ready for further development.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS program was a MS A to MS C - Limited Deployment acquisition strategy, with MS C approval granted in Dec 2016 for limited production and fielding. NGDS 1 will replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17.

The NGDS 2 program addresses CBR agents and concepts of employment (COEs) that the NGDS 1 Film Array does not address. More than one materiel solution is required to expand the scope of CBR agent diagnostics across multiple echelons of care. NGDS 2 will employ a family of systems approach to bridge identified capability gaps for man-portable diagnostics, immunoassay diagnostics, and chemical diagnostics systems. NGDS 2 initiated prototyping of a man-portable diagnostic capability in FY17, while continuing to conduct risk reduction efforts for the other capabilities. Separate decisions will be utilized to proceed with further development and production for each capability, based on individual determinations of technology maturity to meet user requirements. Development efforts are anticipated to be cost-plus awards under the medical Other Transactions Authority (OTA), to take advantage of non-traditional Defense contractor offerings.

ANTI-VIRAL THERAPEUTICS (AV TX)

The acquisition strategy combined the Hemorrhagic Fever Virus (HFV) and Emerging Infectious Diseases Therapeutics (EID TX) Program efforts beginning in FY17, into a single program 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 was conducted targeting award in FY16. The candidate selected for entry into the EMD phase of development will be executed under the Antiviral Therapeutic program in FY17. The candidate selected 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 a 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.

FILOVIRUS (VAC FILO)

The Filovirus Vaccine Program acquisition strategy supports the development of multiple vaccines through the Technology Maturation and Risk Reduction (TMRR) phase that will offer protection against the threat of Ebola and Marburg viruses. During this phase a manufacturing process is developed. This process will be used to produce current Good Manufacturing Practices (cGMP) lots suitable for Phase 1 clinical trials. 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 MS B decision and entry into the Engineering, Manufacturing, and Development (EMD) phase. At Milestone B (MS B), the best Marburg vaccine 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 Marburg vaccine. It is anticipated that the EMD phase contract 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 the United States Army Medical Research Institute of Infectious Diseases (USAMRIID). Following a successful MS B, the program will conduct manufacturing qualification/validation, expanded clinical and nonclinical testing, and assay qualification and validation efforts. These efforts will support the Biological Licensure Application (BLA) submission to the Food and Drug Administration (FDA) and licensure of a Marburg vaccine.

NEXT GENERATION ANTHRAX VACCINE (VAC NGA)

The Next Generation Anthrax vaccine program strategy supports the development and qualification of immunological assays and required reference materials to support potential future anthrax vaccine programs. Once qualified, these assays will provide the DOD with data to support future decisions related to the anthrax pre-exposure vaccine program.

RICIN VACCINE (VAC RIC)

The Ricin Vaccine Program acquisition strategy supports the development of a single vaccine through the Technology Maturation and Risk Reduction (TMRR) phase that will offer protection against the threat of aerosolized ricin toxin. The Government will serve as the integrator during the TMRR 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).

VENEZUELAN EQUINE ENCEPHALITIS VACCINE (VAC VEE)

The VEE 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. 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

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

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 with 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 (USAMRIID). 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.

WESTERN EASTERN VENEZUELAN EQUINE ENCEPH VACCINE (VAC WEVEE)

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 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. Services have prioritized the development and delivery of a licensed Venezuelan Equine Encephalitis (VEE) vaccine. In FY19 the VAC WEVEE program will shift to the VAC VEE program.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - HW S - Rapid Response	C/CPFF	TBD : TBD	0.000	0.000		0.450	Jan 2018	4.980	Dec 2018	-		4.980	Continuing	Continuing	0.000
MCMPT - HW S - Vaccine Platform Manufacturing Efforts	C/CPFF	TBD : TBD	0.000	0.000		0.000		2.180	Dec 2018	-		2.180	Continuing	Continuing	0.000
MCMPT - HW S - ADAMANT MCM Manufacturing	C/CPFF	TBD : TBD	0.000	0.000		0.000		4.183	Dec 2018	-		4.183	Continuing	Continuing	0.000
CMDR-B - Advanced Development Contract	C/CPIF	TBD : TBD	0.000	0.000		0.000		5.537	Jan 2019	-		5.537	Continuing	Continuing	0.000
CMDR-B - Advanced Development Contract 1	C/CPIF	Glaxo Smith Kline : Columbia, MD	2.700	2.830	May 2017	6.407	Feb 2018	0.000		-		0.000	Continuing	Continuing	0.000
NGDS - HW C - NGDS 2 Immunoassay Diagnostic Prototyping	Various	TBD : TBD	0.000	0.000		0.000		2.000	Dec 2018	-		2.000	Continuing	Continuing	0.000
NGDS - HW C - NGDS 2 Develop and mature prototypes for Chemical Agent Diagnostics	Various	TBD : TBD	0.000	0.000		4.950	Mar 2018	6.504	Dec 2018	-		6.504	Continuing	Continuing	0.000
AV TX - Gilead Filo Candidate - Pilot Aerosol Animal Efficacy Studies	C/FP	Gilead Sciences : San Francisco, CA	0.000	15.044	Dec 2016	10.062	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - Enabling Technologies - Manufacturing Process Optimization and Scale Up	C/CPIF	University of Pittsburgh : Pittsburgh, PA	0.000	1.335	Dec 2016	2.120	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - Enabling Technologies - Phase 1 Safety Trials	C/CPIF	Defense Science & Technology Lab (DSTL) : Salisbury Wiltshire, UK	0.000	1.490	May 2017	1.703	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - Enabling Technologies - Non Human Primate Animal Model Enhancement	MIPR	US Army Medical Research Institute of Infectious Disease	0.000	5.015	Feb 2017	5.923	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		(USAMRIID) : Fort Detrick, MD													
VAC FILO - HW S - Non Clinical Studies	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	17.630	1.908	Dec 2016	4.114	Dec 2017	4.800	Dec 2018	-		4.800	Continuing	Continuing	0.000
VAC FILO - SW GFPR - Manufacturing Multiple Prototypes	C/CPFF	Various : Various	12.854	0.000		3.200	Dec 2017	2.200	Dec 2018	-		2.200	Continuing	Continuing	0.000
VAC RIC - SW GFPR - Manufacturing Tech Transfer, animal model & assay development	Various	Various : Various	1.700	0.256	Mar 2017	0.240	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC VEE - Prototypes Phase 1 Clinical Trials	C/CPIF	Various : Various	0.000	0.000		0.000		3.800	Dec 2018	-		3.800	Continuing	Continuing	0.000
VAC WEVEE - HW S - Manufacturing and Process Development	MIPR	National Institute of Allergy & Infectious Diseases : Bethesda, MD	19.957	2.439	Dec 2016	0.090	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - HW S - Manufacturing and Process Development #2	MIPR	Battelle Memorial Institute : Columbus, OH	3.730	1.000	Dec 2016	5.820	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	58.571	31.317		45.079		36.184		-		36.184	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC FILO - ES S - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	3.028	0.350	Dec 2016	0.160	Dec 2017	0.040	Dec 2018	-		0.040	Continuing	Continuing	0.000

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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)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC RIC - ES S - Regulatory Integration	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	0.442	0.090	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - ES S - Regulatory Integration	MIPR	National Institute of Allergy & Infectious Diseases : Bethesda, MD	2.978	0.150	Dec 2016	0.600	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - ES S - Regulatory Integration #2	MIPR	US Army Medical Materiel Development Activity (USAMMDA) : Fort Detrick, MD	0.293	0.150	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	6.741	0.740		0.760		0.040		-		0.040	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - DTE S - ADAMANT BOT A/B Phase 1 Clinical Trial	C/CPFF	TBD : TBD	0.000	0.000		0.000		3.124	Dec 2018	-		3.124	Continuing	Continuing	0.000
BSL4 GLP T&E - DTE SB - T&E Facility	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	17.749	5.444	Dec 2016	5.885	Dec 2017	7.121	Dec 2018	-		7.121	Continuing	Continuing	0.000
VAC FILO - OTHT SB - Testing, Evaluation, and Clinical Trials	C/CPFF	Battelle Memorial Institute : Columbus, OH	37.317	3.300	Dec 2016	5.424	Dec 2017	6.400	Dec 2018	-		6.400	Continuing	Continuing	0.000
VAC FILO - OTE C - Assay Development Prototype 1	C/CPIF	Various : Various	10.649	2.000	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC FILO - OTE C - Assay Development Prototype 2	C/CPIF	Various : Various	8.056	0.368	Mar 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC FILO - OTHT SB - Testing, Evaluation, and Clinical Trials#2, #3	C/CPIF	Various : Various	1.650	0.000		3.437	Dec 2017	4.200	Dec 2018	-		4.200	Continuing	Continuing	0.000
VAC NGA - DTE C - Non-Clinical Testing	C/CPFF	TBD : TBD	0.000	0.000		1.000	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
VAC RIC - OTHT C - Stability Testing	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	1.450	0.803	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC RIC - OTHT C - Stability Testing #2	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	1.901	0.000		0.255	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - OTE C - Test and Evaluation Assay Development	MIPR	Battelle Memorial Institute : Columbus, OH	11.787	4.500	Dec 2016	6.000	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - OTE C - Clinical Trial (Prototype)	MIPR	Various : Various	3.070	0.000		4.000	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	93.629	16.415		26.001		20.845		-		20.845	Continuing	Continuing	N/A

Remarks

A contractual mechanism to access the ADM capability is pending for FY17.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - PM/MS S - Management	Allot	JPM Medical Countermeasure	0.000	0.000		0.050	Jan 2018	2.135	Dec 2018	-		2.135	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Systems (JPM MCS) : Fort Detrick, MD													
MCMPT - PM/MS C Program Management	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		2.792	Dec 2018	-		2.792	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.215	0.000		0.441	Jan 2018	1.244	Jan 2019	-		1.244	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.392	0.200	Jan 2017	0.218	Jan 2018	0.236	Jan 2019	-		0.236	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.082	0.000		0.563	Jan 2018	0.746	Jan 2019	-		0.746	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Contractor Systems Engineering/ Program Management Support	C/FP	Various : Various	0.323	0.000		0.696	Jan 2018	0.528	Jan 2019	-		0.528	Continuing	Continuing	0.000
NGDS - PM/MS SB - Product Management Systems Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.650	0.000		0.000		1.159	Dec 2018	-		1.159	Continuing	Continuing	0.000
NGDS - PM/MS S - Product Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.933	Dec 2018	-		1.933	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - PM/MS S - Product Management Support #2	MIPR	Various : Various	1.000	0.000		0.000		1.288	Dec 2018	-		1.288	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	3.482	Jan 2017	1.365	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	1.174	Jan 2017	1.742	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.972	Jan 2017	0.676	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
AV TX - PM/MS - SB Management Support	C/FP	Various : Various	0.000	1.382	Jan 2017	2.152	Jan 2018	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	3.390	1.000	Dec 2016	1.411	Dec 2017	2.760	Dec 2018	-		2.760	Continuing	Continuing	0.000
VAC NGA - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.282	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
VAC VEE - PM/MS S - Program Manager Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.200	Dec 2018	-		1.200	Continuing	Continuing	0.000
VAC WEVEE - PM/MS S - Program Manager Support	Allot	JPM Medical Countermeasure	2.661	1.000	Dec 2016	2.000	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Systems (JPM MCS) : Fort Detrick, MD													
VAC WEVEE - PM/MS C - Contractor Systems Engineering Program Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	2.837	1.118	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC WEVEE - PM/MS S - Joint Vaccine Acquisition Program Management	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.454	0.000		0.563	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	15.004	10.328		12.159		16.021		-		16.021	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	173.945	58.800		83.999		73.090		-		73.090	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

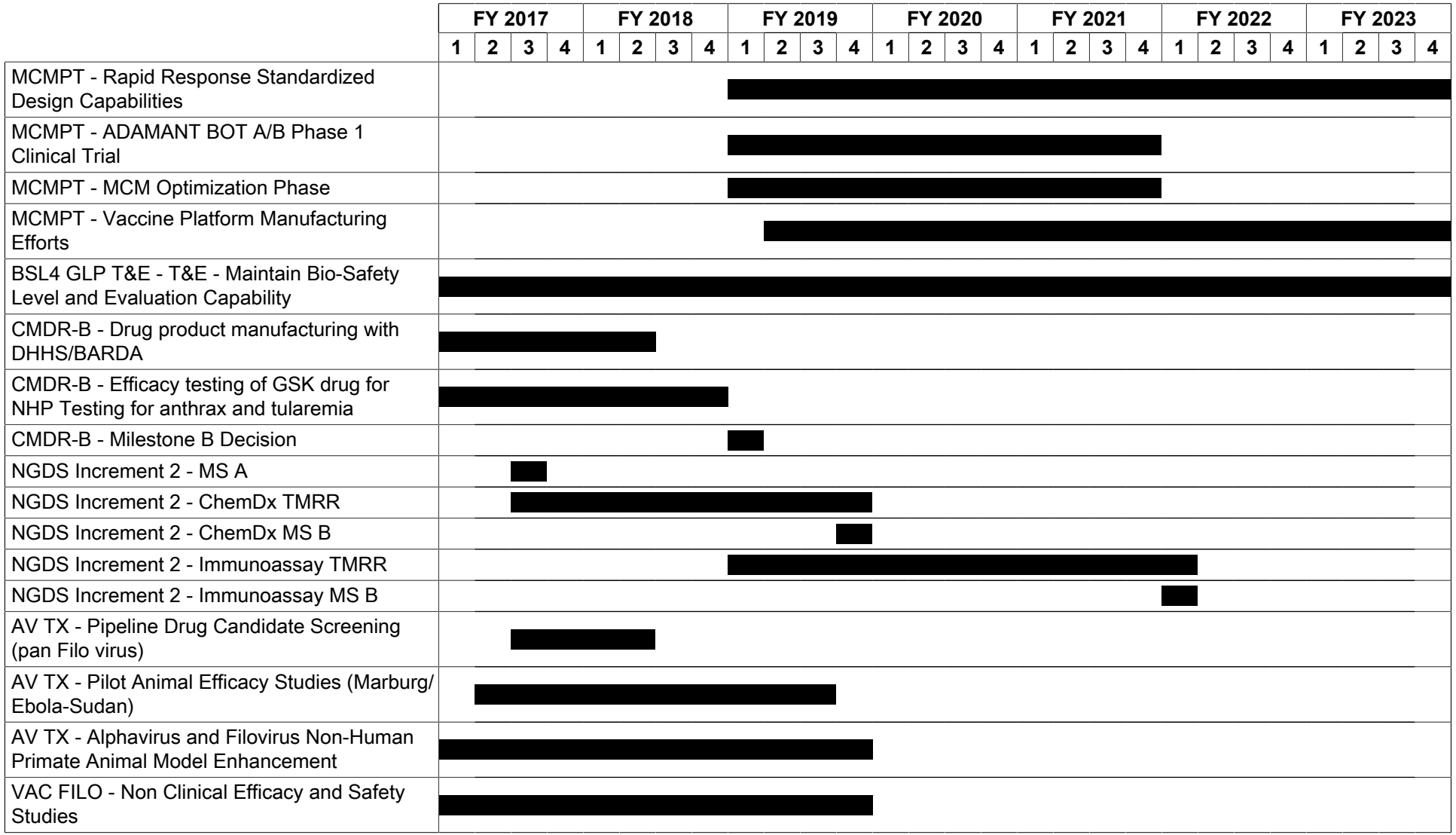

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

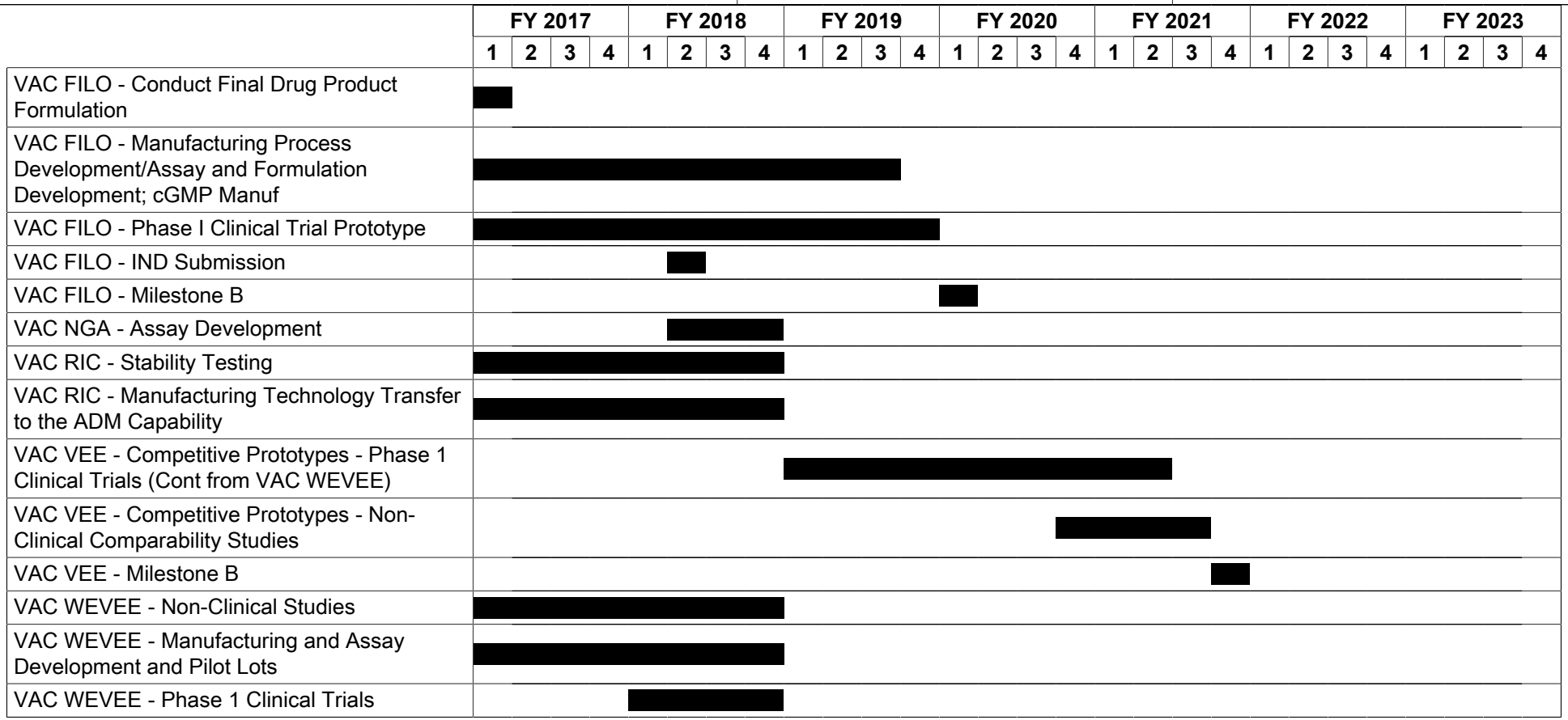

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** MB4 / *MEDICAL BIOLOGICAL DEFENSE (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MCMPT - Rapid Response Standardized Design Capabilities	1	2019	4	2023
MCMPT - ADAMANT BOT A/B Phase 1 Clinical Trial	1	2019	4	2021
MCMPT - MCM Optimization Phase	1	2019	4	2021
MCMPT - Vaccine Platform Manufacturing Efforts	2	2019	4	2023
BSL4 GLP T&E - T&E - Maintain Bio-Safety Level and Evaluation Capability	1	2017	4	2023
CMDR-B - Drug product manufacturing with DHHS/BARDA	1	2017	2	2018
CMDR-B - Efficacy testing of GSK drug for NHP Testing for anthrax and tularemia	1	2017	4	2018
CMDR-B - Milestone B Decision	1	2019	1	2019
NGDS Increment 2 - MS A	3	2017	3	2017
NGDS Increment 2 - ChemDx TMRR	3	2017	4	2019
NGDS Increment 2 - ChemDx MS B	4	2019	4	2019
NGDS Increment 2 - Immunoassay TMRR	1	2019	1	2022
NGDS Increment 2 - Immunoassay MS B	1	2022	1	2022
AV TX - Pipeline Drug Candidate Screening (pan Filo virus)	3	2017	2	2018
AV TX - Pilot Animal Efficacy Studies (Marburg/Ebola-Sudan)	2	2017	3	2019
AV TX - Alphavirus and Filovirus Non-Human Primate Animal Model Enhancement	1	2017	4	2019
VAC FILO - Non Clinical Efficacy and Safety Studies	1	2017	4	2019
VAC FILO - Conduct Final Drug Product Formulation	1	2017	1	2017
VAC FILO - Manufacturing Process Development/Assay and Formulation Development; cGMP Manuf	1	2017	3	2019
VAC FILO - Phase I Clinical Trial Prototype	1	2017	4	2019
VAC FILO - IND Submission	2	2018	2	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
VAC FILO - Milestone B	1	2020	1	2020
VAC NGA - Assay Development	2	2018	4	2018
VAC RIC - Stability Testing	1	2017	4	2018
VAC RIC - Manufacturing Technology Transfer to the ADM Capability	1	2017	4	2018
VAC VEE - Competitive Prototypes - Phase 1 Clinical Trials (Cont from VAC WEVEE)	1	2019	2	2021
VAC VEE - Competitive Prototypes - Non-Clinical Comparability Studies	4	2020	3	2021
VAC VEE - Milestone B	4	2021	4	2021
VAC WEVEE - Non-Clinical Studies	1	2017	4	2018
VAC WEVEE - Manufacturing and Assay Development and Pilot Lots	1	2017	4	2018
VAC WEVEE - Phase 1 Clinical Trials	1	2018	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MC4: *MEDICAL CHEMICAL DEFENSE (ACD&P)*	-	4.816	5.165	2.790	-	2.790	4.675	3.975	7.098	7.098	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 for the Technology Maturation and Risk Reduction 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: (1) Emerging Threats and (2), the 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 Emerging Threats program 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. The Emerging Threats program is specifically supporting the discovery, characterization, development, and fielding of FDA-approved therapeutic medical countermeasures (MCMs) to protect the warfighter against operational exposures to the opioid class of pharmaceutical-based agents (PBAs), a high priority. This FY19 new start consists of transitioning a medical countermeasure against carfentanil into advanced development no later than FY2020.

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) nonclinical studies to demonstrate the safety of the 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 2017	FY 2018	FY 2019
Title: 1) Emerging Threats	-	-	0.990
Description: Regulatory			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 Plans: Initiate regulatory studies for FDA approval. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is new start effort in FY 2019.			
Title: 2) INATS ***Description:*** Non-clinical	1.051	-	-
Title: 3) INATS ***Description:*** Clinical ***FY 2018 Plans:*** Continue and complete OXIME Phase 1 clinical trial. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	1.665	1.085	-
Title: 4) INATS ***Description:*** Non-clinical ***FY 2018 Plans:*** Continue & complete OXIME non-clinical studies. ***FY 2019 Plans:*** Complete OXIME non-clinical studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	1.984	1.925	0.615
Title: 5) INATS ***Description:*** Manufacturing ***FY 2018 Plans:*** Complete CMC Manufacturing of trial material ***FY 2019 Plans:***	-	0.730	0.275

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Complete Chemistry, Manufacturing, and Controls (CMC) Manufacturing of trial material. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 6) INATS ***Description:*** Animal Studies ***FY 2018 Plans:*** Continue rabbit, rat & NHP cause of death studies ***FY 2019 Plans:*** Complete rabbit, rat & NHP cause of death studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	0.116	1.425	0.910
Accomplishments/Planned Programs Subtotals	4.816	5.165	2.790

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	51.903	47.388	62.092	-	62.092	38.576	40.607	31.746	25.740	Continuing	Continuing
• JM6677: *ADVANCED ANTICONVULSANT SYSTEM (AAS)*	0.000	0.000	0.360	-	0.360	0.360	2.700	2.700	4.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

EMERGING THREAT CHEMICAL THERAPEUTICS (EMRT)

The Medical Countermeasures Systems Joint Program Management Office (JPM-MCS), an element of the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) provides U.S. military forces and the nation safe, effective, and innovative medical solutions to counter CBRN threats. This program 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. It supports efforts to develop and produce FDA-approved therapeutic and prophylactic solutions to counter emerging

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

threats. This program includes the Emerging Threats (EMRT) program, which consists of transitioning a medical countermeasure against carfentanil into advanced development no later than FY2020. This strategy will consider use of already existing candidates for incorporation into an autoinjector-based capability, if found to meet DoD requirements.

IMPROVED NERVE AGENT TREATMENT SYSTEM (INATS)

The INATS' evolutionary Acquisition Strategy has expanded to insert a centrally-acting (CA) anticholinergic agent. This strategy employs an incremental approach to provide independent, and more rapid development and delivery in a combined treatment regimen of (1) an improved oxime, and (2) CA capabilities, and to evaluate safety of PB when treating exposure of other traditional and novel organophosphorous nerve agents. In the Technology Maturation and Risk Reduction (TM&RR) phase, close collaborations will occur with 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 nonclinical studies to evaluate safety of pyridostigmine bromide (PB) when used to counter other traditional and novel organophosphorus nerve agents. In the Engineering and Manufacturing Development (EMD) phase for the oxime and CA components, the Government will engage with commercial partner(s) 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 commercial partner(s) will also oversee the manufacture of improved oxime and CA formulations and delivery system that is stable under operationally relevant temperatures. The Government will submit a New Drug Application and seek FDA approval for the INATS products. 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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EMRT - HW C - Emerging Threats	C/CPFF	TBD : TBD	0.000	0.000		0.000		0.900	Nov 2018	-		0.900	Continuing	Continuing	0.000
INATS - HW C - CMC Manufacturing of trial material	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.460	0.000		0.695	Dec 2017	0.262	Dec 2018	-		0.262	Continuing	Continuing	0.000
INATS - Develop bulk drug substance	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.851	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	0.460	0.851		0.695		1.162		-		1.162	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - ES S -Regulatory Integration, IND, and NDA Support Efforts	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.501	0.150	Apr 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	1.501	0.150		0.000		0.000		-		0.000	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - DTE S - Oxime Non-clinical Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.924	1.734	Jan 2017	1.900	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE C - Cause of Death studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.540	0.106	Jul 2017	1.395	Oct 2017	0.875	Nov 2018	-		0.875	Continuing	Continuing	0.000
INATS - DTE C - Oxime Phase 1 Clinical Trial	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.585	1.555	Jan 2017	0.950	Nov 2017	0.585	Nov 2018	-		0.585	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	5.049	3.395		4.245		1.460		-		1.460	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EMRT - PM/MS C - PM/MS S - Chemical and Biological Medical Systems	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		0.090	Nov 2018	-		0.090	Continuing	Continuing	0.000
INATS - PM/MS S - Chemical and Biological Medical Systems	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.020	0.420	Jan 2017	0.225	Jan 2018	0.078	Jan 2019	-		0.078	Continuing	Continuing	0.000
		Subtotal	1.020	0.420		0.225		0.168		-		0.168	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.030	4.816		5.165		2.790		-		2.790	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

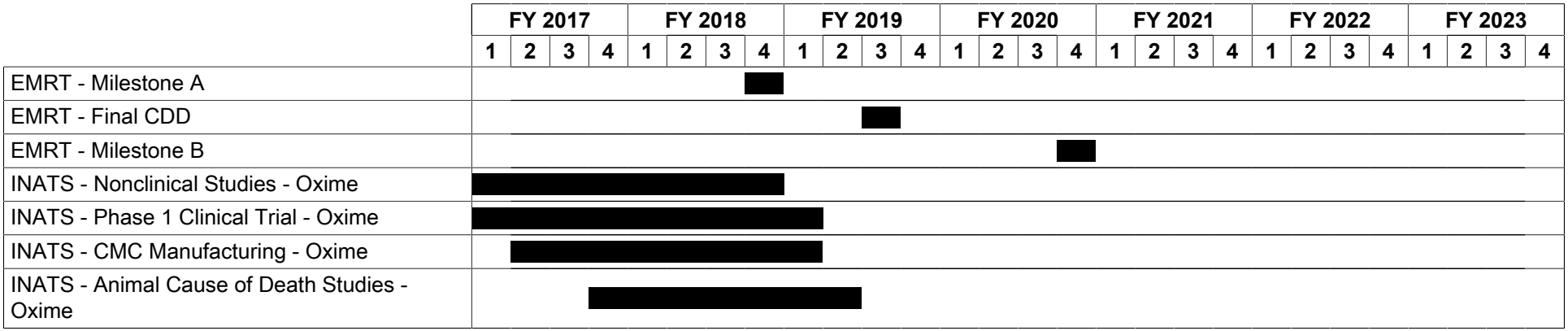

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** MC4 / *MEDICAL CHEMICAL DEFENSE (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
EMRT - Milestone A	4	2018	4	2018
EMRT - Final CDD	3	2019	3	2019
EMRT - Milestone B	4	2020	4	2020
INATS - Nonclinical Studies - Oxime	1	2017	4	2018
INATS - Phase 1 Clinical Trial - Oxime	1	2017	1	2019
INATS - CMC Manufacturing - Oxime	2	2017	1	2019
INATS - Animal Cause of Death Studies - Oxime	4	2017	2	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
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 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
TE4: *TEST & EVALUATION (ACD&P)*	-	11.747	9.157	6.581	-	6.581	5.170	5.165	3.549	3.549	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Chemical Biological Defense Portfolio (CBDP) Product Director, Test, Equipment, Strategy, and Support (PD TESS). Project will continue as Chem Bio Material Assessment Infrastructure (CBMAI) beginning in fiscal year 2019. TESS/CBMAI provides test infrastructure products to support testing and evaluating chemical and biological defense systems throughout the life cycle acquisition process. TESS/CBMAI products are aligned in three areas to include: (1) Analysis and Requirements; (2) Laboratory; (3) Field. The program name changed to highlight the Assessment function, which includes: analysis and analytical products conducted in support of infrastructure improvements.

(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 Aerosol-Vapor Chemical Agent Detector (AVCAD) (formerly Next Generation Chemical Detector (NGCD 1)), Proximity Chemical Agent Detector (PCAD) (formerly NGCD 2), Multiphase Chemical Agent Detector (MPCAD) (formerly NGCD 3), Wearable Chemical Agent Detector (WCAD) (formerly NGCD 4), Uniform Integrated Protection Ensemble (UIPE) Increment 2 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 Test Grid, Open Architecture Data Management System (OADMS) (formerly Safari Test Grid), Joint Ambient Breeze Tunnel (JABT), and 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 simulant cloud; and provide status of all of the equipment in the network at Dugway Proving Ground (DPG). OADMS is an all-inclusive, open architecture, mobile management service functioning wirelessly, capable of integrating, controlling, commanding and managing all assets required to conduct chemical and biological (CB) tests at any Major Range Test Facility Base (MRTFB). OADMS 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 MRTFB for CB Testing. The JABT and ASC improvements will provide a tech refresh to existing infrastructure and allow establishment of test data correlation between laboratory-tunnels-field for test results. The CBD acquisition programs supported are the Joint Expeditionary Collective Protection (JECP), Next Generation Chemical Detector (NGCD), Joint Biological Tactical Detection System

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

(JBTDS), Uniform Integrated Protection Ensemble (UIPE), and the Joint USFK Point and Integrated Threat Recognition (JUPITR) Advanced Technology Demonstration (ATD).

Experimentation and demonstration will be used to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) PD TESS - Program Management ***FY 2018 Plans:*** Continue Government Integrated Product Team, program management, systems engineering and IPT support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	4.676	3.400	-
Title: 2) PD TESS - Non-Traditional Agent Defense Test System (NTADTS) ***Description:*** The NTADTS infrastructure is multi-component advanced threat test system designed to test CBDP equipment against advanced threats in all states of matter and under environmental conditions. ***FY 2018 Plans:*** Continue methodology development and continue test fixture design for additional classes of agent. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	1.965	2.756	-
Title: 3) PD TESS - Joint Ambient Breeze Tunnel (JABT) ***Description:*** Conduct study on methodology to prevent the wind channeling effect existing in the ASC to be implemented into the Test Grid Data Management System (DMS).	0.696	-	-
Title: 4) PD TESS - Active Standoff Chamber (ASC) ***Description:*** Connects the data collected in the chamber with the Test Grid Data Management System (DMS) for accuracy.	0.222	-	-
Title: 5) PD TESS - Test Infrastructure Analysis & Requirements (TIA&R) ***Description:*** Perform studies to determine what modification or additional test infrastructure is required to test programs of record based on their requirements. ***FY 2018 Plans:***	3.033	2.301	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue to analyze upcoming test infrastructure needs and requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 6) PD TESS - Open Architecture Data Management System (OADMS) ***Description:*** Provides a plug-and-play capability to the Test Grid using Open Architecture protocol to integrate legacy systems. ***FY 2018 Plans:*** Integrate additional referee instrumentation and transition the capability to DPG. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	1.155	0.700	-
Title: 7) CBMAI - Joint Ambient Breeze Tunnel (JABT) ***Description:*** Conduct study on methodology to prevent the wind channeling effect existing in the ASC to be implemented into the Test Grid Data Management System (DMS). ***FY 2019 Plans:*** Execute upgrades to the JABT. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.500
Title: 8) CBMAI - Program Management ***Description:*** Program Management ***FY 2019 Plans:*** Continue Government Integrated Product Team, program management, systems engineering, and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	2.081
Title: 9) CBMAI - Test Infrastructure Analysis & Requirements (TIA & R) ***Description:*** Performs studies to determine what modification or additional test infrastructure is required to test programs of record based on their requirements. ***FY 2019 Plans:***	-	-	3.500

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue to analyze upcoming test infrastructure needs and requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Title: 10) CBMAI - Non-Traditional Agent Defense Test System (NTADTS) ***Description:*** The NTADTS infrastructure is multi-component advanced threat test system designed to test CBDP equipment against advanced threats in all states of matter and under environmental conditions. ***FY 2019 Plans:*** Complete methodology development and continue test fixture design for expanded test capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.500
Accomplishments/Planned Programs Subtotals	11.747	9.157	6.581

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• TE5: *TEST & EVALUATION (EMD)*	2.744	9.548	9.056	-	9.056	7.788	7.990	7.394	7.394	Continuing	Continuing
• TE7: *TEST & EVALUATION (OP SYS DEV)*	2.551	6.605	6.318	-	6.318	5.416	5.733	5.733	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.

CHEMICAL BIOLOGICAL MATERIEL ASSESSMENT INFRASTRUCTURE (CBMAI)

CBMAI 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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - HW S - TI Analysis & Requirements	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.097	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - TI Analysis & Requirements #2	C/CPFF	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.465	0.150	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - TI Analysis & Requirements #3	C/CPFF	MRIGlobal : Kansas City, MO	0.000	2.241	Mar 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Joint Ambient Breeze Tunnel Upgrades	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.665	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Active Stand-off Chamber Component Upgrades	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.222	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Open Architecture Data Management System	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.405	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - TI Analysis & Requirements #4	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.038	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - NTA Defense Test System Design/Fabrication/ Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	19.380	1.965	Nov 2016	2.756	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Joint Ambient Breeze Tunnel Component Upgrade	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.031	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - Test Infrastructure - HW S - Analysis & Requirements Capability Analyses	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.088	0.507	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Open Architecture Data Management System	FFRDC	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.500	0.750	Jan 2017	0.700	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Analysis & Requirements	C/CPFF	Various : Various	2.865	0.000		2.301	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - NTA Defense System Design/ Fabrication/Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	0.000
CBMAI - HW S - Joint Ambient Breeze Tunnel Component Upgrades	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	0.000
CBMAI - HW S - TI Analysis and Requirements	C/CPFF	Various : Various	0.000	0.000		0.000		2.800	Dec 2018	-		2.800	Continuing	Continuing	0.000
CBMAI - HW S - TI Analysis and Requirements #2	MIPR	Various : Various	0.000	0.000		0.000		0.700	Dec 2018	-		0.700	Continuing	Continuing	0.000
		Subtotal	24.298	7.071		5.757		4.500		-		4.500	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - ES S - PD TESS - OPETS Support	C/CPFF	Patricio Enterprises : Inc., Woodbridge, VA	0.268	0.190	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - ES S - CBMAI OPETS Support	C/CPFF	Patricio Enterprises : Inc., Woodbridge, VA	0.000	0.000		0.000		0.250	Feb 2019	-		0.250	Continuing	Continuing	0.000
		Subtotal	0.268	0.190		0.000		0.250		-		0.250	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - PM/MS S - Program Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	8.738	4.486	Dec 2016	3.400	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - PM/MS C - Program Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.831	Dec 2018	-		1.831	Continuing	Continuing	0.000
		Subtotal	8.738	4.486		3.400		1.831		-		1.831	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	33.304	11.747		9.157		6.581		-		6.581	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

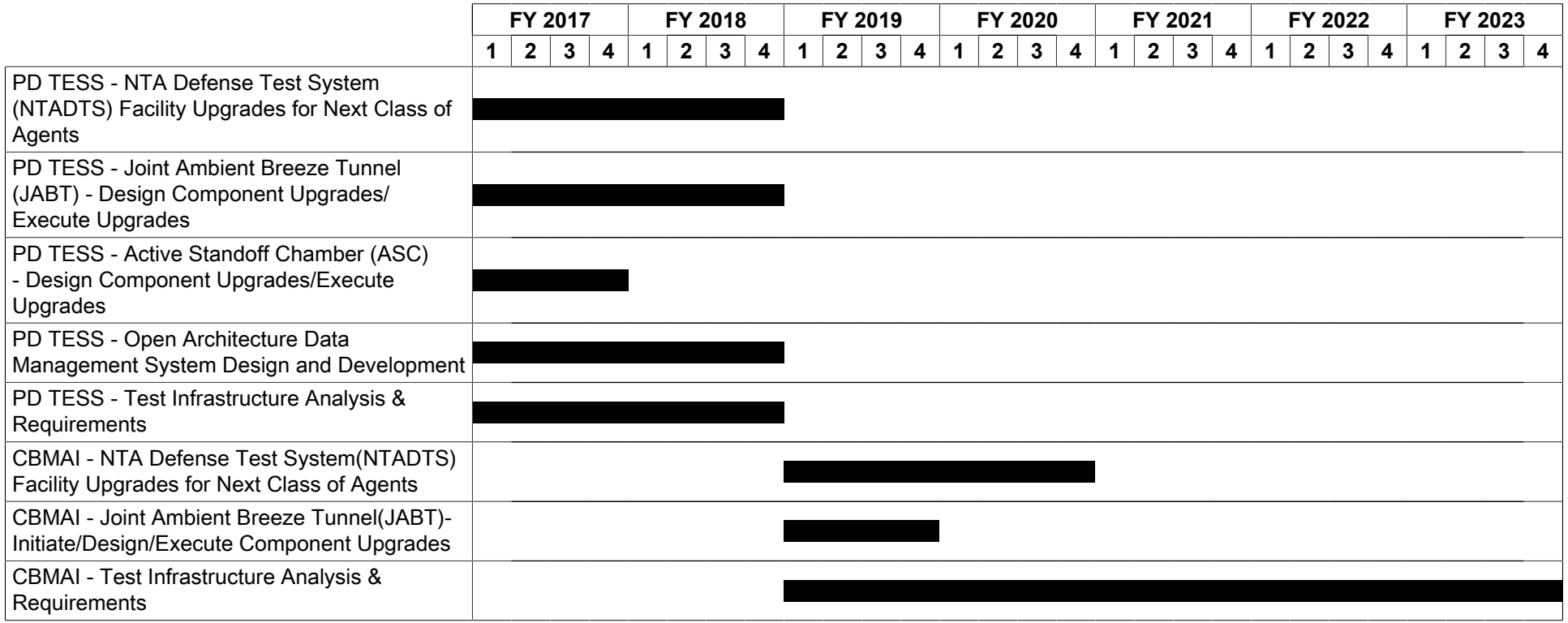

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 4	**R-1 Program Element (Number/Name)** PE 0603884BP / *CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)*	**Project (Number/Name)** TE4 / *TEST & EVALUATION (ACD&P)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents	1	2017	4	2018
PD TESS - Joint Ambient Breeze Tunnel (JABT) - Design Component Upgrades/ Execute Upgrades	1	2017	4	2018
PD TESS - Active Standoff Chamber (ASC) - Design Component Upgrades/Execute Upgrades	1	2017	4	2017
PD TESS - Open Architecture Data Management System Design and Development	1	2017	4	2018
PD TESS - Test Infrastructure Analysis & Requirements	1	2017	4	2018
CBMAI - NTA Defense Test System(NTADTS) Facility Upgrades for Next Class of Agents	1	2019	4	2020
CBMAI - Joint Ambient Breeze Tunnel(JABT)- Initiate/Design/Execute Component Upgrades	1	2019	4	2019
CBMAI - Test Infrastructure Analysis & Requirements	1	2019	4	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	275.806	406.789	388.701	-	388.701	337.454	310.267	261.398	268.300	Continuing	Continuing
CA5: *CONTAMINATION AVOIDANCE (EMD)*	-	66.654	127.499	145.653	-	145.653	91.812	48.108	35.941	42.465	Continuing	Continuing
CM5: *HOMELAND DEFENSE (EMD)*	-	12.223	21.411	6.000	-	6.000	11.200	0.000	0.000	0.000	0.000	50.834
CO5: *COLLECTIVE PROTECTION (EMD)*	-	2.640	8.546	10.802	-	10.802	5.333	4.930	0.000	0.000	0.000	32.251
DE5: *DECONTAMINATION SYSTEMS (EMD)*	-	8.881	15.686	14.049	-	14.049	13.347	15.542	11.493	24.821	Continuing	Continuing
IP5: *INDIVIDUAL PROTECTION (EMD)*	-	13.580	14.481	9.953	-	9.953	5.471	4.709	6.556	6.770	Continuing	Continuing
IS5: *INFORMATION SYSTEMS (EMD)*	-	24.868	25.677	23.281	-	23.281	22.542	18.221	14.006	7.822	Continuing	Continuing
MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	-	92.313	136.553	107.815	-	107.815	141.385	170.160	154.262	153.288	Continuing	Continuing
MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	-	51.903	47.388	62.092	-	62.092	38.576	40.607	31.746	25.740	Continuing	Continuing
TE5: *TEST & EVALUATION (EMD)*	-	2.744	9.548	9.056	-	9.056	7.788	7.990	7.394	7.394	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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*

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 chemical and biologic threats and exposure to ionizing radiation due to nuclear or radiological attacks.

The DoD coordinates its efforts with the Departments of Health and Human Services (DHHS) to promote synergy and minimize redundancy. The DoD ensures coordination by participating in the Public Health Emergency Medical Countermeasures Enterprise interagency strategic planning process ("One Portfolio"). The DoD'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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	266.231	406.789	365.017	-	365.017
Current President's Budget	275.806	406.789	388.701	-	388.701
Total Adjustments	9.575	0.000	23.684	-	23.684
• Congressional General Reductions	-0.043	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	15.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.113	-			
• SBIR/STTR Transfer	-5.269	-			
• Other Adjustments	0.000	-	23.684	-	23.684

Change Summary Explanation

Funding: FY17 (-$0.043M): Congressional general reduction.
FY17 (+$15.000M): Congressional add to support accelerated development for Special Purpose Unit Chemical Detection sensors.
FY17 (-$0.133M): Program reprogrammings.
FY17 (-$5.269M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$5.004M): Application of revised inflation guidance.
FY19 (+$28.688M): Provides for the continued development of NGCD variants following transition to EMD. Restructure of JBTDS program to continue necessary EMD.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CA5: *CONTAMINATION AVOIDANCE (EMD)*	-	66.654	127.499	145.653	-	145.653	91.812	48.108	35.941	42.465	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) Aerosol & Vapor Chemical Agent Detector (AVCAD), (formerly NGCD 1); (2) Enhanced Maritime Biological Detection (EMBD); (3) The Joint Handheld Bio-Agent Identifier (JHBI); (4) Mounted Manned Platform Radiological Detection System (MMPRDS); (5) Multi-Phase Chemical Agent Detector (MPCAD), (formerly NGCD 3); (6) Proximate Chemical Agent Detector (PCAD), (formerly NGCD 2); (7) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA); (8) Joint Nuclear Biological Chemical Radiological System (JNBCRS); (9) Joint Biological Tactical Detection System (JBTDS); (10) Next Generation Chemical Detector (NGCD); (11) Non-Traditional Agent (NTA) Defense Support; (12) the Global Biosurveillance Technology Initiatives (GBTI).

The Aerosol & Vapor Chemical Agent Detector (AVCAD) (formerly NGCD 1) will provide the Joint Forces a man-portable system to detect and identify aerosol and vapor chemical threats and will also be employed on manned and unmanned platforms.

The Enhanced Maritime Biological Detection (EMBD) addresses the Navy detection and identification capability gaps and replaces/upgrades the 135 Joint Biological Point Detection Systems (JBPDS) currently fielded to the Navy. The EMBD system provides improved detection sensitivity, lower false alarms and a modernized computing architecture. The EMBD program will complete development and testing, integration and production of a lower cost biological point detection system to detect, collect and identify biological warfare agent aerosols. The EMBD provides automated warning and reduces sustainment cost while protecting the shipboard personnel.

The Joint Handheld Bio-Agent Identifier (JHBI) program is a Joint Service Acquisition Category (ACAT) III program consisting of two increments to address an existing United States Special Operations Command (USSOCOM) requirement for handheld, multiplexed, environmental, bio-agent identification. The JHBI program was initiated under the Joint Biological Tactical Detection System (JBTDS) and will provide three different handheld bio-identification systems for the rapid and accurate identification of organisms at the point of contact for multiple mission types. The proposed JHBI systems will be handheld, Polymerase Chain Reaction-based, multiplexed devices for the analysis of powder or liquid environmental biological samples. JHBI capabilities will provide Special Operations Forces with timely and accurate identification of 8 or more bio-agents at the point of need. JHBI 1 is anticipated to serve as a supplemental capability to the BioFire RAZOR with JHBI 2 fielding the complete replacement of the RAZOR by FY20. JHBI will transition out from under the JBTDS to its own funding line in FY18.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

The Mounted Manned Platform Radiological Detection System (MMPRDS) provides ruggedized, networkable detectors with a wide operating range of detection, including prompt neutron/gamma, for integration into vehicles, fixed sites, and ships. It replaces the obsolescent UDR-13 and AN/VDR-2 for mounted operations, providing warning and situational awareness for crews and personnel, and enables mounted RN surveillance and reconnaissance for platforms such as the NBCRV.

The Multi-Phase Chemical Agent Detector (MPCAD) (formerly NGCD 3) will provide a sample analysis to identify, quantify, alarm to, and report on diverse chemical species in vapor, aerosol, liquid, and solid phases of matter.

The Proximate Chemical Detector (PCAD) (formerly NGCD 2) is to provide a portable system for the rapid location, detection and identification of liquid and solid chemical threats on surfaces and may be handheld, tripod mounted, or mounted on unmanned platforms.

The Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA) is a ticket based sensor to provide chemical detection and identification capability to the Warfighter. ROSETTA provides improved hazard detection sensitivity, increases the number of chemicals detected and lowers false alarm rate as compared to the M256A2 with an array of reactive colorimetric dyes printed on a detector ticket. The ROSETTA program will complete the development and testing of the new detector ticket to update the currently fielded M256A2 kit. The M256A2 technical data package will be updated with an engineering change proposal (ECP) to create a new M256A3 kit.

Joint Nuclear Biological Chemical Radiological System (JNBCRS) is the Sensor Suite Upgrade (SSU) for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle (NBCRV). The NBCRV Sensor Suite is the Mission Equipment Package for the Stryker NBCRV and consists of chemical point detectors, a standoff chemical vapor detector, a biological point detector, a chemical vapor sampling system, radiological detectors, and the Sensor Processing Group. NBCRV SS provides the Stryker NBCRV the ability to detect, identify, collect, report, and mark NBC Hazards. The Stryker NBCRV SSU will improve chemical, biological and radiological and nuclear detection and identification capabilities, increase the maneuver speed of the Stryker NBCRV when conducting NBC mission and reduce sustainment costs over the current system.

The Joint Biological Tactical Detection System (JBTDS) program is developing, integrating and testing the first lightweight, low cost biological surveillance system to detect, collect, and identify biological warfare agent aerosols. JBTDS provides warning through the Joint Warning And Reporting Network (JWARN) and archives samples for follow-on analyses. JBTDS provides near real-time local audio and visual alarm, and may be employed by any Military User. JBTDS components are man-portable, battery-operable, and easy to employ. JBTDS provides notification of a hazard and enhances battle space awareness to protect and preserve the force. When networked JBTDS augments existing biological detection systems providing a theater-wide array capable of biological detection, identification and warning to support time sensitive force protection decisions. The JBTDS provides surface sampling capability to support sensitive site exploitation missions. Surface sampler interfaces with the JBTDS identifier

The Next Generation Chemical Detector (NGCD) is several detection systems for: vapor and aerosol monitoring (NGCD1), location of liquid and solids on surfaces (NGCD 2), sampling of multiple phases of matter (NGCD 3), and Wearable System (NGCD 4). NGCD will detect and identify non-traditional agents, chemical warfare agents (CWA), 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. The sensors will improve detection, consequence management and reconnaissance, and weapons of mass destruction

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

(WMD) interdiction capabilities. The scope of the project includes detection of chemicals a few feet away from the detector as well as at the sampling point of the detector. Additional tasks will ruggedize and test a system for nontraditional agent detection for special purpose units. The NGCD program divides into separate programs starting in FY19: Aerosol & Vapor Chemical Agent Detector (AVCAD) formerly NGCD 1, Proximate Chemical Agent Detector (PCAD) formerly NGCD 2, Multi-Phase Chemical Agent Detector (MPCAD) formerly NGCD 3, and Wearable Chemical Agent Detector (WCAD) formerly NGCD 4. NCGD funded a USSOCOM effort to develop a modification kit to JCAD to address NTA and threats of interests going into the SP SKO and SPU units.

The Non-Traditional Agent (NTA) Defense program supports the on-going chemical and biological (CB) defense efforts as acquisition programs address emerging threat requirements including pharmaceutical based threats 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, Enhanced Capability Demonstrations, 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. These initiatives allow the CBDP to mitigate risk against emerging threats and better prepare the warfighter to deal with surprises across the full range of military missions.

The Global Biosurveillance Technology Initiative (GBTI) will research and characterize laboratory networks and develop algorithms to identify key nodes, having the greatest potential to compress the time between disease event initiation and the production of actionable data. In FY19, GBTI will close. The Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) will track projects of mutual interest, formerly under GBTI, with the Chemical Biological Defense Program. Under TARMAC, these projects will cover a variety of activities and will provide data and information used to facilitate the identification of unknown threats and the development of new countermeasures. Key node data generation will be augmented in direct support of existing programs of record such as the Common Analytical Laboratory System (CALS).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) Next Generation Chemical Detector (NGCD)	7.844	1.200	-
Description: NGCD acceleration contract for USSOCOM and Special Purpose Sets, Kits, and Outfits (SP SKO) JCAD CED. ***FY 2018 Plans:*** Complete testing of ruggedized sensors ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 2) NGCD - Test Preparation/Expanded Test Capabilities	2.131	-	-
Description: Evaluate test capability improvements to explore pharmaceutical based threats with JCAD CED.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Title: 3) NGCD Test Planning and Preparation ***Description:*** Government test planning for NGCD, SOF Chemical Detection Device (CDD), and JCAD Chemical Explosives Detector (CED).	3.932	-	-
Title: 4) NGCD - Special Purpose-Sets, Kits, and Outfits (SP SKO) ***Description:*** Chemical Detection Device (CDD) Product Development	1.200	-	-
Title: 5) Next Generation Chemical Detector (NGCD) ***Description:*** Program Management ***FY 2018 Plans:*** Continue Government Program Management (transition NGCD 1-3 from BA4 to BA5). Finalize and conduct MSB for NGCD 2 and 3. Initiate EMD. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	8.760	18.045	-
Title: 6) NGCD support for JCAD Chemical Explosives Detector ***Description:*** Build library for NTA and explosives; Design hardware miniaturization.	0.249	-	-
Title: 7) NGCD ***Description:*** Evaluation of commercial candidates for NGCD 3 (Chemical Biological Mass Spectrometer (CBMS) II).	2.632	-	-
Title: 8) NGCD ***Description:*** Chemical Reconnaissance & Explosive Screening Set (CRESS) Engineering Studies.	0.200	-	-
Title: 9) NGCD ***Description:*** Wireless Radio Evaluation	0.400	-	-
Title: 10) NGCD ***Description:*** NGCD 1 EMD Contract ***FY 2018 Plans:***	-	11.274	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Implement Detailed Design, conduct Critical Design Review (CDR), buy 75 test articles for Production Qualification Test (PQT). Continue EMD. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 11) NGCD ***Description:*** NGCD 2- EMD Contract ***FY 2018 Plans:*** Initiate EMD. Conduct Preliminary Design Review (PDR), buy 5 test articles at 85K each for customer test. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	11.236	-
Title: 12) NGCD ***Description:*** NGCD 3- EMD Contract ***FY 2018 Plans:*** Initiate EMD. Conduct Preliminary Design Review (PDR), buy 5 test articles at 150K each for customer test. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	9.835	-
Title: 13) NGCD ***Description:*** NGCD 1 - Test ***FY 2018 Plans:*** Begin Production Qualification Test (PQT). Testing includes PQT Chamber testing and PQT Survivability / Interoperability/ Environmental testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	4.847	-
Title: 14) NGCD ***Description:*** NGCD 2 - Test ***FY 2018 Plans:***	-	0.750	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Conduct customer test for threat library verification. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 15) NGCD ***Description:*** NGCD 3- Test ***FY 2018 Plans:*** Conduct customer test for threat library verification. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	0.800	-
Title: 16) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** AVCAD (formerly NGCD 1) Test and Evaluation ***FY 2019 Plans:*** Initiate and conduct PQT DT Explosive Atmosphere Test, Mil-Std 901D - Ship Shock; MIL-Std 167-1 Vibration Test, OT Operational Assessment (OA) Test, PQT DT Interoperability, PQT DT Cybersecurity Vulnerability, PQT DT Environmental (MIL-STD-810G), PQT DT False Positive Alarm, PQT DT Natural Desert Environmental storage, PQT DT Coastal Operational Service Life, Shipboard Operation Verification, Rotary Wing Compatibility, and PQT DT Chemical Chamber. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	4.278
Title: 17) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** EMD Contracts ***FY 2019 Plans:*** Continue EMD development and Support Production Qualification Test, Logistics Demonstration, and Operational Assessment. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	12.023
Title: 18) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** Management Services	-	-	5.673

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2019 Plans: Continue (from NGCD 1) Government and contracted Integrated Product Development team, program management, systems engineering and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Title: 19) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** MPCAD Management Services (formerly NGCD 3), will quantify low-level vapor for Sample Analysis to identify, quantify, alarm to and report on diverse chemical compounds in vapor, aerosol, liquid and solid phases of matter. ***FY 2019 Plans:*** Continue (from NGCD 3) Government and contracted Integrated Product Development team, program management, systems engineering and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	4.613
Title: 20) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** Testing ***FY 2019 Plans:*** Initiate and conduct Library Build and System Verification, PQT DT Interoperability Test, Cyber Security Vulnerability Test, Chemical Biological Radiological Contamination Survivability (CBRCS) Test, PQT DT Environmental (MIL-STD-810G) Test, PVT DT Explosive Atmosphere Test, PQT DT False (Positive) Alarm Test, PQT DY Natural Desert Environmental Storage Test, PQT DT Electromagnetic Survivability Test, PQT DT/OT Chemicals Test, and PQT DT Chemical Chamber Test. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	6.249
Title: 21) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** EMD Contracts ***FY 2019 Plans:*** Initiate EMD contract. Conduct Preliminary Design Review (PDR), purchase five test articles at 150K each for customer test. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	-	-	22.730

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Program/project funding transferred from another funding line.			
Title: 22) Proximate Chemical Agent Detector (PCAD) ***Description:*** Testing ***FY 2019 Plans:*** Initiate and Conduct PQT DT Customer Chamber Test at ECBC and WDTC. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	3.500
Title: 23) Proximate Chemical Agent Detector (PCAD) ***Description:*** EMD Contract ***FY 2019 Plans:*** Initiate EMD contract. Conduct Preliminary Design Review (PDR), purchase five test articles at 20K each for customer test. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	6.500
Title: 24) Proximate Chemical Agent Detector (PCAD) ***Description:*** Management Services (previously NGCD 2), a survey detector that is a portable system for the rapid location, detection and identification of liquid and solid chemical threats on surfaces, and may be handheld, tripod mounted, or mounted on unmanned platforms. ***FY 2019 Plans:*** Continue (from NGCD 2) Government and contracted Integrated Product Development team, program management, systems engineering and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	6.142
Title: 25) EMBD - Prototype Support ***Description:*** Detector Prototype Technical Data Package (TDP) transition, design transfer assistance, and government test support. ***FY 2018 Plans:***	0.600	2.000	1.100

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Initiate detector Technical Data Package (TDP) transition to Industry and government test support. ***FY 2019 Plans:*** Initiate Detector design transfer assistance and algorithm finalization. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 26) EMBD - Test Support ***Description:*** Live agent performance test support	0.163	-	-
Title: 27) EMBD - Developmental Testing ***Description:*** Near Neighbor and False Alarm Testing ***FY 2019 Plans:*** Developmental military-standard (MIL-STD) testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.232	-	0.425
Title: 28) EMBD - Component Integration ***Description:*** Identifier component integration effort.	0.750	-	-
Title: 29) EMBD - Integrated Product Team Support ***Description:*** EMD IPT Support support. ***FY 2018 Plans:*** Continue combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during Engineering and Manufacturing Development (EMD) Phase. ***FY 2019 Plans:*** Continue combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during Engineering and Manufacturing Development (EMD) Phase. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	0.500	0.550
Title: 30) EMBD - Prototype Procurement	-	5.958	6.775

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Description: EMD Prototype Systems Procurement ***FY 2018 Plans:*** Initiate acquisition of seven prototype systems for contractor developmental testing (DT) and government DT/ Operational Assessment (OA). ***FY 2019 Plans:*** Purchase five prototype systems (at 550K each) for government DT/Operational Assessment (OA), ILS development, design and software finalization. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 31) EMBD - Operational Test Support ***Description:*** EMD operational test support. ***FY 2019 Plans:*** Continue Navy Operational Test Support ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	0.296
Title: 32) EMBD - Live Agent Testing ***Description:*** EMD Live Agent Testing. ***FY 2018 Plans:*** Initiate live agent testing to verify detector performance against remaining agents not tested in JUPITR Advanced Technology Demonstration (ATD). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	2.000	-
Title: 33) EMBD - Component Support ***Description:*** EMD Identifier Support. ***FY 2019 Plans:***	-	-	2.236

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue Identifier hardware, software, and engineering support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 34) EMBD - Management Services ***Description:*** Government Management Services for program ***FY 2018 Plans:*** Continue Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, and technical support for USN variant. ***FY 2019 Plans:*** Continue Government strategic/tactical planning, Government systems engineering, program/financial management, cost analysis, technology assessment, contracting, scheduling, and technical support for USN variant. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	2.200	3.620	6.129
Title: 35) GBTI ***Description:*** NETWORK ANALYSIS ***FY 2018 Plans:*** Complete network analysis to document sample and data flows, identify areas of synergy, and prioritize projects between the GBTI office and the GBTI stakeholder labs. The results of the network analysis will be used to determine the best methods for integrating data and information streams among the labs in order to create a robust data pipeline that feeds the identification of unknown threats, evaluation of countermeasures, and the development of new countermeasures. ***FY 2019 Plans:*** Complete network analysis to document sample and data flows, identify areas of synergy, and prioritize projects between the GBTI office and the GBTI stakeholder labs. The results of the network analysis will be used to determine the best methods for integrating data and information streams among the labs in order to create a robust data pipeline that feeds the identification of unknown threats, evaluation of countermeasures, and the development of new countermeasures. Scope of effort modified to accommodate collection and transfer of data for future initiatives within DBPAP. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.617	1.685	0.490

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Program/project is entering completion and all activities will be closed.			
Title: 36) GBTI ***Description:*** LABORATORY ACTIVITIES ***FY 2018 Plans:*** Engage with stakeholder laboratories to track projects of mutual interest with the Chemical Biological Defense Program. Projects will cover a variety of activities and will provide data and information used to facilitate the identification of unknown threats and the development of new countermeasures. Will transition S3S and EDGE from DTRA-JSTO to support the engagement with stakeholder laboratories for the generation of data and information that support countermeasure development. ***FY 2019 Plans:*** Transition engagements with stakeholder laboratories to the Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) to track projects of mutual interest with the Chemical Biological Defense Program. Under TARMAC, these projects will cover a variety of activities and will provide data and information used to facilitate the identification of unknown threats and the development of new countermeasures. TARMAC will also utilize transactions from tech base (e.g. S2S and EDGE) to support these projects. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	1.570	2.754	1.524
Title: 37) GBTI ***Description:*** EXPEDITIONARY ANALYTICS ***FY 2018 Plans:*** Complete identification, test, and evaluation of new technologies with potential expeditionary analytical applications and their interoperability with existing systems as well as other new technologies. ***FY 2019 Plans:*** Complete identification, test, and evaluation of new technologies with potential expeditionary analytical applications and their interoperability with existing systems as well as other new technologies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	0.117	1.285	0.094
Title: 38) JBTDS: Product Development ***Description:*** EMD Contract	10.076	0.700	5.181

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Continue the EMD Contract for program management, logistics and test support. ***FY 2019 Plans:*** Continue the EMD Contract for program management, logistics and test support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 39) JBTDS: Product Development ***Description:*** Tactical Identifier ***FY 2018 Plans:*** Continue development and design of a tactical identifier using the BioFire Film Array identification system from NGDS Increment 1 program. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is entering completion and all activities will be closed.	0.464	8.891	-
Title: 40) JBTDS: Program Management ***Description:*** Management Support ***FY 2018 Plans:*** Continue Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support. ***FY 2019 Plans:*** Continue Government strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, testing and evaluation, scheduling, and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	10.182	8.983	10.721
Title: 41) JBTDS: Support ***FY 2018 Plans:***	0.790	3.016	5.090

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during EMD Phase. ***FY 2019 Plans:*** Continue combat developer, test community and Service representation (i.e. integrated product teams (IPT) and working groups) during EMD Phase. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 42) JBTDS: Test and Evaluation ***FY 2018 Plans:*** Complete developmental planning and testing to include live agent, environmental false alarm, and outdoor interferent. ***FY 2019 Plans:*** Complete developmental testing to include live agent and Cyber Security. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.866	1.120	4.600
Title: 43) JBTDS:Support ***FY 2018 Plans:*** Complete sensor calibration standards effort for routine maintenance, metrology and calibration capability for detection systems. ***FY 2019 Plans:*** Complete and operationally test sensor calibration tools for routine maintenance, metrology and calibration technology for detection systems. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.188	0.400	0.350
Title: 44) JBTDS: Test and Evaluation ***FY 2018 Plans:*** Continue the verification and validation of military utility model. ***FY 2019 Plans:*** Complete the verification and validation of military utility model. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.273	0.250	0.350

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 45) JBTDS: Product Development ***Description:*** Joint Handheld Bio-Agent Identifier (JHBI)	5.392	-	-
Title: 46) JBTDS ***Description:*** NBCRV Platform Requirements ***FY 2018 Plans:*** Conduct and complete evaluation and engineering redesign study on the JBTDS system to meet NBCRV platform requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	-	0.150	-
Title: 47) JBTDS ***FY 2018 Plans:*** Continue reliability growth model for EMD phase testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	0.120	-
Title: 48) JBTDS: Test and Evaluation ***FY 2018 Plans:*** Complete production of BWAs for live agent aerosol testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is entering completion and all activities will be closed.	2.692	2.600	-
Title: 49) JBTDS ***Description:*** Operational Assessment ***FY 2018 Plans:*** Initiate Operational Assessment which includes end users and biological simulants. ***FY 2019 Plans:*** Continue Operational Assessment which includes end users and biological simulants. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	-	3.350	1.700

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 50) JHBI ***FY 2018 Plans:*** Conduct and complete Developmental and Operational testing of all three systems. Complete Low Rate Initial Production and Initial Operational Test and Evaluation. Field all three systems at Full Operational Capability with screening and confirmatory assays. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	-	0.990	-
Title: 51) JNBCRS 1 ***FY 2018 Plans:*** Initiate and continue the design, build, test, and integrated logistics task of the Stryker NBCRV Sensor Suite. ***FY 2019 Plans:*** Continue the design, build, test, integrated logistics, and program management of the Stryker NBCRV Sensor Suite. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	17.952	20.655
Title: 52) MMPRDS - Program Management ***Description:*** Government Program Management and Integrated Product Team (IPT) Support. ***FY 2019 Plans:*** Continue to provide acquisition management, engineering and technical expertise, and develop milestone (B) documentation for the program. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	0.892
Title: 53) MMPRDS - Test and Evaluation (T&E) ***Description:*** System Developmental Testing ***FY 2019 Plans:***	-	-	0.608

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Conduct Government delta development testing on newly integrated systems received from DTRA to close test gaps remaining following technology transition, to support TEMP completion and Milestone B. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 54) MMPRDS - Product Refinement ***Description:*** Evaluate and refine system prototypes. ***FY 2019 Plans:*** Iterate and modify delivered prototypes to close performance gaps remaining following technology transition. Conduct necessary cybersecurity activities per Risk Management Framework (RMF). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	1.000
Title: 55) NTA Defense ***Description:*** Program Management ***FY 2019 Plans:*** Continues Government Integrated Product Team program management, systems engineering, and IPT Support across all JPEO programs and other governmental partnerships. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	0.404	-	0.406
Title: 56) NTA Defense ***Description:*** Test and Evaluation ***FY 2018 Plans:*** Continue to utilize advance and emerging 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 the MUAs and TTXs to inform lab and field trials evaluating new and emerging component technologies. Continue to prioritize efforts to address Advanced Threat requirements for existing programs of record and user groups. Conduct characterization of protective	0.730	1.188	0.794

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
equipment across many classes of threat compounds, to determine ability to meet program requirements. Continued engagement of user groups with Advanced Threat requirements through TTXs and field trials. ***FY 2019 Plans:*** Continue evaluation of new and emerging component technologies for the CBDP enterprise to inform and refine technology development strategies. Characterize the composition and effects of impurities present in chemical threats, including pharmaceutical based threats. Conduct characterization of detection and protective equipment against advanced threat compounds. Continue engagement of user groups with Advanced Threat requirements supporting TTXs and field trials. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 57) ROSETTA ***Description:*** Technical Data Package (TDP) ***FY 2019 Plans:*** Begin preparing TDP. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.079
Title: 58) ROSETTA ***Description:*** EMD Contract ***FY 2019 Plans:*** Award competitive development contract. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	1.600
Title: 59) ROSETTA ***Description:*** Test ***FY 2019 Plans:*** Complete test plans, begin development and shelf life tests. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	-	-	0.300

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Program/project funding transferred from another funding line.			
Accomplishments/Planned Programs Subtotals	66.654	127.499	145.653

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	49.313	29.211	35.094	-	35.094	27.908	20.208	16.131	17.518	Continuing	Continuing
• JF0100: *JOINT CHEMICAL AGENT DETECTOR (JCAD)*	7.547	4.253	3.500	-	3.500	0.000	0.000	0.000	0.000	0.000	15.300
• MC0100: *JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)*	7.451	0.500	0.000	-	0.000	0.000	0.000	7.655	5.741	Continuing	Continuing
• MC0101: *CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)*	90.445	94.424	91.081	-	91.081	59.972	45.924	44.072	46.674	Continuing	Continuing
• MX0001: *JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)*	0.000	0.000	0.000	-	0.000	46.724	68.825	75.502	81.656	Continuing	Continuing

Remarks

D. Acquisition Strategy

NEXT GENERATION CHEMICAL DETECTOR (NGCD)

BA4: NGCD used Full and Open competition to award TMRR contracts. In FY18 NGCD 4 awarded a wearable technology assessment (WTA) contract to provide brassboard and breadboard prototypes for Government evaluation.

BA5: In FY18 NGCD 1, 2, and 3 will use for Full and Open competition to award EMD contracts with production options under the NGCD funding line. In FY19 the NGCD program divides into separate programs. These contracts will continue in FY19 under the separate programs, AVCAD, PCAD, MPCAD funding lines. U.S. Special Operations Command (USSOCOM) awarded a contract with production options for Special Purpose (SP) Sets, Kits and Outfits (SKO) and JCAD Chemical Explosive Detector (CED). The JCAD CED was initiated under NCGD effort to develop a modification kit for the JCAD to address NTA and threats of interests going to the SP SKO and Special Purpose Units (SPU).

AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Aerosol & Vapor Chemical Agent Detector (AVCAD) (formerly NGCD 1) will use Full and Open competition to award MS B Engineering and Manufacturing Development (EMD) contracts with production options.

MULTI-PHASE CHEMICAL AGENT DETECTOR (MPCAD)

Multi-Phase Chemical Agent Detector (MPCAD) (formerly NGCD 3) will use Full and Open competition to award MS B Engineering and Manufacturing Development (EMD) contracts with production options.

PROXIMATE CHEMICAL AGENT DETECTOR (PCAD)

Proximate Chemical Agent Detector (PCAD) (formerly NGCD 2) will use Full and Open competition to award MS B Engineering and Manufacturing Development (EMD) contracts with production options.

ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)

The Enhanced Maritime Biological Detection (EMBD) program uses 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 enters into acquisition at MS B and makes maximum use of the testing to date through the JUPITR program to field the replacement for the 135 Joint Biological Point Detection Systems (JBPDS) in the Navy. EMBD is utilizing the Joint Enterprise Research, Development, Acquisition and Production/Procurement (JE-RDAP) contract at MS B for the Engineering and Manufacturing Development (EMD) contract with options for Low Rate Initial Production (LRIP). An Request for Proposal (RFP) will be released in 2nd Quarter FY18 for a competitive procurement.

GLOBAL BIO TECH INITIATIVE (GBTI)

The Global Biosurveillance Technology Initiative (GBTI) strategy establishes a robust data stream that directly supports existing programs of record in their development of biological defense countermeasures through the characterization of laboratory networks and augmentation of key nodes within those networks. This will be accomplished through the use of a University of Affiliated Research Center (Johns Hopkins University) to characterize laboratory networks and develop decision-making tools for evaluating potential augmentation of key nodes prior to investment.

JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)

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 addresses legacy Special Purpose Units (SPU) requirements gaps/deficiencies through development and optimization of COTS/GOTS systems.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

JOINT HANDHELD BIO-AGENT IDENTIFIER (JHBI)

The JHBI program will pursue a collaborative accelerated acquisition strategy to incrementally deliver capability to USSOCOM. JHBI will use commercial items to procure candidate systems from 3 vendors for further development and fielding. JHBI is co-managed and co-executed through an acquisition partnership between the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) and USSOCOM to expand the relationship between JPEO-CBD and USSOCOM and leverage acquisition and subject matter expertise on both sides to reduce acquisition timelines and improve customer satisfaction. Specifically, JHBI is using the USSOCOM requirement validation and test and evaluation resources from program inception through Milestone C. The JHBI program acquired test-articles of a single commercial-off-the-shelf (COTS) platform with relevant assays for the JHBI Combat Evaluation (CV), which served as the decision gate for the completion of the Technology Maturation and Risk Reduction (TMRR) phase. To mitigate risk, additional technologies were identified and inserted into the JHBI program.

JOINT NBC RECONNAISSANCE SYSTEM - STRYKER (JNBCRS)

Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRVSS) Upgrade is an upgrade for the Stryker Nuclear Biological Chemical Reconnaissance Vehicle. The contract approach for the Sensor Suite Upgrade will be a Full and Open Cost Plus Incentive Fee Engineering Manufacturing Development contracts with Fixed Price Incentive Fee options for Low Rate Initial Production and Full Rate Production.

MOUNTED MANNED PLATFORM RADIOLOGICAL DETECTION SYSTEM (MMPRDS)

The Mounted Manned Platform Radiological Detection System (MMPRDS) leverages technology transitioning from the Defense Threat Reduction Agency-Nuclear Technologies (DTRA/NT) to expedite technology maturation. DTRA/NT-developed systems will provide component-level test data in support of Milestone B. In Engineering Manufacturing Development (EMD), MMPRDS exterior-mounted and interior-mounted vehicle sensors will be updated and delivered for use in joint evaluation with the NBCRV Sensor Suite Upgrade program, which will support Milestone C. Based on market research, available COTS solutions for interior-mounted vehicle sensors may result in further acquisition streamlining for a portion of the solution set.

NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)

The NTA Defense program initiatives transition information, technologies, and capabilities into existing and future acquisition programs (PORs, ECD/ACDs, and Accelerated Acquisition) and utilize a variety of contract mechanisms (full and open competition, existing task order contracts within DoD, and DLA).

REACTIVE CHEMISTRY ORTHOGONAL SURFACE AND ENVIRONMENTAL THREAT TICKET ARRAY (ROSETTA)

The Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA) will use a streamlined acquisition strategy. This approach is based on technology that will transition from Science and Technology Efforts and industry. It will be developed using a Full and Open competition to award multiple development

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

contracts. An Engineering Change Proposal (ECP) will be prepared to update the M256A2 kits to the new M256A3 kits. Full and Open Competition will also be used for the M256A3 Production Contract.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - HW S - Prototype Build	C/CPIF	Smiths Detection : Edgewood, MD	0.453	7.844	Dec 2016	1.200	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW C - Joint Chemical Agent Detector Chemical Explosives Detector (JCAD-CED) Library Development	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.249	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW SB - NGCD 1 Radio Evaluation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.400	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - CBMS II Replacement Evaluation	C/CPIF	MRIGlobal : Kansas City, MO	0.000	1.271	May 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - SP-SKO CDD	C/CPFF	Smiths Detection : Edgewood, MD	0.000	1.200	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 1	C/CPIF	TBD : TBD	0.000	0.000		11.274	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 2	C/CPIF	TBD : TBD	0.000	0.000		11.236	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 3	C/CPIF	TBD : TBD	0.000	0.000		9.835	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - HW S - Aerosol & Vapor Chemical Agent Detector EMD Contract	C/FPIF	TBD : TBD	0.000	0.000		0.000		12.023	Oct 2018	-		12.023	Continuing	Continuing	0.000
MPCAD - HW S - Multi-Phase Chemical Agent Detector (MPCAD) EMD Contract	C/CPFF	TBD : TBD	0.000	0.000		0.000		22.730	Mar 2019	-		22.730	Continuing	Continuing	0.000
PCAD - HW S - Proximate Chemical Agent Detector EMD Contract	C/CPIF	TBD : TBD	0.000	0.000		0.000		6.500	Mar 2019	-		6.500	Continuing	Continuing	0.000
EMBD - HW SB - EMBD-HW SB Hardware Subsystem	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.750	Jul 2017	0.000		2.236	Nov 2018	-		2.236	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - HW S - Prototype Development and Manufacturing	C/CPIF	TBD : TBD	0.000	0.000		5.958	Mar 2018	6.775	Nov 2018	-		6.775	Continuing	Continuing	0.000
EMBD - HW C - Detector	SS/FFP	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.000	0.600	Jul 2017	2.000	Jan 2018	1.100	Oct 2018	-		1.100	Continuing	Continuing	0.000
JBTDS - HW S - EMD Contract Award	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	13.612	10.076	Nov 2016	0.700	Dec 2017	5.181	Nov 2018	-		5.181	Continuing	Continuing	0.000
JBTDS - HW C - Tactical Common Identifier	C/CPFF	BioFire Dx : Salt Lake City, UT	13.549	0.464	Nov 2016	8.891	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - HW C - NBCRV Platform Integration	MIPR	TBD : TBD	0.000	0.000		0.150	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - HW C - SPU Biomeme JHBI	SS/FFP	Biomeme : Philadelphia, PA	4.049	0.606	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - HW C - SPU Genedrive JHBI	SS/FFP	Epistem : Manchester, UK	4.235	0.542	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - HW C - SPU Mobile Analysis Platform (MAP) JHBI	SS/CPFF	Ibis : Carlsbad, CA	3.991	1.724	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW - Sensor Processing Group Development	MIPR	Armament Research : Development and Engineering Center, Piccatinny, NJ	0.000	0.000		1.200	Feb 2018	3.017	Feb 2019	-		3.017	Continuing	Continuing	0.000
JNBCRS 1 - HW-Sensor Suite Development	C/CPIF	Various : Various	0.000	0.000		13.301	Dec 2017	11.347	Dec 2018	-		11.347	Continuing	Continuing	0.000
MMPRDS - HW C - MMPRDS - Product Refinement	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	0.000	0.000		0.000		1.000	Dec 2018	-		1.000	Continuing	Continuing	0.000
ROSETTA - HW C Rosetta EMD Contract Award	C/FFP	TBD : TBD	0.000	0.000		0.000		1.600	Jul 2019	-		1.600	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	39.889	25.726		65.745		73.509		-		73.509	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - ES S - Joint Service T&E/SE IPT	MIPR	Various : Various	0.705	1.772	Mar 2017	3.010	Oct 2017	0.000		-		0.000	Continuing	Continuing	0.000
EMBD - ES S - OTA/OGA Service Representation USN Variant	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.500	Jan 2018	0.550	Nov 2018	-		0.550	Continuing	Continuing	0.000
GBTI - TD/D C - Biosurveillance (BSV)	Various	Various : Various	0.000	0.359	Apr 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - ES C - Engineering Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	2.000	0.139	Nov 2016	0.000		1.690	Nov 2018	-		1.690	Continuing	Continuing	0.000
JBTDS - ES S - OTA/OGA Service Representation	MIPR	Various : Various	6.039	0.651	Nov 2017	3.016	Mar 2018	2.910	Nov 2018	-		2.910	Continuing	Continuing	0.000
JBTDS - ES S - SPU Engineering Support JHBI	MIPR	Various : Various	0.000	0.572	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - ES S - Biosensor Calibration Effort	MIPR	Naval Research Lab (NRL) : Washington, DC	2.275	0.188	Mar 2017	0.400	Mar 2018	0.350	Mar 2019	-		0.350	Continuing	Continuing	0.000
JBTDS - ILS S - Reliability Growth Model	MIPR	United States Army Materiel Systems Analysis Activity(AMSAA) : Aberdeen Proving Ground, MD	0.043	0.000		0.120	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - ES S - OTA/ OGA Representation USN Variant JHBI	MIPR	Various : Various	0.225	0.460	Oct 2016	0.000		0.000	Oct 2018	-		0.000	Continuing	Continuing	0.000
JBTDS - ES C - SPU System Integration	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.500	0.500	Mar 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JHBI - ES S - Engineering and IPT Support	MIPR	Various : Various	0.000	0.000		0.490	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - ES - Engineering Support	MIPR	Various : Various	0.000	0.000		0.748	Nov 2017	1.525	Nov 2018	-		1.525	Continuing	Continuing	0.000
NTA DEFENSE - ES S - NTA OPETS Support	C/CPFF	Patricio Enterprises : Inc., Woodbridge, VA	0.000	0.075	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	11.787	4.716		8.284		7.025		-		7.025	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - DTE C - Test Preparation/Expanded Test Capabilities	Various	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	2.131	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - DTE S - JCAD-CED Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	2.160	Apr 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - NGCD 1 - PQT Chamber Test	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		3.200	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - NGCD 1 - PQT Survivability /	MIPR	Various : Various	0.000	0.000		1.647	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability/ Environmental															
NGCD - NGCD 2- Customer Testing	MIPR	Various : Various	0.000	0.000		0.750	Jun 2018	0.000		-		0.000	Continuing	Continuing	0.000
NGCD - NGCD 3 - Customer Testing	MIPR	Various : Various	0.000	0.000		0.800	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Interoperability	MIPR	Indian Head : Indian Head, MD	0.000	0.000		0.000		0.220	Jan 2019	-		0.220	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Cyber Security Vulnerability	MIPR	Indian Head : Indian Head, MD	0.000	0.000		0.000		0.220	Apr 2019	-		0.220	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Environmental (MIL-STD-810G)	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.605	Apr 2019	-		0.605	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Explosive Atmosphere Test	MIPR	Electronic Proving Ground : Fort Huachuca, AZ	0.000	0.000		0.000		0.028	Jan 2019	-		0.028	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT False (Positive) Alarm	Allot	20th Support Command : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.220	May 2019	-		0.220	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Natural Desert Environmental Storage	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.000		0.000		0.018	May 2019	-		0.018	Continuing	Continuing	0.000
AVCAD - DTE C - Mil-Std 901D - Ship Shock; MIL-Std 167-1 Vibration	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.028	Jul 2019	-		0.028	Continuing	Continuing	0.000
AVCAD - DTE C - Shipboard Operation Verification	MIPR	Potomac Test Range : Potomac Mills, VA	0.000	0.000		0.000		0.165	Jun 2019	-		0.165	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - DTE C - PQT DT Rotary Wing Compatibility Test	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.028	Feb 2019	-		0.028	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT Coastal Operational Service Life	MIPR	Naval Research Laboratory : Key West, FL	0.000	0.000		0.000		0.110	Jun 2019	-		0.110	Continuing	Continuing	0.000
AVCAD - DTE C - PQT DT/OT Post Field Chamber Chemical Chamber (CWA/AT/TIC Vapor, CWA/AT Aerosol)	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		1.894	Apr 2019	-		1.894	Continuing	Continuing	0.000
AVCAD - DTE C - OT Operational Assessment (OA) Test	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.742	Jun 2019	-		0.742	Continuing	Continuing	0.000
MPCAD - DTE C - Library Build and System Verification	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.858	Nov 2018	-		1.858	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Interoperability	MIPR	Eglin AFB : Eglin Air Force Base, FL	0.000	0.000		0.000		0.200	Feb 2019	-		0.200	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Cyber Security Vulnerability	MIPR	Joint Interoperability Test Command (JITC) : Fort Huachuca, AZ	0.000	0.000		0.000		0.200	Nov 2018	-		0.200	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Chemical Biological Radiological Contamination Survivability (CBRCS)	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.700	Feb 2019	-		0.700	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Environmental (MIL-STD-810G)	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.400	Feb 2019	-		0.400	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MPCAD - DTE C - PVT DT Explosive Atmosphere	MIPR	Electronic Proving Ground : Fort Huachuca, AZ	0.000	0.000		0.000		0.025	Jul 2019	-		0.025	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT False (Positive) Alarm	MIPR	TBD : TBD	0.000	0.000		0.000		0.167	Aug 2019	-		0.167	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Natural Desert Environmental Storage	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.000		0.000		0.100	Jul 2019	-		0.100	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT Electromagnetic Survivability	MIPR	White Sand Missile Range : Mesa, AZ	0.000	0.000		0.000		0.350	Apr 2019	-		0.350	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT/OT Chemicals	MIPR	TBD : TBD	0.000	0.000		0.000		0.400	Jun 2019	-		0.400	Continuing	Continuing	0.000
MPCAD - DTE C - PQT DT/OT Chemical Chamber	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		1.849	Nov 2018	-		1.849	Continuing	Continuing	0.000
PCAD - DTE C - PQT DT Customer Chamber Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.750	Nov 2018	-		1.750	Continuing	Continuing	0.000
PCAD - DTE C - PQT DT Customer Chamber Test #2	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		1.750	Nov 2018	-		1.750	Continuing	Continuing	0.000
EMBD - DTE S - Consumable Procurement	MIPR	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.163	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EMBD - DTE C - Near Neighbor Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.232	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EMBD - DTE C - Live Agent Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		2.000	Jul 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - OTE S - EMBD OTE S - Navy Operational Test & Eval	MIPR	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.000	0.000		0.000		0.296		-		0.296	Continuing	Continuing	0.000
EMBD - DTE S - DT Testing - EMBD	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.425	Nov 2018	-		0.425	Continuing	Continuing	0.000
GBTI - Test and Evaluation of Technology Refresh Candidates	MIPR	Various : Various	0.000	0.059	Aug 2017	1.285	Dec 2017	0.093	Dec 2018	-		0.093	Continuing	Continuing	0.000
JBTDS - DTE S - Battelle BPSA	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	2.692	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE S - Developmental Testing	MIPR	Various : Various	1.265	1.866	Mar 2017	0.720	Mar 2018	3.440	Jan 2019	-		3.440	Continuing	Continuing	0.000
JBTDS - DTE S - System Testing/Optimization SPU JHBI	C/CPIF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.563	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE S - V&V of JBTDS Military Utility Model	FFRDC	Institute for Defense Analysis (IDA) : Alexandria, VA	0.564	0.273	Jun 2017	0.250	Dec 2017	0.350	Apr 2019	-		0.350	Continuing	Continuing	0.000
JBTDS - DTE S - Development Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.089	0.000		0.400	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE S - Battelle	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.814	0.000	Dec 2016	2.600	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE S - Various	MIPR	Various : Various	0.000	0.000		3.350	Dec 2017	3.350	Jun 2019	-		3.350	Continuing	Continuing	0.000
JHBI - DTE S - Test and Evaluation Support	MIPR	Various : Various	0.000	0.000		0.500	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JNBCRS 1 - DTE - Test and Evaluation	MIPR	Various : Various	0.000	0.000		0.700	Jun 2018	2.576	Jun 2019	-		2.576	Continuing	Continuing	0.000
MMPRDS - DTE S - MMPRDS - Design Verification Test	MIPR	TBD : TBD	0.000	0.000		0.000		0.608	Apr 2019	-		0.608	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Developmental Test and Evaluation	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.174	Jan 2018	0.200	Dec 2018	-		0.200	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Developmental Test and Evaluation #2	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.787	0.172	Feb 2017	0.436	Mar 2018	0.260	Dec 2018	-		0.260	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Test & Evaluation	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.135	Aug 2017	0.000		0.134	Dec 2018	-		0.134	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Developmental Test and Evaluation #3	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.280	0.423	Feb 2017	0.261	Jan 2018	0.275	Dec 2018	-		0.275	Continuing	Continuing	0.000
ROSETTA - DTE C - Development Testing	MIPR	Various : Various	0.000	0.000		0.000		0.300	Dec 2018	-		0.300	Continuing	Continuing	0.000
		Subtotal	4.799	10.869		19.073		26.334		-		26.334	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - PM/MS C - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	3.224	6.744	Dec 2016	15.035	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - PM/MS C - NGCD CA Support (Additional Plus-Up Funding)	Various	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	2.016	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS S - CRESS OGAs - ECBC, ATC, Pine Bluff	MIPR	Various : Various	0.000	0.200	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS C - CBMS II Replacement Evaluation	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.576	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - PM/MS S - CBMS II OGAs	MIPR	Various : Various	0.000	0.785	Aug 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - PM/MS S	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		5.673	Nov 2018	-		5.673	Continuing	Continuing	0.000
MPCAD - PM/MS C - MPCAD - PM/MS S	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		3.950	Mar 2019	-		3.950	Continuing	Continuing	0.000
MPCAD - PM/MS S - OGA Support	MIPR	Various : Various	0.000	0.000		0.000		0.663	Oct 2018	-		0.663	Continuing	Continuing	0.000
PCAD - PM/MS S - PCAD	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		5.175	Nov 2018	-		5.175	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PCAD - PM/MS S - OGA Support PCAD ES S-Joint Services T&E/SE IPT	MIPR	Various : Various	0.000	0.000		0.000		0.967	Nov 2018	-		0.967	Continuing	Continuing	0.000
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	2.200	Jul 2017	3.620	Dec 2017	6.129	Oct 2018	-		6.129	Continuing	Continuing	0.000
GBTI - PM/MS C - Program Management Support	Allot	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.970	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
GBTI - PM/MS S - Network Analysis and Characterization	MIPR	Various : Various	0.000	0.216	Aug 2017	1.685	Jun 2018	0.331	Jun 2019	-		0.331	Continuing	Continuing	0.000
GBTI - PM/MS C - Project Engagement	MIPR	Various : Various	0.000	0.000		2.754	Nov 2017	0.158	Nov 2018	-		0.158	Continuing	Continuing	0.000
GBTI - PM/MS C - Bioinformatics	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.688	0.700	Dec 2016	0.000		1.526	Dec 2018	-		1.526	Continuing	Continuing	0.000
JBTDS - PM/MS SB - Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	22.454	10.182	Dec 2016	8.983	Dec 2017	10.721	Dec 2018	-		10.721	Continuing	Continuing	0.000
JBTDS - PM/MS SB - SPU Program Management Support JHBI	MIPR	Various : Various	0.738	0.425	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - PM - Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO,	0.000	0.000		2.003	Nov 2017	2.190	Nov 2018	-		2.190	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
MMPRDS - PM/MS C - MMPRDS Program Management Matrix	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.535	Nov 2018	-		0.535	Continuing	Continuing	0.000
MMPRDS - PM/MS C - MMPRDS Program Management Support	MIPR	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.357	Nov 2018	-		0.357	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	5.683	0.329	Dec 2016	0.317	Dec 2017	0.331	Dec 2018	-		0.331	Continuing	Continuing	0.000
ROSETTA - PM/MS C - Rosetta Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.079	Dec 2018	-		0.079	Continuing	Continuing	0.000
		Subtotal	32.787	25.343		34.397		38.785		-		38.785	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	89.262	66.654		127.499		145.653		-		145.653	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

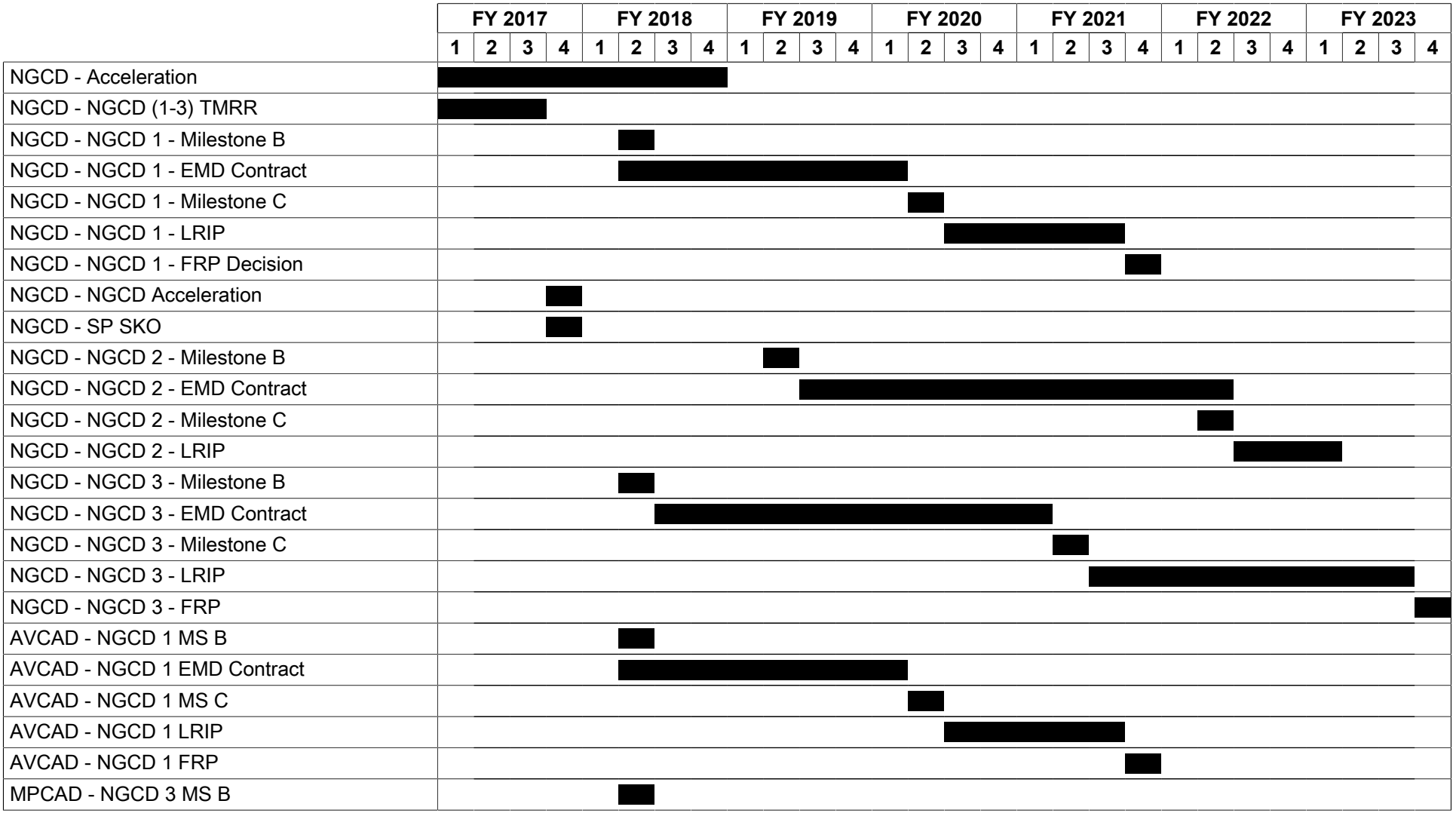

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

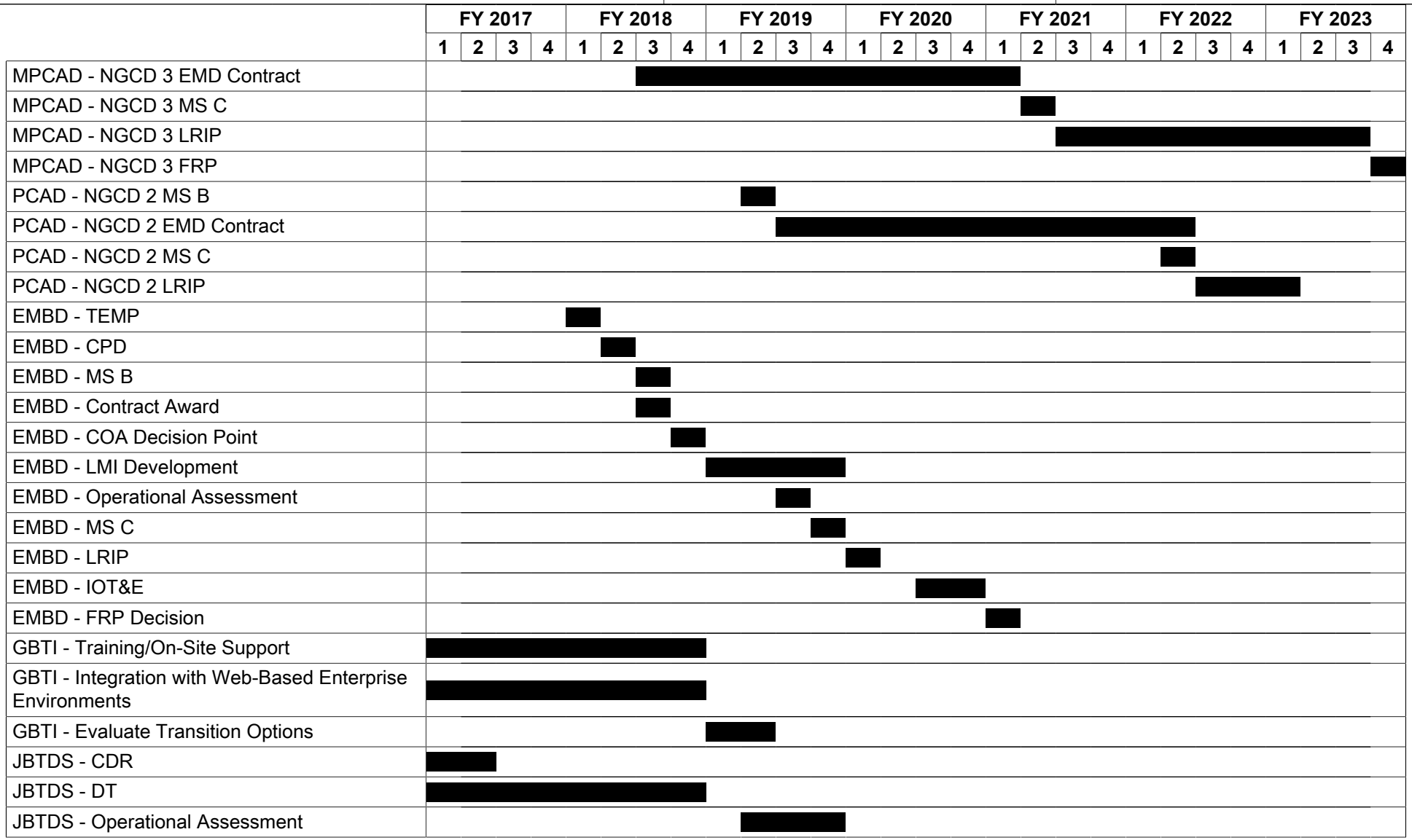

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

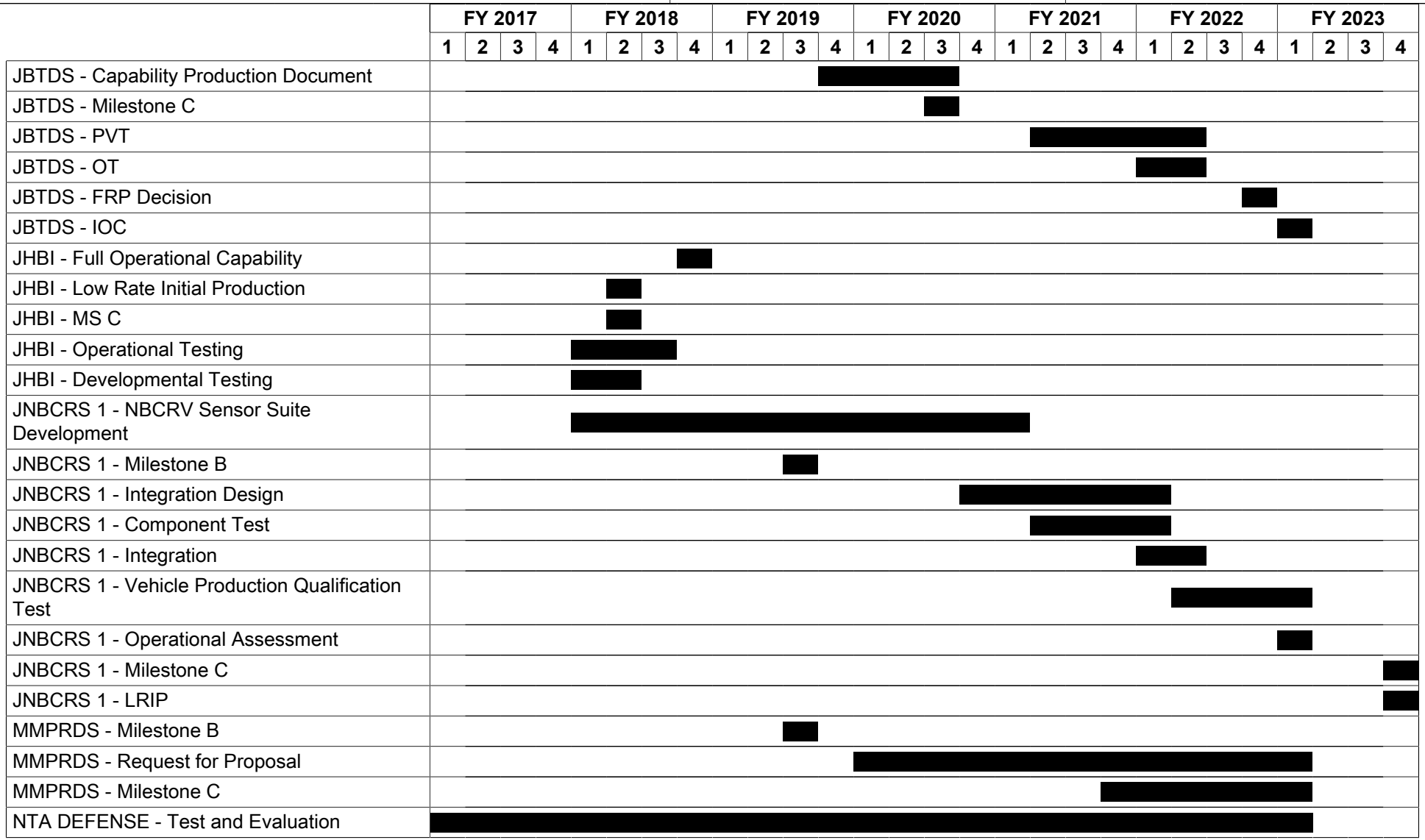

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

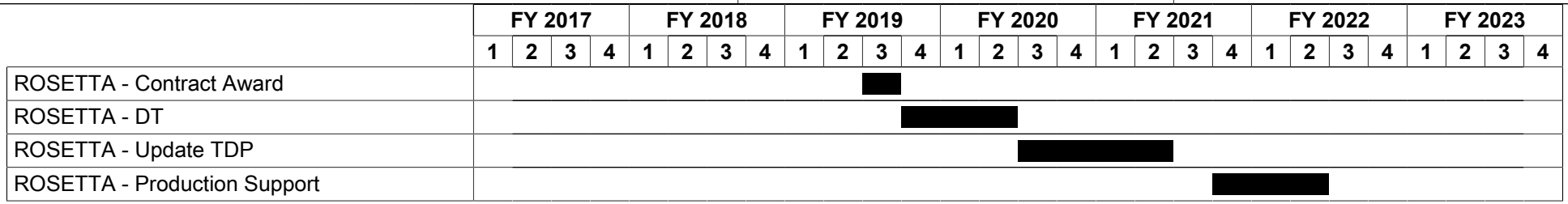

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NGCD - Acceleration	1	2017	4	2018
NGCD - NGCD (1-3) TMRR	1	2017	3	2017
NGCD - NGCD 1 - Milestone B	2	2018	2	2018
NGCD - NGCD 1 - EMD Contract	2	2018	1	2020
NGCD - NGCD 1 - Milestone C	2	2020	2	2020
NGCD - NGCD 1 - LRIP	3	2020	3	2021
NGCD - NGCD 1 - FRP Decision	4	2021	4	2021
NGCD - NGCD Acceleration	4	2017	4	2017
NGCD - SP SKO	4	2017	4	2017
NGCD - NGCD 2 - Milestone B	2	2019	2	2019
NGCD - NGCD 2 - EMD Contract	3	2019	2	2022
NGCD - NGCD 2 - Milestone C	2	2022	2	2022
NGCD - NGCD 2 - LRIP	3	2022	1	2023
NGCD - NGCD 3 - Milestone B	2	2018	2	2018
NGCD - NGCD 3 - EMD Contract	3	2018	1	2021
NGCD - NGCD 3 - Milestone C	2	2021	2	2021
NGCD - NGCD 3 - LRIP	3	2021	3	2023
NGCD - NGCD 3 - FRP	4	2023	4	2023
AVCAD - NGCD 1 MS B	2	2018	2	2018
AVCAD - NGCD 1 EMD Contract	2	2018	1	2020
AVCAD - NGCD 1 MS C	2	2020	2	2020
AVCAD - NGCD 1 LRIP	3	2020	3	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AVCAD - NGCD 1 FRP	4	2021	4	2021
MPCAD - NGCD 3 MS B	2	2018	2	2018
MPCAD - NGCD 3 EMD Contract	3	2018	1	2021
MPCAD - NGCD 3 MS C	2	2021	2	2021
MPCAD - NGCD 3 LRIP	3	2021	3	2023
MPCAD - NGCD 3 FRP	4	2023	4	2023
PCAD - NGCD 2 MS B	2	2019	2	2019
PCAD - NGCD 2 EMD Contract	3	2019	2	2022
PCAD - NGCD 2 MS C	2	2022	2	2022
PCAD - NGCD 2 LRIP	3	2022	1	2023
EMBD - TEMP	1	2018	1	2018
EMBD - CPD	2	2018	2	2018
EMBD - MS B	3	2018	3	2018
EMBD - Contract Award	3	2018	3	2018
EMBD - COA Decision Point	4	2018	4	2018
EMBD - LMI Development	1	2019	4	2019
EMBD - Operational Assessment	3	2019	3	2019
EMBD - MS C	4	2019	4	2019
EMBD - LRIP	1	2020	1	2020
EMBD - IOT&E	3	2020	4	2020
EMBD - FRP Decision	1	2021	1	2021
GBTI - Training/On-Site Support	1	2017	4	2018
GBTI - Integration with Web-Based Enterprise Environments	1	2017	4	2018
GBTI - Evaluate Transition Options	1	2019	2	2019
JBTDS - CDR	1	2017	2	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JBTDS - DT	1	2017	4	2018
JBTDS - Operational Assessment	2	2019	4	2019
JBTDS - Capability Production Document	4	2019	3	2020
JBTDS - Milestone C	3	2020	3	2020
JBTDS - PVT	2	2021	2	2022
JBTDS - OT	1	2022	2	2022
JBTDS - FRP Decision	4	2022	4	2022
JBTDS - IOC	1	2023	1	2023
JHBI - Full Operational Capability	4	2018	4	2018
JHBI - Low Rate Initial Production	2	2018	2	2018
JHBI - MS C	2	2018	2	2018
JHBI - Operational Testing	1	2018	3	2018
JHBI - Developmental Testing	1	2018	2	2018
JNBCRS 1 - NBCRV Sensor Suite Development	1	2018	1	2021
JNBCRS 1 - Milestone B	3	2019	3	2019
JNBCRS 1 - Integration Design	4	2020	1	2022
JNBCRS 1 - Component Test	2	2021	1	2022
JNBCRS 1 - Integration	1	2022	2	2022
JNBCRS 1 - Vehicle Production Qualification Test	2	2022	1	2023
JNBCRS 1 - Operational Assessment	1	2023	1	2023
JNBCRS 1 - Milestone C	4	2023	4	2023
JNBCRS 1 - LRIP	4	2023	4	2023
MMPRDS - Milestone B	3	2019	3	2019
MMPRDS - Request for Proposal	1	2020	1	2023
MMPRDS - Milestone C	4	2021	1	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NTA DEFENSE - Test and Evaluation	1	2017	1	2023
ROSETTA - Contract Award	3	2019	3	2019
ROSETTA - DT	4	2019	2	2020
ROSETTA - Update TDP	3	2020	2	2021
ROSETTA - Production Support	4	2021	2	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CM5: *HOMELAND DEFENSE (EMD)*	-	12.223	21.411	6.000	-	6.000	11.200	0.000	0.000	0.000	0.000	50.834
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project supports Engineering and Manufacturing Development of the following program: 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 will be three variants of CALS as detailed below:

1. Field Confirmatory Integrated System (FC-IS) Variant - NGB and Marine Corp User
-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.

2. Theater Validation Integrated System (TV-IS) Variant - Army User
-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 one Family of Medium Tactical Vehicles (FMTV) and one trailer, to support the needed additional laboratory space.

3. Field Confirmatory Analytical Capability Sets (FC-ACS) Variant - Army, Navy, Air Force and NGB User - A palletized / transportable equipment subsets that allows them to be loaded into transport cases and palletized. Enables the users to receive the Chemical and Biological (CB) subsystems that meet their specific mission profiles.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) CALS - System Level Prototype Variant Development and Manufacturing	4.776	6.554	0.147
Description: Development of System Level variant prototypes ensuring integration and connectivity between modules as a general system layout. This includes raw and semi-fabricated material plus purchased parts materials, fabrication, processing,			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
subassembly, final assembly, reworking modification, and installation of parts and equipment, power plants, electronic equipment, and other items (including government-Furnished equipment [GFE]), and the proving of such equipment and instruments for the specified system prototype. ***FY 2018 Plans:*** Continue engineering changes and refurbishment of variant prototypes ensuring integration and connectivity between modules as a general system layout. Major system design changes are required during the EMD phase for the FC IS and TV IS variants, this was directed by the Joint Requirements Office (JRO) ***FY 2019 Plans:*** Continue engineering changes and refurbishment of variant prototypes ensuring integration and connectivity between modules as a general system layout for the TV IS. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 2) CALS - System Level Test and Evaluation ***Description:*** System Level test and evaluation activities to include detailed planning, conduct, support, data reduction, and reports from such testing. ***FY 2018 Plans:*** Continue System Level Developmental Test (DT), Logistics Demonstration and contract verification testing for field confirmatory and theater validation variants. Initiate Operational Test for the Analytical Capability Sets (ACS). ***FY 2019 Plans:*** Complete System Level Testing and engineering changes / refurbishment of variant prototypes ensuring integration and connectivity between modules as a general system layout. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	3.053	7.293	3.861
Title: 3) CALS - System Integration Laboratory ***Description:*** Establishment of a System Integration laboratory to assist in the mitigation of programmatic risk and to facilitate the evaluation and integration of subsystem CBRN modules into System level prototypes. ***FY 2018 Plans:***	0.400	0.642	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Complete system integration laboratory analysis risk reduction and activities to incorporate analysis of variant system configurations, capabilities, engineering controls, information assurance and DoD Information Assurance Certification and Accreditation Procedure (DIACAP) requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 4) CALS - Safety Release Internal Review Board ***FY 2018 Plans:*** 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. ***FY 2019 Plans:*** 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.182	0.200	0.100
Title: 5) CALS - System Engineering and Program Management ***Description:*** 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/program, including functions of logistics engineering and integrated logistics support (ILS) management (e.g., maintenance support, facilities, personnel, training, testing). ***FY 2018 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. Major system design changes are required during the EMD phase for the FC IS and TV IS variants, this was directed by the Joint Requirements Office (JRO). ***FY 2019 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 of the TV IS. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	3.812	6.722	1.892
Accomplishments/Planned Programs Subtotals	12.223	21.411	6.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JS0005: *COMMON ANALYTICAL LABORATORY SYSTEM (CALS)*	23.100	16.402	48.317	-	48.317	55.636	71.483	70.891	70.637	Continuing	Continuing

Remarks

D. Acquisition Strategy

COMMON ANALYTICAL LABORATORY SYSTEM (CALS)

The Common Analytical Laboratory System (CALS) will be developed 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 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. CALS 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) entered DT first and to reached an early Milestone C - Low Rate Initial Production (LRIP) (FY17) followed by a Full Rate Production (FRP) Decision prior to the Milestone C (LRIP) (FY19) and (FRP) Decision for the FC (1st Quarter, FY20) 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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - HW S - ACS Operational Test (OT)	C/FP	TBD : TBD	0.000	0.000		3.439	Mar 2018	0.000		-		0.000	0.000	3.439	0.000
CALS - HW S Prototype System Manufacturing	C/CPIF	Battelle Memorial Institute : Columbus, OH	24.596	4.876	Jan 2017	6.554	Dec 2018	0.147	Nov 2018	-		0.147	0.000	36.173	0.000
CALS - HW S - NGDS Tactical Variant Alpha Prototype	C/CPFF	BioFire Dx : Salt Lake City, UT	1.501	0.000		0.354	Mar 2018	0.000		-		0.000	0.000	1.855	0.000
		Subtotal	26.097	4.876		10.347		0.147		-		0.147	0.000	41.467	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - ES S - Engineering Support System	C/FFP	Various : Various	7.773	2.148	Feb 2017	3.308	Feb 2018	0.000		-		0.000	0.000	13.229	0.000
CALS - ES C - Other Government Agencies (DT/OT) Services	MIPR	Various : Various	0.000	0.000		0.946	Jan 2018	1.066	Jan 2019	-		1.066	0.000	2.012	0.000
CALS - ES S - System Integration Laboratory Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.936	0.400	Jan 2017	0.642	Jan 2018	0.000		-		0.000	0.000	1.978	0.000
CALS - TD/D S - CALS - Safety Internal Review Board	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.182	Mar 2017	0.200	Mar 2018	0.100	Mar 2019	-		0.100	0.000	0.482	0.000
		Subtotal	8.709	2.730		5.096		1.166		-		1.166	0.000	17.701	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - DTE S - DT/OT and LOGDEMO	C/CPIF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		1.267	Jan 2018	0.000		-		0.000	0.000	1.267	0.000
CALS - DTE S - System DT/OT and LOGDEMO	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	3.182	Feb 2017	1.818	Jan 2018	3.631	Feb 2019	-		3.631	0.000	8.631	0.000
CALS - OTHT C - Operation Test Agencies	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.150	0.000		1.977	Jan 2018	0.299	Feb 2019	-		0.299	0.000	2.426	0.000
		Subtotal	0.150	3.182		5.062		3.930		-		3.930	0.000	12.324	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - PM/MS HW - Program Office - Planning and Programming	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	6.453	1.435	Mar 2017	0.906	Jan 2018	0.757	Nov 2018	-		0.757	0.000	9.551	0.000
		Subtotal	6.453	1.435		0.906		0.757		-		0.757	0.000	9.551	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	41.409	12.223		21.411		6.000		-		6.000	0.000	81.043	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

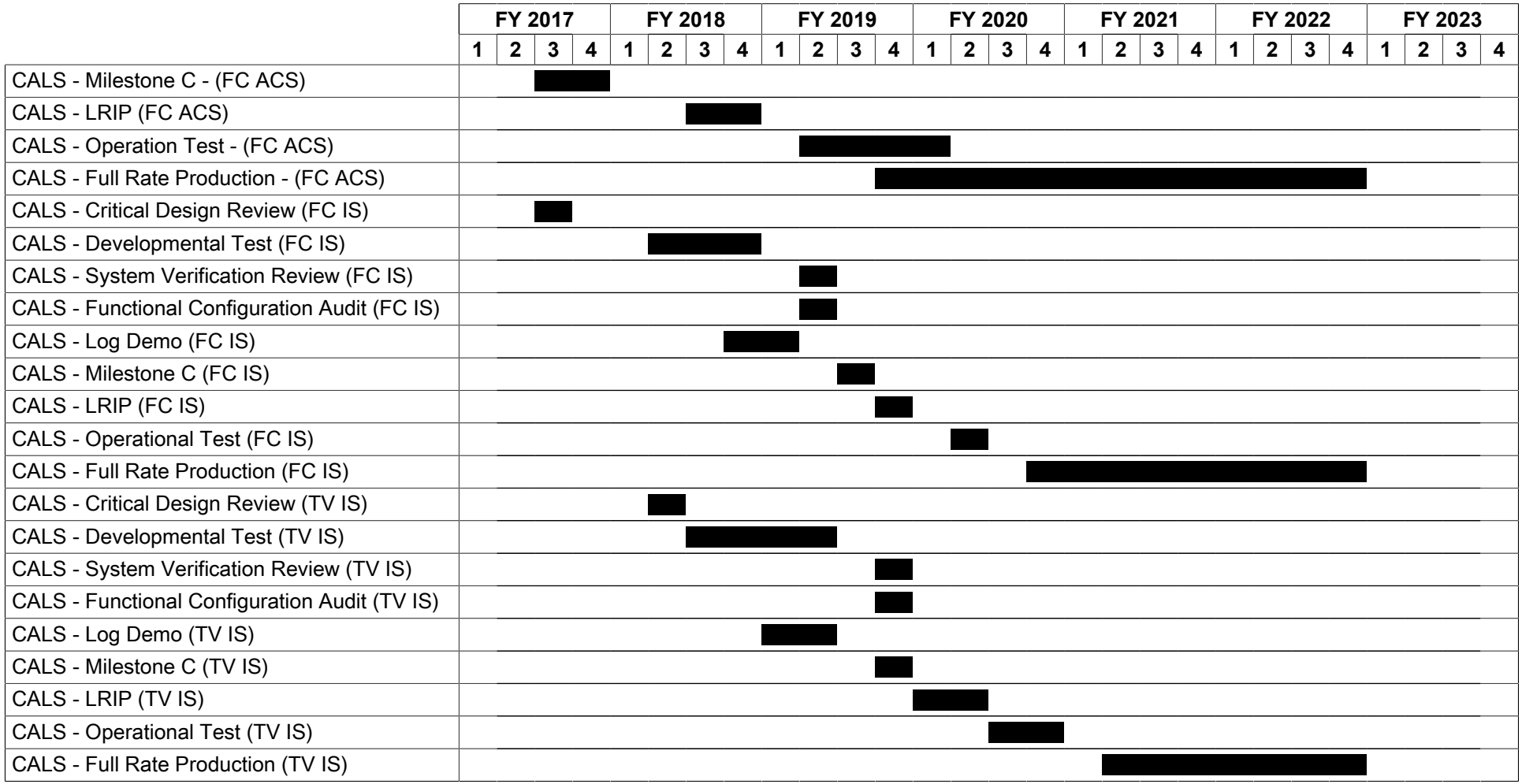

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CALS - Milestone C - (FC ACS)	3	2017	4	2017
CALS - LRIP (FC ACS)	3	2018	4	2018
CALS - Operation Test - (FC ACS)	2	2019	1	2020
CALS - Full Rate Production - (FC ACS)	4	2019	4	2022
CALS - Critical Design Review (FC IS)	3	2017	3	2017
CALS - Developmental Test (FC IS)	2	2018	4	2018
CALS - System Verification Review (FC IS)	2	2019	2	2019
CALS - Functional Configuration Audit (FC IS)	2	2019	2	2019
CALS - Log Demo (FC IS)	4	2018	1	2019
CALS - Milestone C (FC IS)	3	2019	3	2019
CALS - LRIP (FC IS)	4	2019	4	2019
CALS - Operational Test (FC IS)	2	2020	2	2020
CALS - Full Rate Production (FC IS)	4	2020	4	2022
CALS - Critical Design Review (TV IS)	2	2018	2	2018
CALS - Developmental Test (TV IS)	3	2018	2	2019
CALS - System Verification Review (TV IS)	4	2019	4	2019
CALS - Functional Configuration Audit (TV IS)	4	2019	4	2019
CALS - Log Demo (TV IS)	1	2019	2	2019
CALS - Milestone C (TV IS)	4	2019	4	2019
CALS - LRIP (TV IS)	1	2020	2	2020
CALS - Operational Test (TV IS)	3	2020	4	2020
CALS - Full Rate Production (TV IS)	2	2021	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CO5: *COLLECTIVE PROTECTION (EMD)*	-	2.640	8.546	10.802	-	10.802	5.333	4.930	0.000	0.000	0.000	32.251
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 systems included in this project are: (1) Chemical-Biological Aircraft Survivability Barrier (CASB) and (2) Joint Expeditionary Collective Protection (JECP) Family of Systems.

The CASB will provide a lightweight, low-cost, expendable, negative-pressure enclosure that will protect the interior of multi-service aircraft (MH-47, CV22, MC-130) capable of airlifting/exfiltrating chemically or biologically contaminated personnel, equipment, contagious patients, and cargos while preserving the aircraft for continued unrestricted operations without need for extensive decontamination.

JECP provides the Joint Expeditionary Forces a CP capability which is lightweight, compact, modular, and affordable. JECP is 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 1 includes standalone CP systems and kits to provide existing host platforms and structures with CBRN protection. Phase 2 includes kits to provide CBRN protection to other host platforms and structures that were not explicitly designed in Phase 1. 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 2017	FY 2018	FY 2019
Title: 1) Chemical and Biological Aircraft Survivability Barrier (CASB)	-	3.247	4.830
Description: Developmental Testing and Prototype Development			
FY 2018 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Conduct Technical reviews to include a Technology Readiness Assessment (TRA), Manufacturing Readiness Assessment (MRA), Critical Design Review (CDR), Draft Request for Proposal (RFP), Lifecycle Sustainment Plan (LCSP) and Test and Evaluation Master Plan (TEMP), Initiate Developmental Testing on prototypes to include chemical and biological filtration protection, swatch/ permeation, reliability/availability. ***FY 2019 Plans:*** Complete Developmental Test and Evaluation (DT&E), conduct an Operational Assessment (OA), and complete operational test and evaluation needed to support Airworthiness (AWR) Certification. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 2) JECP - Phase 1 Full Rate Production (FRP) Preparations ***Description:*** Preparations for Phase I FRP Decision and Type Classification/Materiel Release (TC/MR).	2.640	-	-
Title: 3) JECP - Phase 2 System Development and Demonstration ***Description:*** Phase 2 system development and demonstration events. ***FY 2018 Plans:*** Continue design and development of Phase 2 tent kits to address emerging service requirements for collective protection to new host platforms. Continue prototyping, changes to logistic support products, and continue updates to the Govt owned Tech Data Package. Begin test planning and initiate developmental testing. ***FY 2019 Plans:*** Continue design and development of Phase 2 tent kits to address emerging service requirements for collective protection to new host platforms. Continue prototyping, changes to logistic support products, and continue updates to the Government owned Technical Data Package. Begin test planning and initiate developmental testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to change in program/project schedule.	-	5.299	5.972
Accomplishments/Planned Programs Subtotals	2.640	8.546	10.802

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JP1111: *JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)*	13.699	10.728	22.752	-	22.752	17.592	22.218	25.793	39.293	Continuing	Continuing

Remarks

D. Acquisition Strategy

CHEMICAL BIOLOGICAL AIRCRAFT SURVIVABILITY BARRIER (CASB)

CASB will field a capability that will support the overall intent of the (Aircraft CBRN Contamination Survivability ACCS) Initial Capabilities Development (ICD) in the areas of barriers, aircraft containment systems, modular Collective Protection (ColPro) for aircraft interiors, and disposable ColPro. CASB is one member of a family of systems that will support the ICD. It will protect the interior of DoD airlift assets from incidental cross-contamination by CB-contaminated personnel and equipment and cargos under transport. The overall strategy is to utilize primary materials (air filtration and flexible barrier material) currently in use by other programs in the CB defense portfolio in a negative pressure system specifically designed for airframe use. CASB will review existing materials and technology as well as designs, configurations, and test data from legacy systems developed for ColPro applications. Using this information, systems will be developed to meet the broader range of airframes and airframe specific requirements, chemical biological protection and logistic supportability that are now required. Based on commonality between the requirements of the CASB and the requirements of similar programs (i.e. Joint Expeditionary Collective Protection, TIS, and Aeromedical Biological Containment System), CASB will be initiated at MS B EMD phase to meet these expanded requirements within the various airframes. CASB will leverage an IDIQ contract to pursue a Commercial-of-the-Shelf (COTS) development strategy using full and open competition for awards following MS B and MS C. During the EMD phase, CASB intends to award a Cost Plus Incentive Fee (CPIF) delivery order for the development and delivery of prototypes for airworthiness certification within two years. During the Production phase, CASB intends to pursue a Fixed Price Incentive Fee (FPIF) delivery order to reduce the logistical burden and sustainment costs.

JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)

JECP Family of Systems (FoS) (Phase 1 and Phase 2) involves multiple contract types throughout the Engineering and Manufacturing Development and Production and Deployment Phases of the program. Having achieved a Full Rate Production (FRP) decision for Phase 1 Systems in December 2016, the program exercised Fixed Price Incentive production options in FY17 & FY18 under the current Leidos contract to meet Initial Operational Capability. A competitive build-to-print follow-on production task order under the Joint Enterprise Research, Development, Acquisition, and Production (JE-RDAP) Contract will be awarded in FY19 to support production of Phase 1 Systems to meet Full Operational Capability (FOC). Phase 2 systems will be developed starting in FY18 as engineering changes to the Phase 1 systems under a separate JE-RDAP competitive task order and will undergo limited developmental and operational testing in pursuit of a FRP decision in FY21. Production options will be included in the task order to meet FOC for Phase 2 systems. Additionally, BA7 funding will develop incremental improvements to fielded JECP FoS. BA7 efforts include a range of improvements intended to enhance filtration protection, provide a field leakage test capability and update various environmental control

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

unit types for use with collective protection. These efforts involve a simplified acquisition procurement contract and exploitation of commercial off-the-shelf items. BA7 product development and testing will continue through FY19 with an expectation to achieve production readiness at the end of FY19.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - HW S - Prototype Development, TRA, MRA	MIPR	Various : Various	0.000	0.000		1.057	Nov 2017	0.123	Apr 2019	-		0.123	0.000	1.180	0.000
JECP - HW S - Phase 2 System Product Development	C/FPIF	TBD : TBD	0.000	0.000		1.865	Nov 2017	1.214	Jan 2019	-		1.214	0.000	3.079	0.000
JECP - HW S - Phase 2 Prototype Manufacturing	C/FPIF	TBD : TBD	0.000	0.000		0.000		1.187	Jan 2019	-		1.187	0.000	1.187	0.000
JECP - HW S - Non-recurring Engineering	C/FPIF	Leidos : Abingdon, MD	5.372	0.598	Nov 2016	0.000		0.000		-		0.000	0.000	5.970	0.000
		Subtotal	5.372	0.598		2.922		2.524		-		2.524	0.000	11.416	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - ES S - IPT and Technical Support	MIPR	Various : Various	0.000	0.000		0.550	Nov 2017	1.000	Nov 2018	-		1.000	0.000	1.550	0.000
JECP - ES S - Systems Engineering Oversight	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	1.348	0.098	Nov 2016	0.335	Nov 2017	0.342	Nov 2018	-		0.342	0.000	2.123	0.000
JECP - ES S - Systems Engineering IPT	MIPR	Various : Various	7.031	0.234	Nov 2016	0.463	Nov 2017	0.472	Nov 2018	-		0.472	0.000	8.200	0.000
JECP - ILS S - Integrated Logistics IPT	MIPR	Various : Various	6.014	0.731	Nov 2016	0.852	Nov 2017	0.869	Nov 2018	-		0.869	0.000	8.466	0.000
		Subtotal	14.393	1.063		2.200		2.683		-		2.683	0.000	20.339	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - OTE S - Operational Testing	MIPR	Various : Various	0.000	0.000		0.000		1.000	Apr 2019	-		1.000	0.000	1.000	0.000
CASB - DTE S - Developmental Testing	MIPR	Various : Various	0.000	0.000		1.470	Nov 2017	1.500	Nov 2018	-		1.500	0.000	2.970	0.000
JECP - OTHT SB - Test & Evaluation IPT	MIPR	Various : Various	7.277	0.339	Nov 2016	0.523	Nov 2017	0.532	Nov 2018	-		0.532	0.000	8.671	0.000
JECP - DTE S - SKUI PVT - Vapor Challenge Testing	MIPR	28th Test and Evaluation Squadron : Eglin AFB, FL	0.000	0.193	Nov 2016	0.000		0.000		-		0.000	0.000	0.193	0.000
JECP - DTE S - Phase 2 Systems Production Verification Testing	MIPR	Various : Various	0.000	0.000		0.653	Nov 2017	0.000		-		0.000	0.000	0.653	0.000
		Subtotal	7.277	0.532		2.646		3.032		-		3.032	0.000	13.487	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.170	Nov 2017	1.207	Nov 2018	-		1.207	0.000	1.377	0.000
JECP - PM/MS S - Program Management Support	MIPR	Various : Various	10.416	0.447	Nov 2016	0.608	Nov 2017	1.356	Nov 2018	-		1.356	0.000	12.827	0.000
		Subtotal	10.416	0.447		0.778		2.563		-		2.563	0.000	14.204	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	37.458	2.640		8.546		10.802		-		10.802	0.000	59.446	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

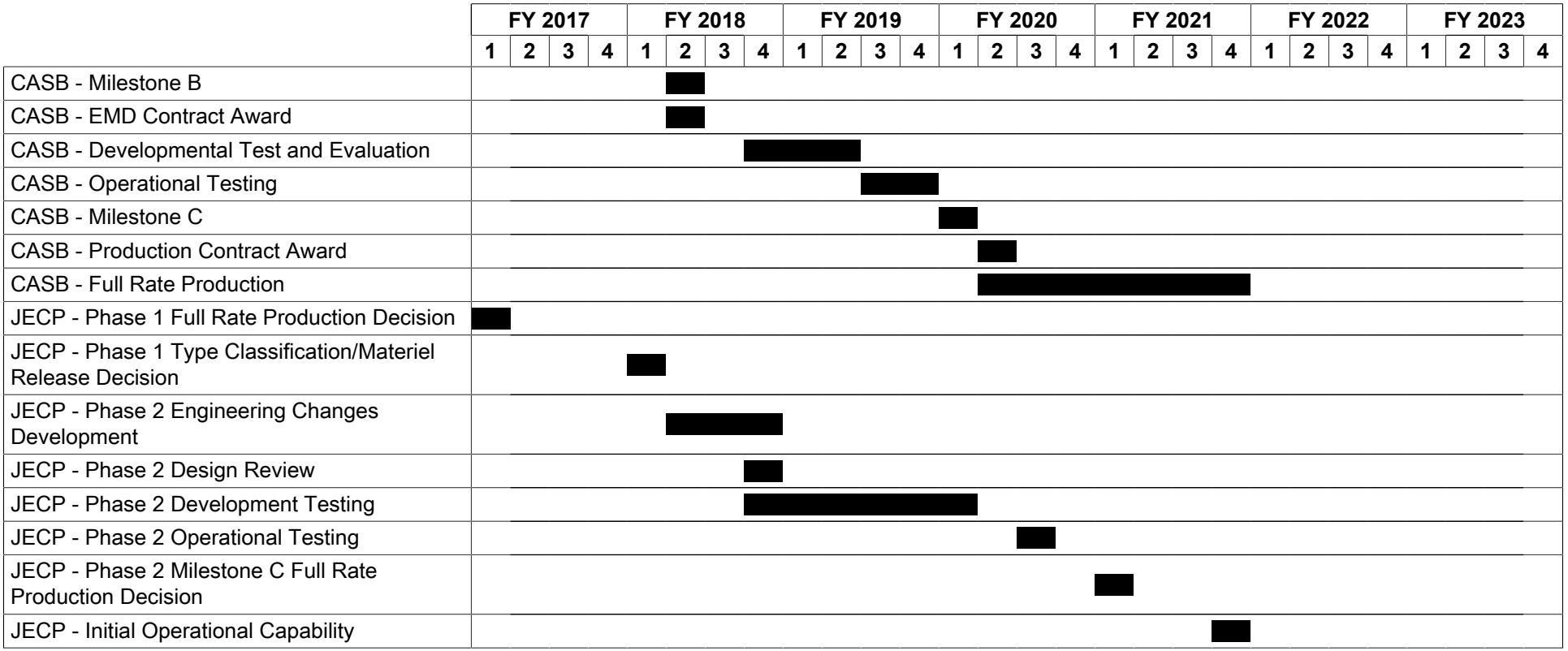

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CASB - Milestone B	2	2018	2	2018
CASB - EMD Contract Award	2	2018	2	2018
CASB - Developmental Test and Evaluation	4	2018	2	2019
CASB - Operational Testing	3	2019	4	2019
CASB - Milestone C	1	2020	1	2020
CASB - Production Contract Award	2	2020	2	2020
CASB - Full Rate Production	2	2020	4	2021
JECP - Phase 1 Full Rate Production Decision	1	2017	1	2017
JECP - Phase 1 Type Classification/Materiel Release Decision	1	2018	1	2018
JECP - Phase 2 Engineering Changes Development	2	2018	4	2018
JECP - Phase 2 Design Review	4	2018	4	2018
JECP - Phase 2 Development Testing	4	2018	1	2020
JECP - Phase 2 Operational Testing	3	2020	3	2020
JECP - Phase 2 Milestone C Full Rate Production Decision	1	2021	1	2021
JECP - Initial Operational Capability	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DE5: *DECONTAMINATION SYSTEMS (EMD)*	-	8.881	15.686	14.049	-	14.049	13.347	15.542	11.493	24.821	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) Decontamination Family of Systems (DFoS) Contamination Indicator Decontamination Assurance System (CIDAS); (3) DFoS General Purpose Decontaminant (GPD); and (4) Joint Biological Agent Decontamination System (JBADS). Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, Concept of Operations and Tactics, Techniques & Procedures.

The MDAP Chemical Biological Radiological and Nuclear (CBRN) Survivability Initiative ensures weapon system programs at all Acquisition Category (ACAT) levels, as well as non-DoD agency programs such as those programs at the Department of Homeland Security (DHS), meet their CBRN defense requirements. This effort facilitates and coordinates the research, development, test and evaluation, procurement, delivery, and life cycle sustainment of affordable CBRN defense materiel solutions for each program's documented CBRN requirements.

DFoS 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 (small-scale, tactical large scale, and reusable large scale applicators) and three indicator formulations (nerve training, nerve and blister indicators). 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. DFoS 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.

DFoS GPD is a liquid, field adjustable decontaminant for chemical and biological agents that will provide thorough decontamination capabilities for tactical vehicles, shipboard surfaces, crewserved 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 JBADS will provide the capability to conduct biological agent decontamination of the interior and exterior of the C-130 aircraft. The JBADS 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. Future capability may address biological decontamination of other airframes and vehicles.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MDAP	0.155	0.157	1.125

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Description: CBRN Survivability support ***FY 2018 Plans:*** Provide platform specific support for CBRN Survivability Assessments and integration of CBRN Detection, Protection and Decontamination assets. ***FY 2019 Plans:*** Conduct CBRN survivability compliance reviews for Armored Multi-Purpose Vehicle, Combat Rescue Helicopter, Huey Replacement Program, Large Executive Aircraft Recapitalization, Littoral Combat Ship Fast Frigate, European Reassurance Initiative CBRN equipment, in preparation for various program acquisition milestones, system and sub-system test events, design reviews and low rate initial production reviews. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.			
Title: 2) DFoS CIDAS ***Description:*** Other Government Activities ***FY 2018 Plans:*** Receive LRIP deliveries and conduct Physical Configuration Audit of nerve indicator and applicators. Conduct Logistics Demonstration, Production Qualification Testing, and begin Multi-Service Operational Test and Evaluation of nerve indicator and applicators. Receive DT deliveries of blister indicator and prepare for DT. ***FY 2019 Plans:*** Prepare for Material Release and Full Rate Production Decision for nerve indicator and applicators. Receive DT deliveries of blister indicator and prepare for DT. Conduct DT and prepare for System Verification Review of blister indicator. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	3.872	5.777	2.845
Title: 3) DFoS CIDAS ***Description:*** Manufacturing ***FY 2018 Plans:***	0.940	3.706	1.912

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Conduct Physical Configuration Audit of nerve indicator and applicators. Manufacturers will support Logistics Demonstration, Production Qualification Testing, and preparation for Multi-Service Operational Test and Evaluation of nerve indicator and applicators. Award contract for blister indicator DT articles. ***FY 2019 Plans:*** Award contract for blister indicator DT articles. Procure 137 small ($347.97 ea.) and 172 large ($3,488.68 ea.) scale blister indicator kits for developmental testing. Work to reduce the sustainment unit cost of the blister indicator through qualifying alternate sources of raw materials and changing manufacturing processes to increase efficiencies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.			
Title: 4) DFoS GPD ***Description:*** DFoS GPD Support	0.100	-	-
Title: 5) JBADS ***Description:*** JBADS Development and Testing ***FY 2018 Plans:*** Conduct Product Verification Testing on JBADS system to include MIL-STD 810 and Human Factors Assessment. test ***FY 2019 Plans:*** Conduct/complete Integrated Operational Test & Evaluation (IOT&E). Prepare documentation for Milestone C and IOT&E. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	3.504	5.923	8.167
Title: 6) JBADS Increment II ***FY 2018 Plans:*** Continue IPT and Tech Support for JBADS Increment II efforts. Expand Bio-Thermal Decontamination (BTD) technology and increase technology readiness level for Chemical Warfare Agent Hot Air Decontamination (CHAD). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to fact of life change in the program/project.	0.310	0.123	-
Accomplishments/Planned Programs Subtotals	8.881	15.686	14.049

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JD0050: *DECONTAMINATION FAMILY OF SYSTEMS (DFoS)*	4.704	7.285	12.035	-	12.035	13.414	10.869	9.645	10.579	Continuing	Continuing

Remarks

D. Acquisition Strategy

MAJOR DEFENSE ACQUISITION PROGRAM (MDAP)

The MDAP program provides assistance to non-CBD programs with meeting and or optimizing their Chemical, Biological, Radiological, and Nuclear (CBRN) survivability and force protection capabilities. The MDAP also provides systems engineering analyses to develop CBRN specific operational and technical requirements, identifies performance gaps between existing materiel and technical requirements, develops cost and schedule estimates, conducts preliminary CBRN T&E and logistics planning, develops CBRN defense architectures products, and performs trade space analyses for a number of non-CBD programs.

DFoS CONTAMINATION INDICATOR DECONTAMINATION ASSURANCE SYSTEM (DFoS CIDAS)

The DFoS CIDAS program will follow an evolutionary acquisition strategy in consonance with user developed capability documents. Following MS A, the program office collaborated with external 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. The DFoS CIDAS program determined the need for and initiated Government designed reusable and tactical large scale applicators to provide affordable solutions to meet specific User requirements. Following MS B, the program used full and open competition to award a performance based indefinite quantity contract with fixed price incentive successive target contract line items, with options for Low Rate Initial Production (LRIP) and Full Rate Production (FRP) for nerve indicator and small scale applicator systems. The DFoS CIDAS program will award a sole source, performance based indefinite delivery indefinite quantity contract for a blister technology. The program will integrate the Contractor and Government designed indicator and applicators and conduct 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 DFoS GPD to by-pass Milestone (MS) B and enter directly to MS C Low Rate Initial Production (LRIP). During the TD Phase, the DFoS 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 DFoS GPD Program entered the final phase of Technology Development (Developmental Test), the program continued to follow an evolutionary acquisition strategy. Following

the MS C/LRIP decision the program acquired the Tech Data Package, allowing for the future establishment of an organic production line for LRIP and FRP production quantities. This strategy ensures that all prospective sources, with the capability of meeting the program requirements, have the opportunity to participate.

JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)

The JBADS acquisition approach is to leverage information and technology from the JBADS Joint Capability Technology Demonstration (JCTD) to support entry into the Engineering and Manufacturing Development (EMD) phase of the acquisition cycle. The EMD is supported by a Technology Readiness Assessment of 7 from the JCTD. The JBADS will utilize Commercial-off-the-Shelf components for the shelter, the decontamination delivery system, the environmental control and monitoring system(s), and other ancillary components with the award of a competitive contract to produce, operate, and sustain the system. The program as a whole utilizes the evolutionary acquisition approach for future increments that may expand JBADS capabilities to include other platforms (aircraft and vehicles) as requirements dictate.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS - HW S - Nerve Test Assets	C/FPIF	FLIR Detection : Inc, Stillwater, OK	3.826	0.940	Nov 2016	0.424	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
DFoS CIDAS - HW S - Blister Test Assets	SS/FPIF	FLIR Detection : Inc, Stillwater, OK	0.000	0.000		2.915	Nov 2017	0.741	Nov 2018	-		0.741	Continuing	Continuing	0.000
DFoS CIDAS - HW S - Large Scale Applicators	MIPR	Various : Various	0.917	1.008	Nov 2016	0.367	Nov 2017	0.075	Nov 2018	-		0.075	Continuing	Continuing	0.000
JBADS - HW S - Increment II Chemical Agent Decon Mods	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.310	Dec 2016	0.123	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	4.743	2.258		3.829		0.816		-		0.816	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MDAP - TD/D SB - IPT and Technical Support	MIPR	Various : Various	0.193	0.137	Nov 2016	0.140	Nov 2017	0.870	Nov 2018	-		0.870	Continuing	Continuing	0.000
DFoS CIDAS - TD/D S - IPT and Technical Support	MIPR	Various : Various	1.792	1.106	Nov 2016	1.831	Nov 2017	1.056	Nov 2018	-		1.056	Continuing	Continuing	0.000
DFoS GPD - TD/D S - IPT and Technical Support	MIPR	Various : Various	1.542	0.074	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - TD/D S - IPT and Technical Support	MIPR	Various : Various	1.294	1.066	Nov 2016	0.842	Nov 2017	1.100	Nov 2018	-		1.100	Continuing	Continuing	0.000
		Subtotal	4.821	2.383		2.813		3.026		-		3.026	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS - DTE S - Live Agent / Lab and Operational Testing	MIPR	Various : Various	2.156	1.249	Nov 2016	2.581	Nov 2017	1.753	Nov 2018	-		1.753	Continuing	Continuing	0.000
DFoS GPD - DTE S - Developmental Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.793	0.026	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - OTE S - IOT&E	MIPR	Various : Various	0.000	0.000		2.000	Nov 2017	3.946	Nov 2018	-		3.946	Continuing	Continuing	0.000
JBADS - OTHT S - Other TE activities	Various	TBD : TBD	0.000	0.064	Jul 2017	0.000		1.267	Nov 2018	-		1.267	Continuing	Continuing	0.000
JBADS - - Product Verification Testing	MIPR	Various : Various	1.128	0.000		2.210	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	6.077	1.339		6.791		6.966		-		6.966	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MDAP - PM/MS SB - Program Management and Technical Support	MIPR	Various : Various	0.022	0.018	Jan 2017	0.017	Nov 2017	0.255	Nov 2018	-		0.255	Continuing	Continuing	0.000
DFoS CIDAS - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	0.285	0.509	Nov 2016	1.365	Nov 2017	1.132	Nov 2018	-		1.132	Continuing	Continuing	0.000
JBADS - PM/MS S - Program Management & Tech Support	MIPR	Various : Various	0.281	2.374	Nov 2016	0.871	Nov 2017	1.854	Nov 2018	-		1.854	Continuing	Continuing	0.000
		Subtotal	0.588	2.901		2.253		3.241		-		3.241	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	16.229	8.881		15.686		14.049		-		14.049	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

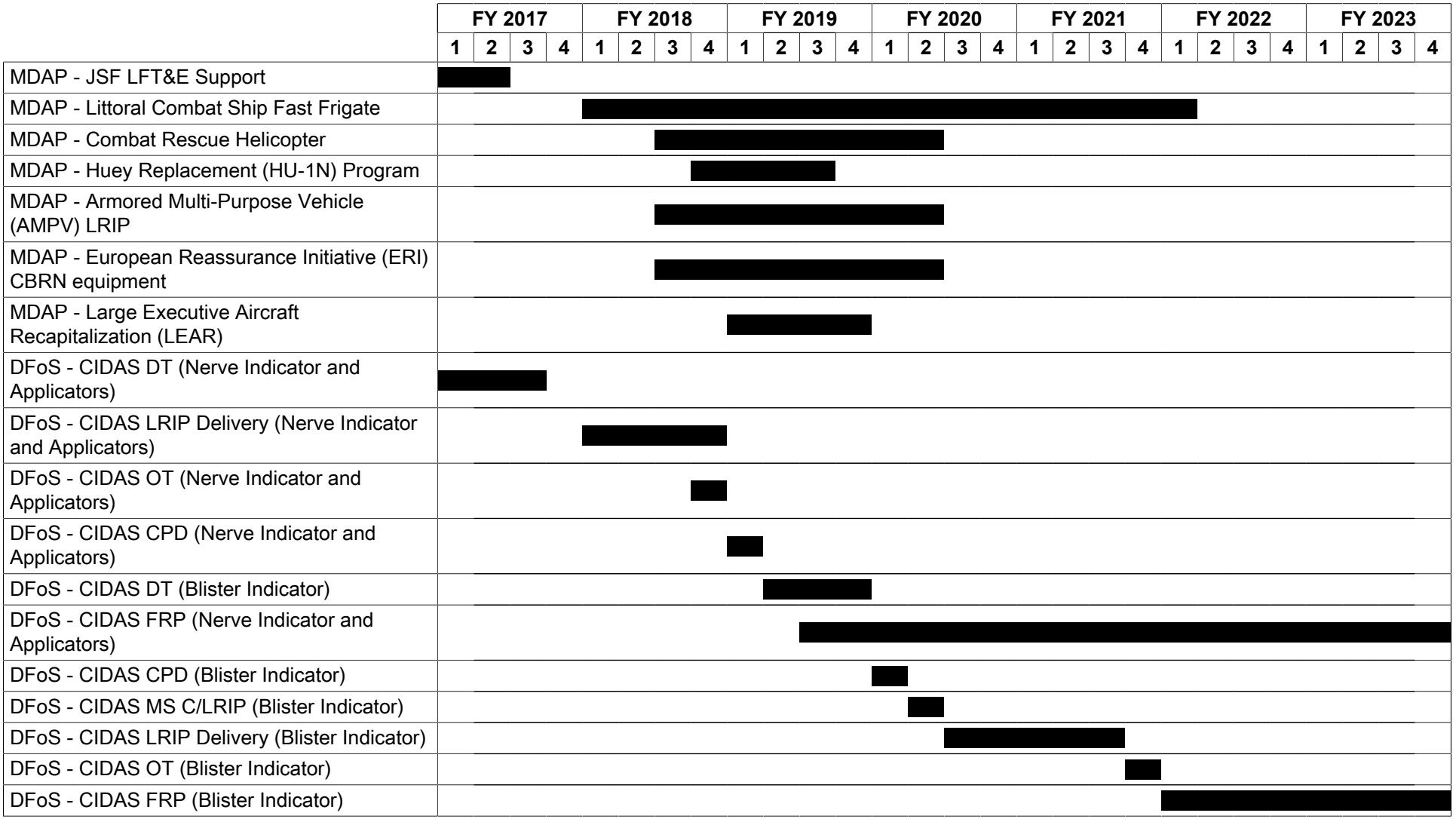

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

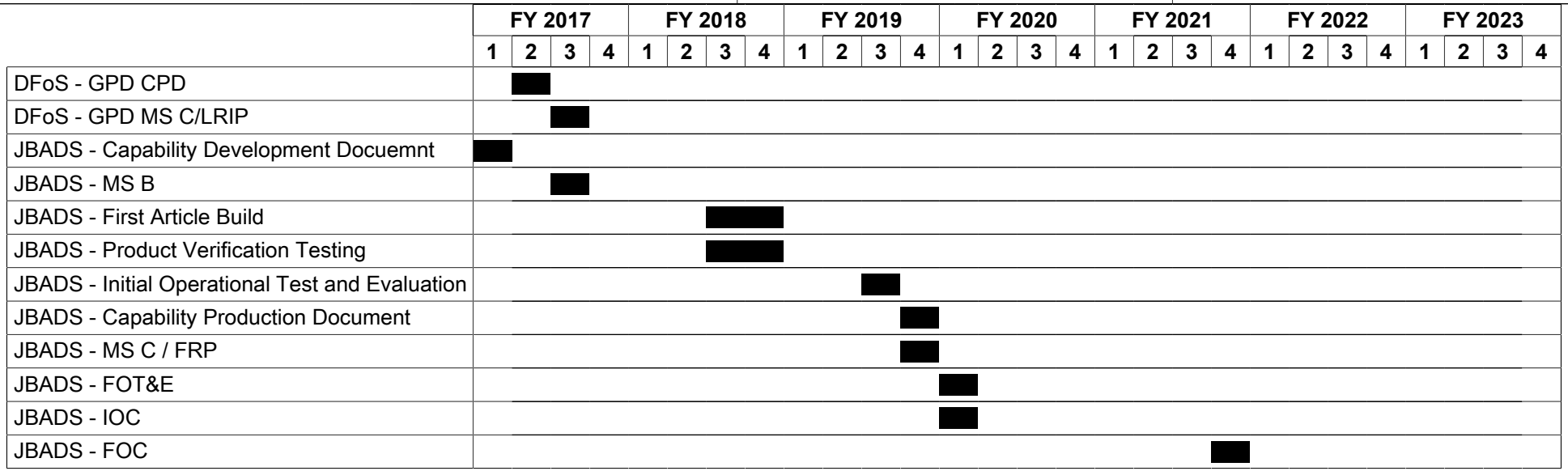

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MDAP - JSF LFT&E Support	1	2017	2	2017
MDAP - Littoral Combat Ship Fast Frigate	1	2018	1	2022
MDAP - Combat Rescue Helicopter	3	2018	2	2020
MDAP - Huey Replacement (HU-1N) Program	4	2018	3	2019
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP	3	2018	2	2020
MDAP - European Reassurance Initiative (ERI) CBRN equipment	3	2018	2	2020
MDAP - Large Executive Aircraft Recapitalization (LEAR)	1	2019	4	2019
DFoS - CIDAS DT (Nerve Indicator and Applicators)	1	2017	3	2017
DFoS - CIDAS LRIP Delivery (Nerve Indicator and Applicators)	1	2018	4	2018
DFoS - CIDAS OT (Nerve Indicator and Applicators)	4	2018	4	2018
DFoS - CIDAS CPD (Nerve Indicator and Applicators)	1	2019	1	2019
DFoS - CIDAS DT (Blister Indicator)	2	2019	4	2019
DFoS - CIDAS FRP (Nerve Indicator and Applicators)	3	2019	4	2023
DFoS - CIDAS CPD (Blister Indicator)	1	2020	1	2020
DFoS - CIDAS MS C/LRIP (Blister Indicator)	2	2020	2	2020
DFoS - CIDAS LRIP Delivery (Blister Indicator)	3	2020	3	2021
DFoS - CIDAS OT (Blister Indicator)	4	2021	4	2021
DFoS - CIDAS FRP (Blister Indicator)	1	2022	4	2023
DFoS - GPD CPD	2	2017	2	2017
DFoS - GPD MS C/LRIP	3	2017	3	2017
JBADS - Capability Development Docuemnt	1	2017	1	2017
JBADS - MS B	3	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JBADS - First Article Build	3	2018	4	2018
JBADS - Product Verification Testing	3	2018	4	2018
JBADS - Initial Operational Test and Evaluation	3	2019	3	2019
JBADS - Capability Production Document	4	2019	4	2019
JBADS - MS C / FRP	4	2019	4	2019
JBADS - FOT&E	1	2020	1	2020
JBADS - IOC	1	2020	1	2020
JBADS - FOC	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
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 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
IP5: *INDIVIDUAL PROTECTION (EMD)*	-	13.580	14.481	9.953	-	9.953	5.471	4.709	6.556	6.770	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).

Efforts included in this project are: (1) the Joint Service Aircrew Mask (JSAM) Rotary Wing (RW), JSAM for Strategic Aircraft (SA), JSAM for Tactical Aircraft (TA), JSAM Joint Strike Fighter (JSF), and (2) Uniform Integrated Protective Ensemble (UIPE) Family of Systems (Increment 2).

(1) The JSAM RW, JSAM SA, JSAM TA, and JSAM-JSF are Acquisition Category (ACAT) III programs developed to provide respiratory and ocular protection. The JSAM is a lightweight Chemical, Biological, Radiological and Nuclear (CBRN) protective mask for most United States Army (USA), Navy (USN), Air Force (USAF), and Marine Corps (USMC) fixed wing and RW aircrew. 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 (except JSAM SA), and an intercom for ground communication. They will also provide flame protection, demist/emergency demist (except JSAM SA), 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.

The JSAM RW mask is being developed for use by pilots and aircrew in the majority of DoD RW aircraft in the USA (H-60, H-6, H-47, H-72), USAF (H-1 and H-60), and USN/USMC (H-60, H-1, and H-53). 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) 3 (garment, boots, and mask) and easily install the face plate when the threat level dictates, thereby reducing physiological and psychological burden. If threat level warrants, the user can install their face plate into an already donned hood and enter MOPP 4 (garments, boots, gloves and mask) without removing their flight helmet.

The JSAM SA mask will provide individual respiratory, ocular, and percutaneous protection of chemical and biological warfare agents, and select toxic industrial chemicals for USAF (E-3, E-8, C-135s, C-17, C-145, C-146, C-130s, C-5), Aeromedical personnel (C-130s, KC-10, U-18, CV-22, KC-135, C-12s, KC-46), USN (P-8, E-6, C-40, C-12, C-20), USMC (C-9, C-12, C-20, UC-35), and USA (RC-7, C-12s, C-20, C-26, UC-35, C-37) strategic aircrew. The mask components will be optimized to minimize their impact on the wearer's performance and maximize its ability to interface with aircrew protective clothing. JSAM SA will provide pressure breathing for altitude for aircraft that do not require pressure breathing for gravity. JSAM SA will integrate with aircraft subsystems which include aviation life support equipment, aircrew flight equipment, aircraft seating, portable aircrew systems, communications systems, and aircraft oxygen systems.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

The JSAM TA mask will provide individual respiratory, ocular, and percutaneous protection of chemical and biological warfare agents, and select toxic industrial chemicals for USAF (F-22 A), USN (C-2 A, E-2 C/D, E/A-18G, F/A-18 A/C/E/F), and USMC (F/A-18 A/C/D, AV-8B, KC-130J and MV-22) tactical aircrew members. The mask components will be optimized to minimize their impact on the wearer's performance and maximize its ability to interface with aircrew protective clothing. JSAM TA will be compatible with anti-G systems, providing Chemical, Biological, Radiological (CBR) protection without degrading protection against Gravity Induced Loss of Consciousness (GLOC) up to 9 Gz. JSAM TA will integrate with essential aircraft subsystems.

The JSAM-JSF is a CB respirator being specifically designed to support the F-35 (Joint Strike Fighter) and procured by the Joint Strike Fighter Program Office. 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. 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 USAF, USN, USMC, and International Partners.

(2) Uniform Integrated Protective Ensemble (UIPE) Family of Systems (FoS). UIPE FoS will develop a family of systems that will provide the broad spectrum of users with individual percutaneous protective equipment allowing the ability to operate in a contaminated environment with no or minimal degradation in performance. UIPE FoS will seek to address the broader scope of the UIPE Initial Capabilities Document (ICD), to include protection from operationally relevant traditional, non-traditional, and advanced chemical, biological, radiological, and nuclear/Toxic Industrial Material threats likely to be encountered during joint force operations.

In FY19, CBRN Uniform Integrated Protection Ensemble Increment 2 (UIPE 2) will be moved under CBRN Uniform Integrated Protection Ensemble Family of Systems (UIPE FoS). The UIPE Increment 2 is being transitioned to UIPE FoS because the program will have more than one solution to meet the Warfighters needs. This is reflected in not only the name change but in the structure of the program. Instead of the program being driven towards meeting individual Service needs, the program is designed to meet mission area needs. There are four Mission Areas: Land, Air, Sea, and Homeland Defense. Each of the Mission Areas has unique mission requirements that the UIPE FoS solutions will seek to fulfill.

The acquisition strategy allows for multiple decision points throughout product development, which provides flexibility to accelerate mature commercial-off the-shelf/non-developmental item solutions and fully develop less mature solutions.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) JSAM RW	1.393	0.382	-
Description: Multi-Service Operational Testing and Evaluation (MOT&E)			
FY 2018 Plans: Complete follow-on USN/USMC MOT&E test activities, and Low Rate Initial Production (LRIP) phase.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Program/project transitioned to Production and Deployment Phase.			
Title: 2) JSAM SA ***Description:*** Operational Testing and Evaluation ***FY 2018 Plans:*** Complete Operational Testing on the USA MC-12 and UC-35 aircraft. Conduct Developmental Testing, Integration Testing and Safe-to-Fly on various USAF and USN aircraft. Conduct engineering studies to assess communication system adaptors and oxygen system adaptors for several USAF and USN aircraft. Update the Technical Manual to include specialized procedures for several USAF, USN, and USA aircraft. ***FY 2019 Plans:*** Complete Operational Testing in the form of Integration and Airworthiness Certification testing on the KC-10 (USAF), C-17 (USAF), C-5 (USAF), C-9 (USMC), C-20 (USN/USMC) and C-26 (USA) aircraft. Conduct engineering studies to assess communication system adaptors and oxygen system adaptors for remaining aircraft. Update the Technical Manual to include specialized procedures for the various aircraft tested. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	4.747	2.097	2.105
Title: 3) JSAM TA ***Description:*** Integration Testing Events ***FY 2018 Plans:*** Complete IT events with aircraft platforms including flight tests and shipboard testing. Update Technical Manuals, training package and conduct Logistics Demonstration. Receive Operational Test Agency (OTA) Letter of Observation or Observation of Operational Capabilities. Update program documentation in preparation of MS C/FRP. ***FY 2019 Plans:*** Develop final test reports. Conduct Joint Integrated Logistics Assessment, Production Readiness Review, and Manufacturer Readiness Assessment. Finalize design changes and receive configuration control board approval for engineering changes. Obtain final Safe-to-Fly certification for all platforms. Prepare for and conduct MS C decision review. Develop package for the production contract. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	5.557	2.954	2.329

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Decrease due to change in program/project schedule.			
Title: 4) JSAM-JSF ***Description:*** Live Fire Test and Evaluation and F-35 Flight	1.883	-	-
Title: 5) UIPE - Increment 2 ***Description:*** System Development and Demonstration/Engineering and Manufacturing Development ***FY 2018 Plans:*** Investigate mission profile requirements against available Commercial Off The Shelf/Non-Developmental Item (COTS/NDI) that could quickly meet Warfighter needs. Manufacture and conduct testing on applicable COTS/NDI. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	9.048	-
Title: 6) UIPE FoS ***Description:*** System Development and Demonstration/Engineering and Manufacturing Development ***FY 2019 Plans:*** Conduct Gated System Testing, conduct a User Evaluation, prototype manufacturing, and complete the Joint Independent Logistics Assessment. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	5.519
Accomplishments/Planned Programs Subtotals	13.580	14.481	9.953

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JI0002: *JS AIRCREW MASK (JSAM)*	33.423	36.782	54.775	-	54.775	60.278	63.806	63.110	44.478	Continuing	Continuing
• MA0401: *CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)*	16.025	10.990	13.064	-	13.064	13.820	12.424	13.805	8.906	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost

Remarks

D. Acquisition Strategy

JOINT SERVICE AIRCREW MASK ROTARY WING (JSAM RW)

The JSAM RW was developed under a competitive Cost Plus Fixed Fee (CPFF) contract, that included JSAM Apache and JSAM Apache Block III. A sole source Fixed Price Incentive (FPI) contract was awarded for LRIP. A Fixed Price modification to the sole source LRIP contract awarded June 2017 to complete USAF and initiate USA Total Package Fielding (TPF). A competitive Indefinite Delivery/Indefinite Quantity (IDIQ) production contract with Fixed Price Incentive (FPI) and Firm Fixed Price (FFP) CLINs will be pursued for Full Rate Production (FRP). The Full Rate Production (FRP) contract will also include Cost Plus CLINS for the vendor to establish a production line at Pine Bluff Arsenal.

JOINT SERVICE AIRCREW MASK 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), and United States Army (USA). The Research Development Test & Evaluation (RDT&E) contract was awarded via sole source to Avon Protection Systems, Cadillac, Michigan to modify and field a commercially available mask (M53).

The overall acquisition strategy is to initially produce and field the JSAM SA masks incrementally. This approach allows the JSAM SA mask to be fielded to aircrew of the most applicable aircrafts in the shortest amount of time. At the end of all increments, the Services will have achieved their Full Operating Capability (FOC). The first increment will consist of fielding the JSAM SA mask to 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 aircraft will be addressed in subsequent increments.

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 Critical Design Review (CDR). The second test phase is Developmental Testing (DT) to support Milestone C/LRIP. The third test phase is Operational Testing (OT) of assets to support Initial Operating Capability (IOC) fielding to USAF E-3, USN P-8, USA MC-12, and USA UC-35 aircrew. The final test phase will consist of Integration and Airworthiness Certification (I&AC) testing for all remaining aircraft.

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

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

JOINT SERVICE AIRCREW MASK TACTICAL AIRCRAFT (JSAM TA)

The JSAM TA acquisition approach involves modifying the USN/USMC fielded A/P22P-14A series respirator design to meet aircraft integration requirements. The test strategy involves integrated testing (combined DT/OT) to be completed prior to MS C/FRP. The contract strategy consists of two sole source Firm Fixed Price (FFP) contracts with Cam Lock, Ltd. Aldershot Hampshire, United Kingdom. The first contract, awarded September 2016, covers all activities during the Engineering, Manufacturing, and Development (EMD) phase. The second contract will be a sole source FFP Indefinite Delivery/Indefinite Quantity (ID/IQ) and is planned for award after the Milestone C/FRP. The second contract will cover the activities during the Production and Deployment phase including FRP builds. The JSAM TA mask is intended to be fielded to the USAF, USN, and USMC.

JOINT SERVICE 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 USAF, USN, USMC 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 Joint Service Aircrew Mask- Fixed Wing (JSAM-FW) design and shared the same base contract with a Cost Plus Incentive Fee delivery order.

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)

The UIPE Increment 2 will use an evolutionary acquisition strategy to develop a family of systems that will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional CBRN threats. The acquisition strategy allows for multiple decision points throughout product development, which provides flexibility to accelerate mature commercial-off the-shelf/non-developmental item solutions and fully develop less mature solutions. The family of systems will be developed based on Service mission profiles with the goal being to minimize operational burden and provide improved fit, function, and integration with the current Warfighter kits compared to legacy systems. Pre-Milestone A activities included the exploration of available state of the art technologies through market research, Requests for Information, and a challenge competition; shaping realistic requirements by exploring trade space of novel technologies; and identified protection offered by non-chemical biological (CB) combat gear. The Technology Maturation and Risk Reduction (TMRR) phase will reduce technology, engineering, integration, and life-cycle cost risk. During this phase, the program will focus on forming mission profile areas designed to narrow the focus of solutions designed specifically for a certain Warfighter functional area. Early testing will aide in deciding what is possible for each mission profile area and feed information into the trade space analysis. Developmental/Operational Testing will assess the ability of the solution to meet requirements, demonstrate system technical performance in accordance with the operational requirements, and demonstrate performance in realistic conditions. An Other Transaction Authority (OTA) contracting approach will be used to procure informational white papers during the TMRR phase, prototypes, and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTA or a more traditional contracting vehicle.

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE FAMILY OF SYSTEMS (UIPE FOS)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

The UIPE Family of Systems (FoS) will use an evolutionary acquisition strategy to develop a family of systems that will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional CBRN threats. The family of systems will be developed based on Service mission profiles (Land, Sea, Air and Homeland Defense) with the goal being to minimize operational burden and provide improved fit, function, and integration with the current Warfighter kits compared to legacy systems. Pre-Milestone A activities included the exploration of available state of the art technologies through market research, Requests for Information, and a challenge competition; shaping realistic requirements by exploring trade space of novel technologies; and identified protection offered by non-chemical biological (CB) combat gear. The Technology Maturation and Risk Reduction (TMRR) phase will reduce technology, engineering, integration, and life-cycle cost risk. During this phase, the program will focus on forming mission profile areas designed to narrow the focus of solutions designed specifically for a certain Warfighter functional area. Early testing will aide in deciding what is possible for each mission profile area and feed information into the trade space analysis. Developmental/Operational Testing will assess the ability of the solution to meet requirements, demonstrate system technical performance in accordance with the operational requirements, and demonstrate performance in realistic conditions. An Other Transaction Authority (OTA) contracting approach will be used to procure informational white papers during the TMRR phase, prototypes, and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTA or a more traditional contracting vehicle. Once Milestone B is achieved for the Family of Systems each mission profile will be broken out onto their own budget lines.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM SA - HW S - Modified M53 - Design Modification and Development	SS/CPFF	AVON Protection Systems Inc. : Cadillac, MI	1.685	1.963	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM TA - HW S - Hardware and Support Equipment for Integration and Test	SS/FFP	Cam Lock Limited : Aldershot Hampshire, UK	0.000	0.110	Aug 2017	0.155	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JSAM-JSF - HW S - Engineering and Manufacturing Contract	C/CPIF	GENTEX Corp. : Rancho Cucamonga, CA	2.495	0.812	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - HW S - Trade Space Analysis	MIPR	TBD : TBD	0.000	0.000		0.000		0.500	Nov 2018	-		0.500	Continuing	Continuing	0.000
		Subtotal	4.180	2.885		0.155		0.500		-		0.500	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM RW - ES S - Integrated Product Team/ Engineering/Technical Support	MIPR	Various : Various	5.812	0.691	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - ES S - Engineering and IPT Support	MIPR	Various : Various	2.672	0.661	Nov 2016	0.043	Nov 2017	0.278	Nov 2018	-		0.278	Continuing	Continuing	0.000
JSAM TA - ES S - Engineering Support	MIPR	Various : Various	1.961	2.301	Nov 2016	0.664	Nov 2017	0.200	Nov 2018	-		0.200	Continuing	Continuing	0.000
JSAM-JSF - ES S - Engineering Support	MIPR	Various : Various	1.405	0.745	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - ES S - Program Engineering/Technical IPT	Various	Various : Various	0.000	0.000		3.108	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) IP5 / *INDIVIDUAL PROTECTION (EMD)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS - ES S - Program Eng/Tech IPT	Various	Various : Various	0.000	0.000		0.000		1.667	Nov 2018	-		1.667	Continuing	Continuing	0.000
		Subtotal	11.850	4.398		3.815		2.145		-		2.145	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM RW - OTE S - Multi-Service Operational Testing (USN/USMC)	MIPR	Various : Various	1.233	0.593	Nov 2016	0.382	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - DTE S - Developmental Testing	MIPR	Various : Various	1.553	0.000		0.960	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - OTE S - Operational Testing	MIPR	Various : Various	0.000	1.754	Nov 2016	0.792	Nov 2017	1.350	Nov 2018	-		1.350	Continuing	Continuing	0.000
JSAM TA - DTE S -Testing and Integration	MIPR	Various : Various	1.496	2.034	Nov 2016	1.376	Nov 2017	1.451	Nov 2018	-		1.451	Continuing	Continuing	0.000
JSAM TA - DTE/ OTE S - Integrated Testing (combined DT/OT)	MIPR	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.000	0.191	Nov 2016	0.333	Nov 2017	0.150	Nov 2018	-		0.150	Continuing	Continuing	0.000
JSAM-JSF - OTE S - Live Fire Test & Evaluation	MIPR	Various : Various	0.000	0.087	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - DTE S - Design Verification Testing	MIPR	TBD : TBD	0.000	0.000		4.637	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - DTE S - Design Verification Testing	MIPR	TBD : TBD	0.000	0.000		0.000		2.099	Nov 2018	-		2.099	Continuing	Continuing	0.000
		Subtotal	4.282	4.659		8.480		5.050		-		5.050	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM RW - PM/MS S - Program Management and Technical Support	Various	Various : Various	3.899	0.109	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - PM/MS S - Program Management and Technical Support Services	MIPR	Various : Various	0.294	0.369	Nov 2016	0.302	Nov 2017	0.477	Nov 2018	-		0.477	Continuing	Continuing	0.000
JSAM TA - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	0.657	0.921	Nov 2016	0.426	Nov 2017	0.528	Nov 2018	-		0.528	Continuing	Continuing	0.000
JSAM-JSF - PM/MS S - Program Management and Technical Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.340	0.239	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - PM/MS S - PM/ SME Prog Mgt	MIPR	Various : Various	0.000	0.000		1.303	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - PM/MS S - PM/SME Prog Mgt	MIPR	Various : Various	0.000	0.000		0.000		1.253	Nov 2018	-		1.253	Continuing	Continuing	0.000
		Subtotal	6.190	1.638		2.031		2.258		-		2.258	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.502	13.580		14.481		9.953		-		9.953	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

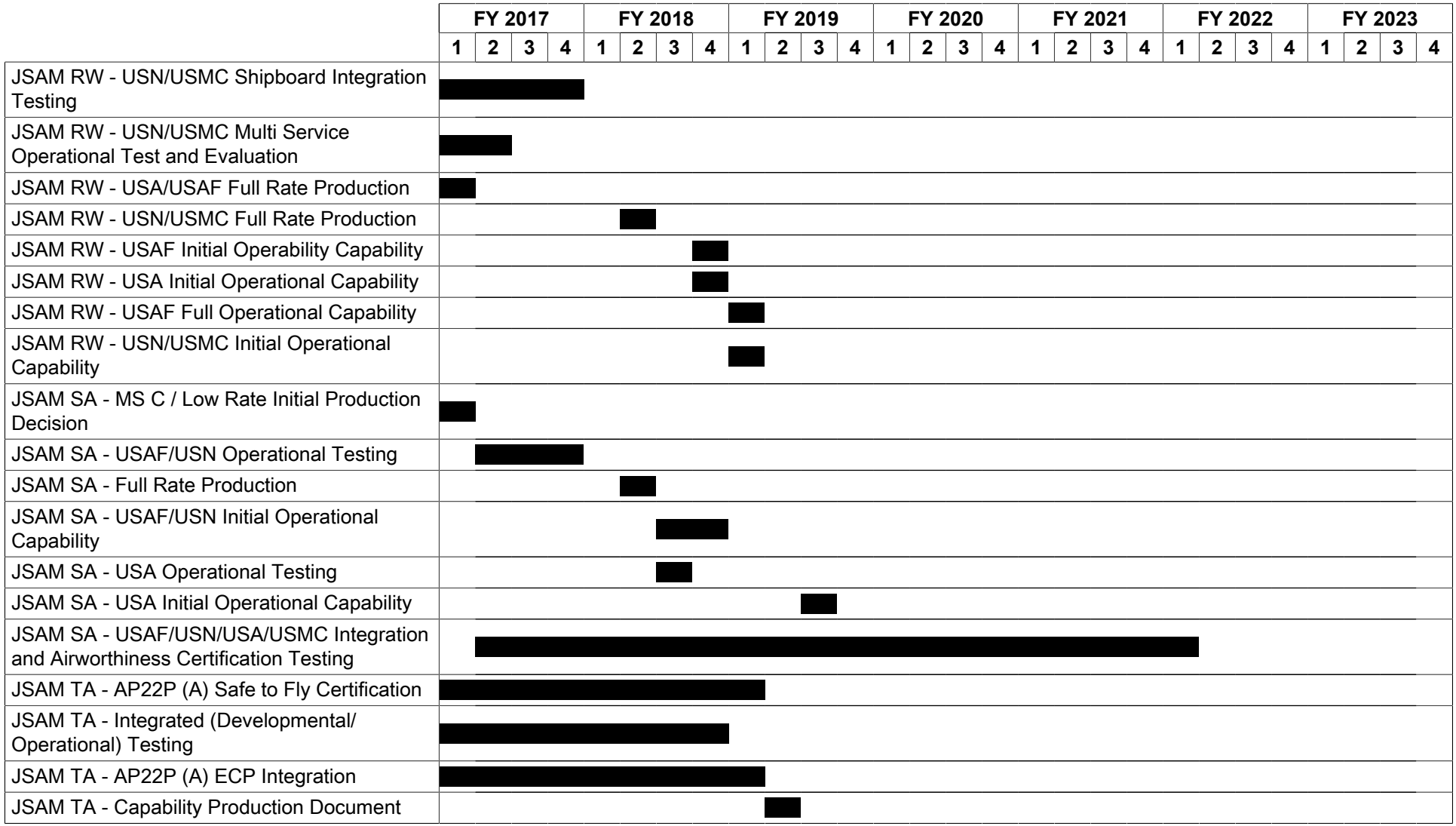

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

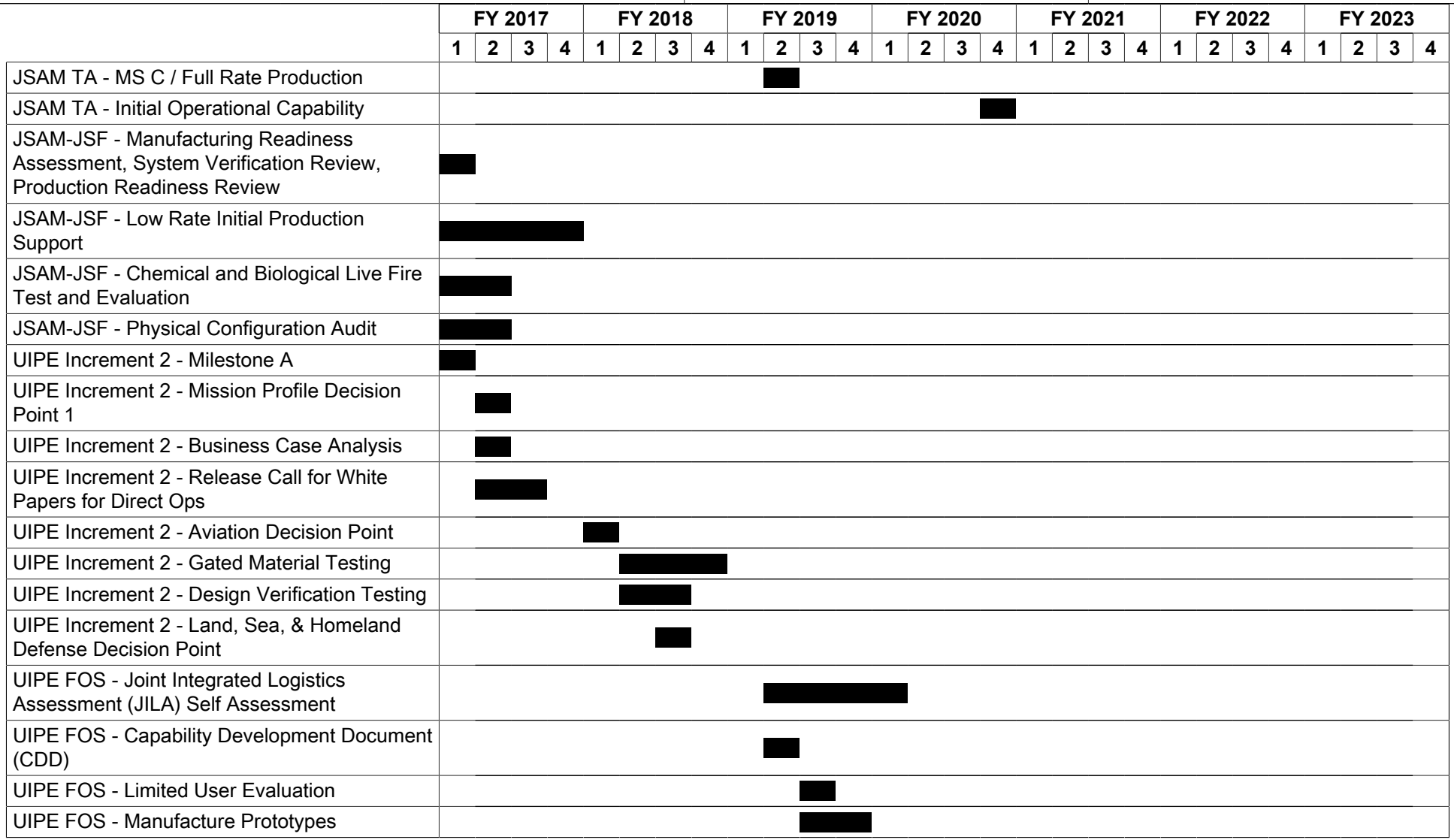

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

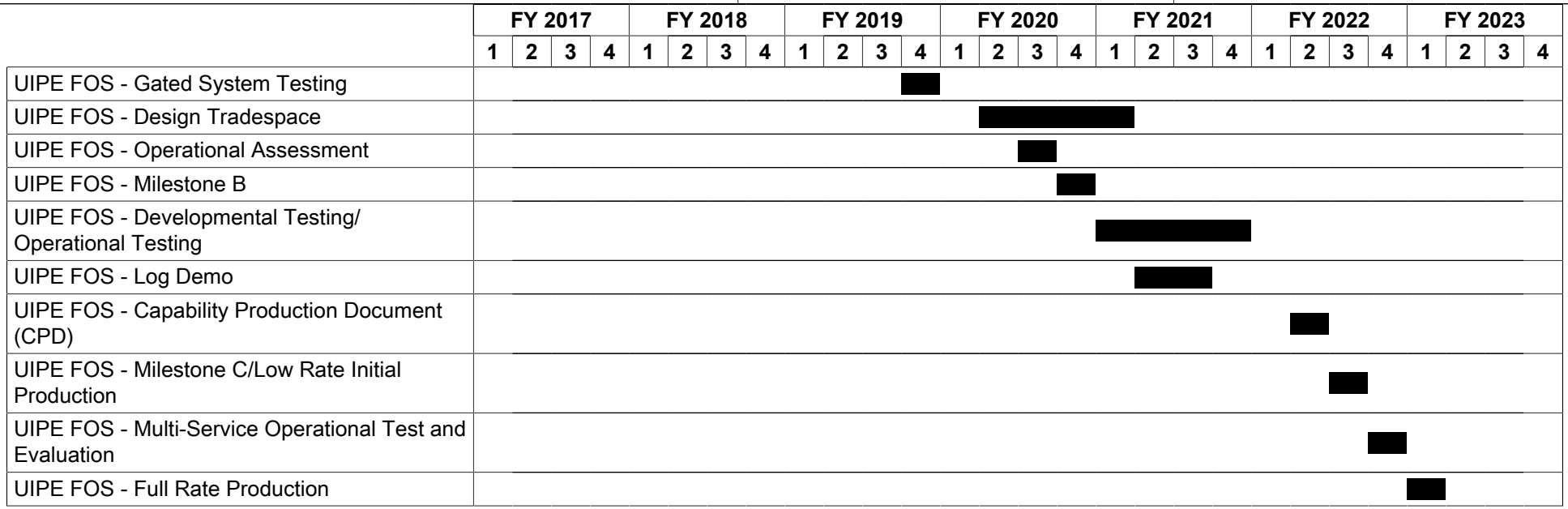

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JSAM RW - USN/USMC Shipboard Integration Testing	1	2017	4	2017
JSAM RW - USN/USMC Multi Service Operational Test and Evaluation	1	2017	2	2017
JSAM RW - USA/USAF Full Rate Production	1	2017	1	2017
JSAM RW - USN/USMC Full Rate Production	2	2018	2	2018
JSAM RW - USAF Initial Operability Capability	4	2018	4	2018
JSAM RW - USA Initial Operational Capability	4	2018	4	2018
JSAM RW - USAF Full Operational Capability	1	2019	1	2019
JSAM RW - USN/USMC Initial Operational Capability	1	2019	1	2019
JSAM SA - MS C / Low Rate Initial Production Decision	1	2017	1	2017
JSAM SA - USAF/USN Operational Testing	2	2017	4	2017
JSAM SA - Full Rate Production	2	2018	2	2018
JSAM SA - USAF/USN Initial Operational Capability	3	2018	4	2018
JSAM SA - USA Operational Testing	3	2018	3	2018
JSAM SA - USA Initial Operational Capability	3	2019	3	2019
JSAM SA - USAF/USN/USA/USMC Integration and Airworthiness Certification Testing	2	2017	1	2022
JSAM TA - AP22P (A) Safe to Fly Certification	1	2017	1	2019
JSAM TA - Integrated (Developmental/Operational) Testing	1	2017	4	2018
JSAM TA - AP22P (A) ECP Integration	1	2017	1	2019
JSAM TA - Capability Production Document	2	2019	2	2019
JSAM TA - MS C / Full Rate Production	2	2019	2	2019
JSAM TA - Initial Operational Capability	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JSAM-JSF - Manufacturing Readiness Assessment, System Verification Review, Production Readiness Review	1	2017	1	2017
JSAM-JSF - Low Rate Initial Production Support	1	2017	4	2017
JSAM-JSF - Chemical and Biological Live Fire Test and Evaluation	1	2017	2	2017
JSAM-JSF - Physical Configuration Audit	1	2017	2	2017
UIPE Increment 2 - Milestone A	1	2017	1	2017
UIPE Increment 2 - Mission Profile Decision Point 1	2	2017	2	2017
UIPE Increment 2 - Business Case Analysis	2	2017	2	2017
UIPE Increment 2 - Release Call for White Papers for Direct Ops	2	2017	3	2017
UIPE Increment 2 - Aviation Decision Point	1	2018	1	2018
UIPE Increment 2 - Gated Material Testing	2	2018	4	2018
UIPE Increment 2 - Design Verification Testing	2	2018	3	2018
UIPE Increment 2 - Land, Sea, & Homeland Defense Decision Point	3	2018	3	2018
UIPE FOS - Joint Integrated Logistics Assessment (JILA) Self Assessment	2	2019	1	2020
UIPE FOS - Capability Development Document (CDD)	2	2019	2	2019
UIPE FOS - Limited User Evaluation	3	2019	3	2019
UIPE FOS - Manufacture Prototypes	3	2019	4	2019
UIPE FOS - Gated System Testing	4	2019	4	2019
UIPE FOS - Design Tradespace	2	2020	1	2021
UIPE FOS - Operational Assessment	3	2020	3	2020
UIPE FOS - Milestone B	4	2020	4	2020
UIPE FOS - Developmental Testing/Operational Testing	1	2021	4	2021
UIPE FOS - Log Demo	2	2021	3	2021
UIPE FOS - Capability Production Document (CPD)	2	2022	2	2022
UIPE FOS - Milestone C/Low Rate Initial Production	3	2022	3	2022
UIPE FOS - Multi-Service Operational Test and Evaluation	4	2022	4	2022

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Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
UIPE FOS - Full Rate Production	1	2023	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
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 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
IS5: *INFORMATION SYSTEMS (EMD)*	-	24.868	25.677	23.281	-	23.281	22.542	18.221	14.006	7.822	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 is an enterprise solution that provides End to End easily accessible sets of CBRN Enterprise capabilities through web services utilizing Service Oriented Architecture. Provides timely, fused, and easily accessible CBRN defense information to the Joint warfighter, CBDP community of interest, civil and international partners. CBRN-IS provides a collaborative environment that allows users to collect and disseminate CBRN warning and reporting data, provide detailed CBRN hazard predictions, aid in decision support, and make relevant CBRN defense information available in near-real time. CBRN-IS provides an environment that supports the implementation of Integrated Early Warning (IEW) capabilities that allow users to access netted sensor information, data fusion, disease modeling, biosurveillance data, source term estimation data, incident management tools, and planning and analysis capabilities. CBRN-IS provides net centric, cloud based tools and capabilities that are aligned with the current and future DoD IT/Cyber computing environments including Army Common Operating Environment (COE) and the Joint Information Environment (JIE). The CBRN-IS enterprise makes CBRN decision aids readily accessible from any desktop through a standard web browser simplifying interoperability, reducing integration and deployment costs and increases cybersecurity protection.

The Joint Effects Model (JEM) is a web-based software application that supplies the 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 versions 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. JEM will also 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.

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

The Joint Warning and Reporting Network (JWARN) is an accredited 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.

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 (CDD) released early in the program. "Agile Software Development" 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 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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) program addresses USSOCOM requirements contained in an approved Information Systems Capability Development Document (IS CDD). BSP is a web-based enterprise environment that will facilitates 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

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

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 BSP Program will utilize BA5 funding to execute the development, testing and evaluation of capabilities to meet the defined program requirements. There will be two Production Capability Drops (CDs) and two Engineering CDs in FY18. CDs will be evaluated following Developmental Testing (DT) through End-to-End Testing using users to validate delivered capability as part of the IT Box process thus reducing risk to the program and ensure a quality product is delivered to the warfighter.

As software-intensive systems, JEM, JWARN, and BSP have no separately identifiable unit production components. BSP, 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.

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 2017	FY 2018	FY 2019
Title: 1) BSP	7.682	5.319	3.787
Description: Product Development ***FY 2018 Plans:*** Continue the development and integration of BSP capabilities for inclusion in capability releases. This includes architecture development, system design, key system tools, third party developed models, access to external data sources, cybersecurity and information assurance, and host platform design. ***FY 2019 Plans:*** Continue the development and integration of BSP capabilities as required by the operational users, delivered in Capability Drops in 1QFY19 and 3QFY19. Continue adding Below-Country Level data to provide greater detail to BSP users. Continue integration of new and existing CDC Red Sky data in BSP. Continue improvements in architecture development, system design, key system			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
tools, third party developed models, access to external data sources, cybersecurity and information assurance, and host platform design. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 2) BSP ***Description:*** Developmental Test and Evaluation ***FY 2018 Plans:*** Continue Developmental Testing associated with planned two Production Capability Drops and two Engineering Drops per FY. Planned cybersecurity testing in conjunction with cloud host provider requirements. ***FY 2019 Plans:*** Conduct Developmental Testing associated with two Engineering Capability Drops in 1QFY19 and 3QFY19. Conduct Cybersecurity Penetration Test in 4QFY19 in conjunction with cloud host provider requirements. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.317	0.991	0.358
Title: 3) BSP ***Description:*** Program Management Support ***FY 2018 Plans:*** Management and oversight of all aspects of BSP program development and testing. Tasks include planning, budgeting, execution oversight, risk management, test and user feedback coordination, scheduling, training and administration. ***FY 2019 Plans:*** Manage and conduct oversight of all aspects of BSP program development and testing. Tasks include planning, budgeting, execution oversight, risk management, test and user feedback coordination, scheduling, training and administration. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.300	1.114	0.793
Title: 4) BSP ***Description:*** Operational Testing and Evaluation ***FY 2018 Plans:***	1.544	1.091	0.928

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue Operational Testing of BSP through End-to-End testing of planned Production Capability Drops to validate capabilities prior to delivery to the Warfighters. Support will consist of test support personnel as well as engineering, and operational support. Two User Feedback events are planned per FY. ***FY 2019 Plans:*** Conduct Operational Testing of BSP with two Production Capability Drop End-to-End tests in 1QFY19 and 3QFY19 to validate capabilities prior to delivery to the Warfighters. Support will consist of test, engineering, and operational personnel support. Conduct multiple User Feedback Events (UFEs) in FY19. UFEs provide a crucial link between the Program Managers, Engineers, and Operators. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 5) CBRN-IS ***Description:*** Technical Guidance ***FY 2018 Plans:*** Continue to define CBRN IS Technical Guidance. ***FY 2019 Plans:*** Provide management and system engineering oversight for all aspects of the CBRN-IS program. CBRN-IS will initially integrate appropriate JPEO-CBD products into a Family of Systems (FoS) framework (to begin with JWARN, JEM and BSP). Align validated requirements into an enterprise approach. Provide strategy for integration of future capabilities and emerging requirements including advanced technology demonstrations (ATDs), experimental capability demonstrations (ECDs) for Integrated Early Warning, Decision Support/ Consequence and Incident Management, Data Analytics and other analytical and situational awareness tools. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.452	0.298	0.226
Title: 6) CBRN-IS ***Description:*** Standardization ***FY 2018 Plans:*** Continue to ensure BSP, JEM, JWARN are built using industry standards and best practices that are consistent with CBRN IS. ***FY 2019 Plans:***	0.547	0.477	0.362

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Provide guidance and direction to ensure new capabilities meet industry and program standards for integration. Ensure development and integration efforts are compliant and compatible with the Joint Information Environment (JIE) and Service common operational and common computing environments. Comply with DoD and Service specified Cybersecurity and Net Ready Key Performance Parameters. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) CBRN-IS ***Description:*** Cybersecurity / Information Assurance ***FY 2018 Plans:*** Continue further implementations of cybersecurity lock-downs for CBRN and maintain an Authority To Operate. ***FY 2019 Plans:*** Provide guidance and direction for the implementation of ongoing cybersecurity requirements and policies and DoD information assurance vulnerability alerts (IAVAs) to mitigate system vulnerabilities and avoid serious compromise of the CBRN-IS environment that would potentially degrade mission performance. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.432	0.277	0.210
Title: 8) CBRN-IS ***Description:*** Product Development ***FY 2018 Plans:*** Continue installations of 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 operational 24/7. ***FY 2019 Plans:*** Transition to production and deployment phase efforts, post IOC. Continue coordination with Services and integrated early warning (IEW) advanced technology demonstration (ATD) and integrated early warning (IEW) experimental capability demonstration (ECD) projects to determine prioritization of CBRN and IEW capabilities to be developed, transitioned and	0.954	1.394	1.059

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
integrated into CBRN-IS through subsequent capability drops. These capability drops will continue throughout the production and deployment phase with two capability drops planned per FY. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 9) CBRN-IS ***Description:*** Operational Assessments ***FY 2018 Plans:*** Continue Operational Assessments of CBRN IS in various operational environments. ***FY 2019 Plans:*** Conduct operational test and evaluations and user feedback events in accordance with product and application test plans to assess and validate capabilities prior to implementing in the production enterprise environment. Tests will assess accessibility, bandwidth/throughput, and reliability to meet program KPPs and KSAs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.826	0.915	0.695
Title: 10) JEM 2 ***Description:*** Developmental Test and Evaluation ***FY 2018 Plans:*** Continue Government Development Test of software deliveries in Command and Control (C2) environments. Perform verification, validation, and accreditation of new hazard prediction models provided by the S&T community as defined in Requirements Definition Package 3. ***FY 2019 Plans:*** Continue Government Development Test of software deliveries in Command and Control (C2) environments. Perform verification, validation, and accreditation of new hazard prediction models provided by the S&T community as defined in Requirements Definition Package 3. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.492	1.043	0.844
Title: 11) JEM 2	0.993	1.676	1.357

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Product Development ***FY 2018 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 and develop/transition new S&T capabilities as defined in Requirements Definition Package 3. ***FY 2019 Plans:*** Continue development of JEM 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 2 baseline software and develop/transition new S&T capabilities as defined in Requirements Definition Package 3. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 12) JEM 2 ***Description:*** Program Management ***FY 2018 Plans:*** Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM Increment 2. Continue development and execution of 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 and to the Science and Technology Community. ***FY 2019 Plans:*** Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM 2. Continue development and execution of JEM 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 2 to the services and to the Science and Technology Community. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.525	0.774	0.627
Title: 13) JEM 2 ***Description:*** Operational Test and Evaluation ***FY 2018 Plans:***	0.734	1.162	0.940

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
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. ***FY 2019 Plans:*** Develop operational test plans and conduct lab based OT and limited scope service specific IOT&E to support fielding decisions for the JEM 2 software. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 14) JWARN 2 ***Description:*** Management Support ***FY 2018 Plans:*** 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. ***FY 2019 Plans:*** Provide program/financial management, costing, contracting, scheduling and acquisition oversight for JWARN 2. Continue development and execution of Build Decisions (BDs) for JWARN 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 2 to the services. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.544	0.787	0.921
Title: 15) JWARN 2 ***Description:*** Product Development ***FY 2018 Plans:*** 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. ***FY 2019 Plans:***	2.768	4.475	5.239

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue JWARN 2 software development and perform integration into Command and Control (C2) systems and integration of CBRN sensor/detector data/input with JWARN software baseline. JWARN 2 software development and perform integration into the Army's Common Operational Environment version 3 (COE v3) to provide convergence with other Army COE services. Complete Information Assurance Certification and accreditation to support Multiservice Operation Test and Evaluation (MOT&E). Initiating transitioning False Sensor Alert Reduction prototyping into JWARN software development. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.			
Title: 16) JWARN 2 ***Description:*** Developmental Test and Evaluation ***FY 2018 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. ***FY 2019 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 2 to be deployed to the services. Conduct development test and evaluation of JWARN 2 in preparation for OT&E for development to COE v3. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.273	0.634	0.742
Title: 17) JWARN 2 ***Description:*** Operational Test and Evaluation ***FY 2018 Plans:*** Conduct Multiservice Operational Test and Evaluation (MOT&E) which will allow for additional Capability Drops (CDs) with added JWARN Increment 2 capabilities and functionality to be deployed to the services. ***FY 2019 Plans:***	1.304	0.937	1.097

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Conduct Multiservice Operational Test and Evaluation (MOT&E) which will allow for additional Capability Drops (CDs) with added JWARN 2 capabilities and functionality to be deployed to the services. Conduct a OT&E of JWARN 2 in preparation for deployment to COE v3. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 18) SSA ***Description:*** Policies, Standards and Guidelines ***FY 2018 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 2019 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 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.240	0.256	0.343
Title: 19) SSA ***Description:*** Integrated Architecture ***FY 2018 Plans:*** 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. ***FY 2019 Plans:*** 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.280	0.301	0.403

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 20) SSA ***Description:*** Enterprise Support and Services ***FY 2018 Plans:*** 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. ***FY 2019 Plans:*** 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.231	0.215	0.287
Title: 21) SSA ***Description:*** Chemical, Biological, Radiological, Nuclear (CBRN) Data Model ***FY 2018 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. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.255	0.241	0.323
Title: 22) SSA ***Description:*** Cybersecurity / Information Assurance ***FY 2018 Plans:***	0.480	0.556	0.743

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
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. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 23) SSA ***Description:*** Policy and Standards Repository ***FY 2018 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 2019 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 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.403	0.432	0.578
Title: 24) SSA ***Description:*** Technology Transition Support ***FY 2018 Plans:*** Continue to perform Technology Transition support services (common components and services) for CBD programs. ***FY 2019 Plans:*** Continue to perform Technology Transition support services (common components and services) for CBD programs. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.292	0.312	0.419

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	24.868	25.677	23.281

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• IS7: *INFORMATION SYSTEMS (OP SYS DEV)*	10.293	12.203	15.552	-	15.552	16.951	16.492	15.163	13.211	Continuing	Continuing
• G47101: *JOINT WARNING & REPORTING NETWORK (JWARN)*	3.889	0.981	0.502	-	0.502	0.445	0.400	0.375	0.380	Continuing	Continuing
• JC0208: *JOINT EFFECTS MODEL (JEM)*	3.069	0.983	0.911	-	0.911	0.696	0.731	0.746	0.761	Continuing	Continuing
• JS5230: *SOFTWARE SUPPORT ACTIVITY (SSA)*	0.300	0.096	0.094	-	0.094	0.082	0.075	0.071	0.068	Continuing	Continuing

Remarks

D. Acquisition Strategy

BIOSURVEILLANCE PORTAL (BSP)

The Biosurveillance Portal (BSP) program will continue to meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. 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 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). There are two planned Production Capability Drops and two Engineering Capability Drops planned in each FY. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD to verify capabilities prior to delivery to the Warfighter. User Feedback Events (UFEs) will be conducted with identified Users to elicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) was achieved in July 2016. A Full Operational Test & Evaluation will be conducted prior to Final Operational Capability to be delivered in 3QFY20.

CBRN INFORMATION SYSTEMS

CBRN-IS acquisition strategy utilizes a Family-of-Systems (FoS) approach to align multiple programs of record capabilities to the CBRN-IS architecture and operational environment. CBRN-IS enterprise will initially integrate appropriate JPEO-CBD products into a FoS framework beginning with the Joint Warning and Reporting (JWARN)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

and Joint Effects Model (JEM) program capabilities. CBRN-IS leverages the concepts of CBRN Hazard Awareness and Understanding and DISA Enterprise Services to integrate current CBRN capabilities, and other information and intelligence services, applications, and systems to provide increased situational awareness and decision support to commanders for CBRN defense. The strategy supports the implementation of integrated early warning capabilities by incorporating the inclusion of mature science and technology products and emerging technologies from existing advanced technology demonstrations (ATD) and experimental capability demonstrations (ECD). CBRN-IS utilizes the Agile software development process with the IT Box acquisition strategy to provide for the spiral development and fielding of modular capability packages.

JOINT EFFECTS MODEL (JEM)

JEM 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.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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.

As part of this strategy a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in March 2017.

The current contractor for JEM 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1, CD 2.2, and CD 2.3 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The contract awarded in March 2017 includes scope for developing the remaining capabilities under the JEM 2.0 contract. The contract utilizes full and open competition and is referred to as the JEM development, modernization and sustainment contract.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in Q4 FY14, and a CD1.1 Fielding Decision and a RDP-2 Build Decision were approved in Q3 FY16. Each subsequent RDP will have a single Build Decision and each CD will have an associated Fielding Decision.

It is anticipated JEM 2 capabilities will transition to CBRN-IS in Fiscal Year 2023.

JOINT WARNING & REPORTING NETWORK (JWARN)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

JWARN 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).

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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 JWARN Program will find an appropriate Sensor Connectivity Capability (SCC) 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).

The current contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) and RDP-2 documents. It is anticipated that the JRO will release further RDP-3 and RDP-4 prior to contract completion.

As part of the strategy for a single JWARN integrator, a follow-on contract Request for Proposal (RFP) is targeted for release Q4 FY17 with a targeted award date of Q3 FY18. The follow-on contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The follow-on contract in FY18 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JWARN follow-on contract will utilize full and open competition and will be referred to as the JWARN software development and maintenance contract.

It is anticipated JWARN 2 capabilities will transition to CBRN IS in Fiscal Year 2023.

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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - SW S - software - BSP software development	FFRDC	Johns Hopkins University - Applied Physics Lab : Laurel, MD	6.954	7.682	Dec 2016	5.319	Mar 2018	3.787	Dec 2018	-		3.787	Continuing	Continuing	0.000
CBRN IS - SW S - software - integration with BSP, JEM, JWARN	MIPR	Various : Various	0.000	0.942	Feb 2017	1.394	Dec 2017	1.058	Dec 2018	-		1.058	Continuing	Continuing	0.000
JEM - SW SB -2 - Hazard Prediction Model Development and Integration	C/CPAF	General Dynamics Information Technologies : Fairfax, VA	11.526	0.993	Apr 2017	1.676	Apr 2018	1.356	Apr 2019	-		1.356	Continuing	Continuing	0.000
JWARN - 2- SW S - Soft Dev Follow-On	C/CPAF	TBD : TBD	0.000	0.000		0.000		5.239	Jun 2019	-		5.239	Continuing	Continuing	0.000
JWARN - 1&2- SW S - Software Development	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	4.210	2.768	Feb 2017	4.475	Feb 2018	0.000		-		0.000	Continuing	Continuing	0.000
SSA - SW S - CBRN Data Model	C/CPAF	Various : Various	6.958	0.698	Mar 2017	0.749	Mar 2018	1.003	Mar 2019	-		1.003	Continuing	Continuing	0.000
		Subtotal	29.648	13.083		13.613		12.443		-		12.443	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - ES S - Support Costs - Cybersecurity and IA updates, architecture documentation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	0.000	1.313	Feb 2017	0.774	Dec 2017	0.565	Dec 2018	-		0.565	Continuing	Continuing	0.000
SSA - ES S - Support Costs	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	8.386	0.683	Nov 2016	0.707	Dec 2017	0.946	Dec 2018	-		0.946	Continuing	Continuing	0.000
		Subtotal	8.386	1.996		1.481		1.511		-		1.511	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - BSP-DTE S - Software	MIPR	Various : Various	0.998	1.317	Dec 2016	0.991	Dec 2017	0.358	Dec 2018	-		0.358	Continuing	Continuing	0.000
BSP - BSP- OTE S - Software - MOT&E	MIPR	Various : Various	1.135	1.544	Dec 2016	1.091	Dec 2017	0.928	Dec 2018	-		0.928	Continuing	Continuing	0.000
CBRN IS - OTE S - Operational Test - service-specific testing, joint test	MIPR	Various : Various	0.000	0.706	Feb 2017	0.894	Dec 2017	0.679	Dec 2018	-		0.679	Continuing	Continuing	0.000
JEM - DTE SB - 2 - Hazard Prediction Model Development Test	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	9.342	0.492	Nov 2016	1.046	Dec 2017	1.785	Dec 2018	-		1.785	Continuing	Continuing	0.000
JEM - OTHT C - Increment 2 - OT&E Hazard Prediction Modeling software	MIPR	Various : Various	2.087	0.734	Dec 2016	0.859		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2- DTE S - Completed Development Test and Evaluation of JWARN 2 in support of JWARN 2 IOT&E	MIPR	Various : Various	0.850	0.273	Dec 2016	1.571	Dec 2017	1.839	Dec 2018	-		1.839	Continuing	Continuing	0.000
JWARN - 2 - OTE S - Multi-service Operational Test and Evaluation of JWARN 2 software	MIPR	Various : Various	1.251	1.304	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
SSA - DTE S - Test and Evaluation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.656	0.524	Dec 2016	0.561	Dec 2017	0.751	Dec 2018	-		0.751	Continuing	Continuing	0.000
		Subtotal	19.319	6.894		7.013		6.340		-		6.340	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - PM/MS S - Program Management	Various	Various : Various	0.867	1.300	Dec 2016	1.114	Dec 2017	0.793	Dec 2018	-		0.793	Continuing	Continuing	0.000
CBRN IS - PM/MS S - Program Management - Planning, Programming, and Budgeting	MIPR	Various : Various	0.000	0.250	Feb 2017	0.299	Dec 2017	0.250	Dec 2018	-		0.250	Continuing	Continuing	0.000
JEM - PM/MS S - Program Office - Planning and Programming	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	7.223	0.525	Dec 2016	1.074	Dec 2017	0.627	Dec 2018	-		0.627	Continuing	Continuing	0.000
JWARN - 2- PM/MS C - Program Management Support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	0.925	0.544	Nov 2016	0.787	Dec 2017	0.921	Nov 2018	-		0.921	Continuing	Continuing	0.000
SSA - PM/MS S - Management Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.926	0.276	Dec 2016	0.296	Dec 2017	0.396	Dec 2018	-		0.396	Continuing	Continuing	0.000
		Subtotal	11.941	2.895		3.570		2.987		-		2.987	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	69.294	24.868		25.677		23.281		-		23.281	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

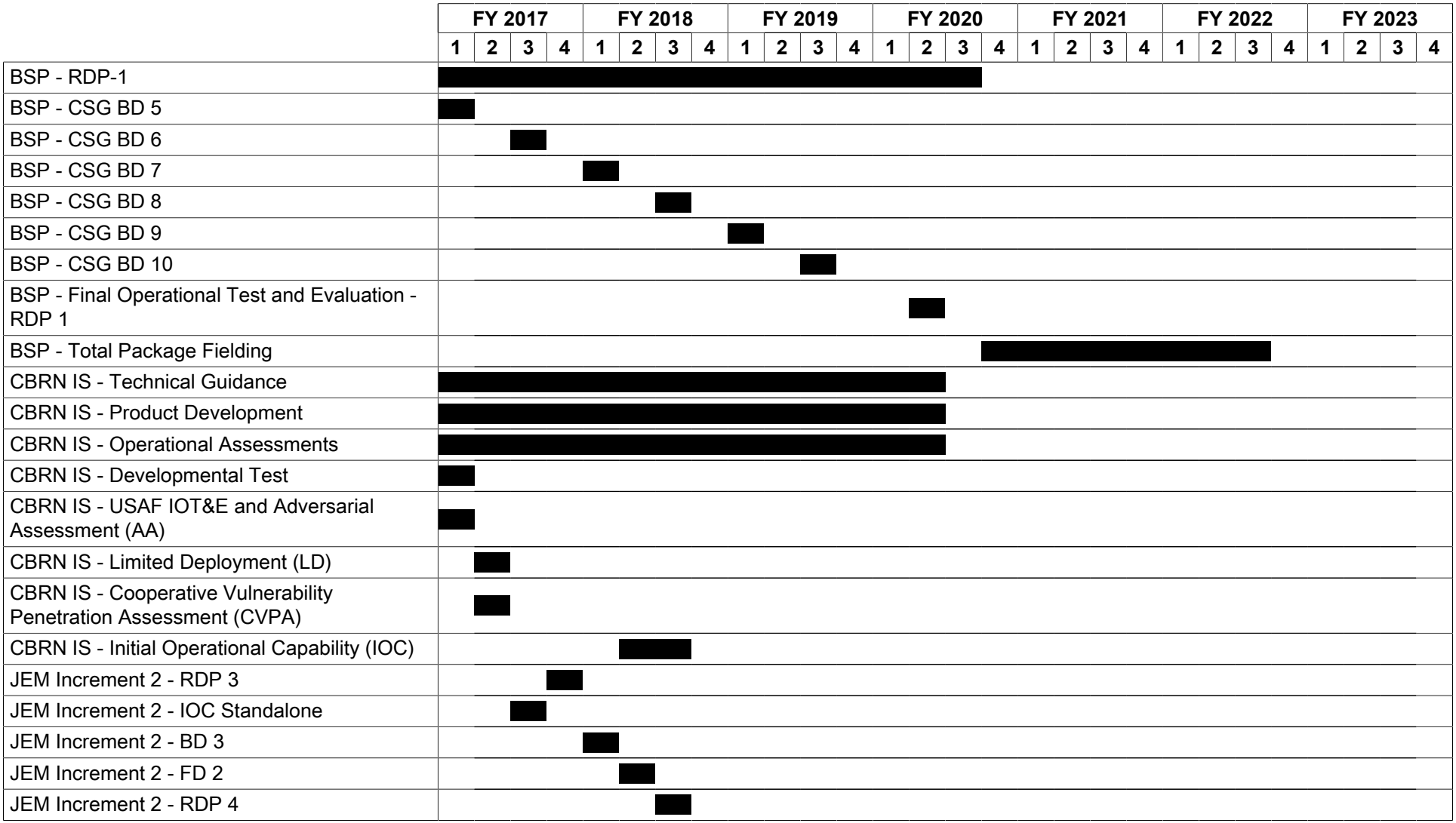

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

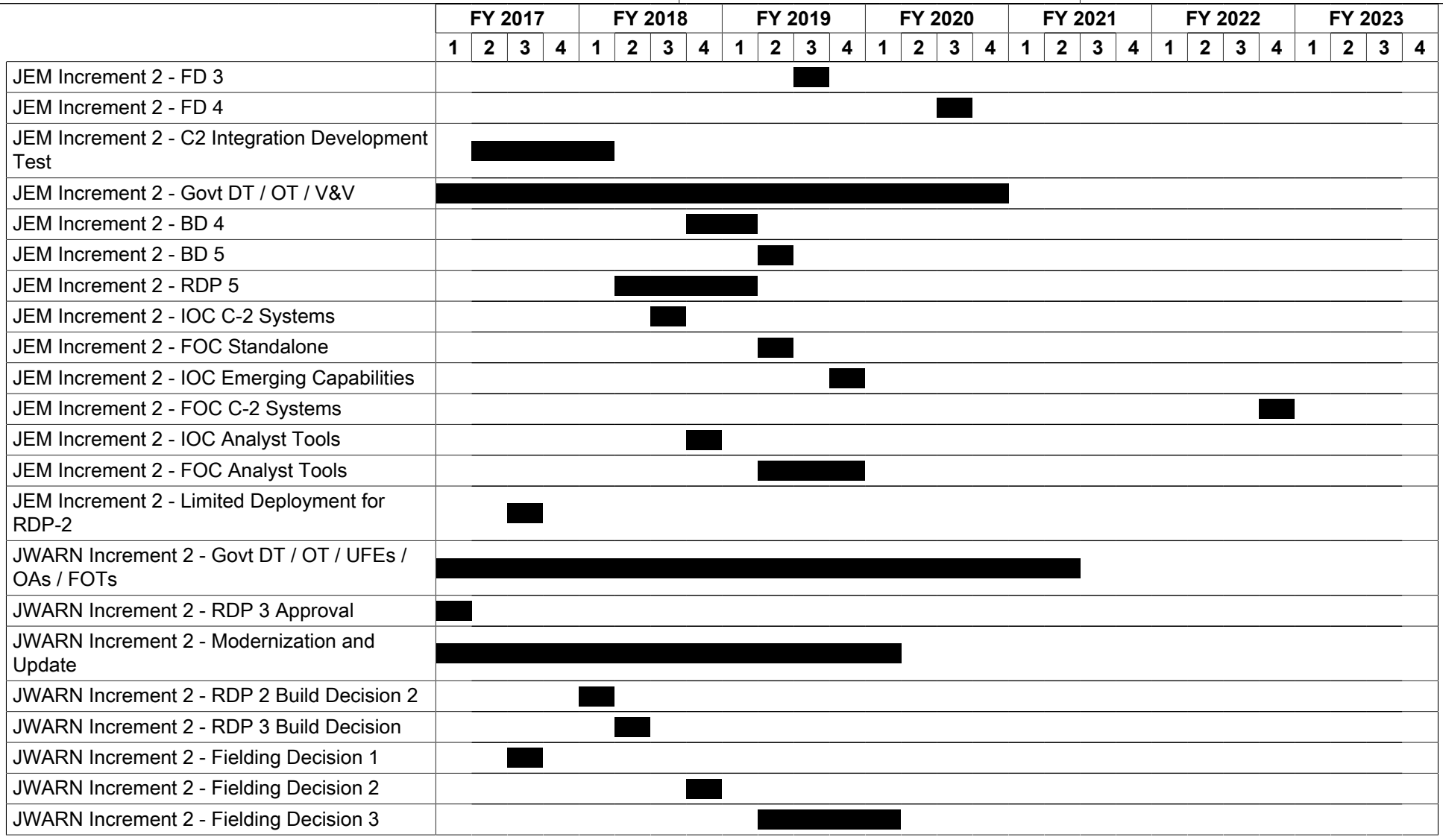

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

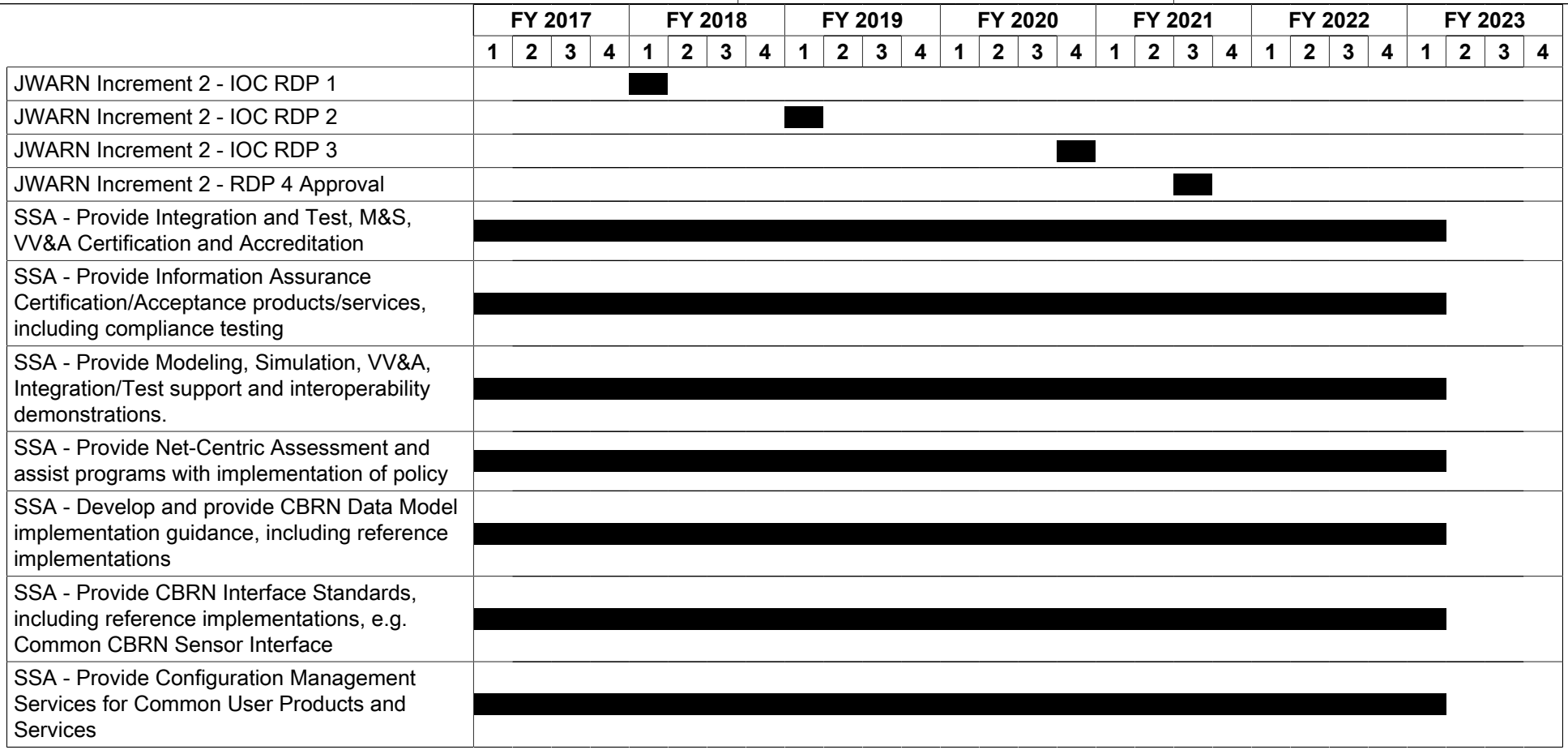

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BSP - RDP-1	1	2017	3	2020
BSP - CSG BD 5	1	2017	1	2017
BSP - CSG BD 6	3	2017	3	2017
BSP - CSG BD 7	1	2018	1	2018
BSP - CSG BD 8	3	2018	3	2018
BSP - CSG BD 9	1	2019	1	2019
BSP - CSG BD 10	3	2019	3	2019
BSP - Final Operational Test and Evaluation - RDP 1	2	2020	2	2020
BSP - Total Package Fielding	4	2020	3	2022
CBRN IS - Technical Guidance	1	2017	2	2020
CBRN IS - Product Development	1	2017	2	2020
CBRN IS - Operational Assessments	1	2017	2	2020
CBRN IS - Developmental Test	1	2017	1	2017
CBRN IS - USAF IOT&E and Adversarial Assessment (AA)	1	2017	1	2017
CBRN IS - Limited Deployment (LD)	2	2017	2	2017
CBRN IS - Cooperative Vulnerability Penetration Assessment (CVPA)	2	2017	2	2017
CBRN IS - Initial Operational Capability (IOC)	2	2018	3	2018
JEM Increment 2 - RDP 3	4	2017	4	2017
JEM Increment 2 - IOC Standalone	3	2017	3	2017
JEM Increment 2 - BD 3	1	2018	1	2018
JEM Increment 2 - FD 2	2	2018	2	2018
JEM Increment 2 - RDP 4	3	2018	3	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JEM Increment 2 - FD 3	3	2019	3	2019
JEM Increment 2 - FD 4	3	2020	3	2020
JEM Increment 2 - C2 Integration Development Test	2	2017	1	2018
JEM Increment 2 - Govt DT / OT / V&V	1	2017	4	2020
JEM Increment 2 - BD 4	4	2018	1	2019
JEM Increment 2 - BD 5	2	2019	2	2019
JEM Increment 2 - RDP 5	2	2018	1	2019
JEM Increment 2 - IOC C-2 Systems	3	2018	3	2018
JEM Increment 2 - FOC Standalone	2	2019	2	2019
JEM Increment 2 - IOC Emerging Capabilities	4	2019	4	2019
JEM Increment 2 - FOC C-2 Systems	4	2022	4	2022
JEM Increment 2 - IOC Analyst Tools	4	2018	4	2018
JEM Increment 2 - FOC Analyst Tools	2	2019	4	2019
JEM Increment 2 - Limited Deployment for RDP-2	3	2017	3	2017
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	1	2017	2	2021
JWARN Increment 2 - RDP 3 Approval	1	2017	1	2017
JWARN Increment 2 - Modernization and Update	1	2017	1	2020
JWARN Increment 2 - RDP 2 Build Decision 2	1	2018	1	2018
JWARN Increment 2 - RDP 3 Build Decision	2	2018	2	2018
JWARN Increment 2 - Fielding Decision 1	3	2017	3	2017
JWARN Increment 2 - Fielding Decision 2	4	2018	4	2018
JWARN Increment 2 - Fielding Decision 3	2	2019	1	2020
JWARN Increment 2 - IOC RDP 1	1	2018	1	2018
JWARN Increment 2 - IOC RDP 2	1	2019	1	2019
JWARN Increment 2 - IOC RDP 3	4	2020	4	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JWARN Increment 2 - RDP 4 Approval	3	2021	3	2021
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2017	1	2023
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2017	1	2023
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2017	1	2023
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	1	2017	1	2023
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2017	1	2023
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2017	1	2023
SSA - Provide Configuration Management Services for Common User Products and Services	1	2017	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	-	92.313	136.553	107.815	-	107.815	141.385	170.160	154.262	153.288	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.

The Defense Biological Products Assurance Program (DBPAP) 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 DBPAP 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 product in development failed during phase 3 clinical trials as a result the flu effort is being terminated. The development of a broad spectrum medical countermeasure will continue under the Antiviral Therapeutic program.

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 and resulting bio-toxins. The resulting product(s) will be US Food and Drug Administration (FDA)-approved to prevent or minimize effects of MDR bacterial exposures.

The Antiviral Therapeutic Program (AV TX) will develop and deliver FDA approved antiviral therapeutics for the warfighter. 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. Developed antiviral therapeutics will be employed after suspected or confirmed exposure to the relevant threat agents and AV TX MCMs will ameliorate the effect of threat agents to the warfighter. In the event of a natural occurring outbreak, antiviral therapeutics can be provided to ensure freedom of operation.

Medical Countermeasure Platform Technologies (MCMPT) will leverage platform technologies to streamline the MCM delivery to the Force by reducing developmental risk and a subset of these technologies will be adapted to deliver a rapid response capability to novel and emerging threats. The first platform being established as part of an Advanced Technology Demonstration (ATD) is the Advanced Development and Manufacturing Antibody Technologies (ADAMANT). A second platform technology will be established which will focus on a vaccine platform capability. The Agile Medical Paradigm (AMP) is the CBDP's strategic framework to accelerate the delivery of MCMs. To achieve this goal the DOD is establishing a medical countermeasures platform (MCMPT) capability. The goal of the MCMPT is to counter a variety of threat

agents using standardized discovery, design, manufacturing, and testing processes to reduce the MCM development risks. Efforts will center on leveraging the DoD's Advanced Development Manufacturing (ADM) facility and developing robust manufacturing processes.

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 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 2 will provide additional capability for diagnosis of CBR-induced diseases, suitable for use in far forward environments.

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 Next Generation Anthrax 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 for the Recombinant Botulinum A/B, Plague, and Next Generation Anthrax vaccine programs 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.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MCMPT	-	0.500	2.961
Description: ADAMANT BOT A/B			
FY 2018 Plans: Initiate establishment of advanced platform technologies within the DoD's Advanced Development Manufacturing (ADM) facility.			
FY 2019 Plans: Continue the establishment phase of the ADAMANT platform capability. Complete cGMP manufacturing and conduct IND-enabling studies and IND preparation.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

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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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 2) MCMPT ***Description:*** Program Management ***FY 2019 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	0.113
Title: 3) CMDR-B ***Description:*** Clinical ***FY 2019 Plans:*** Execute Advanced Development Contract(s) for mature drug products. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	4.975
Title: 4) NGDS 2 ***Description:*** Program Management ***FY 2019 Plans:*** Continue strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	5.775	-	2.188
Title: 5) NGDS 2 ***Description:*** Man Portable Diagnostic System (MPDS) ***FY 2018 Plans:***	5.168	9.174	3.428

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue Engineering & Manufacturing Development on required system engineering activities and complete operational test activities for Man Portable Diagnostic System. ***FY 2019 Plans:*** Continue Engineering & Manufacturing Development and initiate clinical trials for Man Portable Diagnostics System (MPDS). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 6) NGDS 2 In Vitro Diagnostic Assay Development and Maturation ***FY 2018 Plans:*** Optimize In Vitro Diagnostic assays for NGDS 2 man-portable diagnostic system. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	-	6.612	-
Title: 7) CRP ***Description:*** Development/expansion of biological select agents reference materials.	1.461	-	-
Title: 8) CRP ***Description:*** Development of immunoassays and nucleic acid based genomic assays.	0.893	-	-
Title: 9) CRP - ADAMANT ***Description:*** Advanced Development and Manufacturing of Antibody Technologies	5.439	-	-
Title: 10) CRP ***Description:*** QA/QC Testing	1.177	-	-
Title: 11) CRP ***Description:*** Maintain yearly accreditation audits.	0.029	-	-
Title: 12) CRP ***Description:*** OSCAR Support	0.691	-	-
Title: 13) DBPAP	-	2.473	3.016

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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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Threat Agent Reference Materials ***FY 2018 Plans:*** Continue (CRP) development/expansion of biological select agents reference materials to known and emerging threats. ***FY 2019 Plans:*** Continue development/expansion of biological threat agents reference materials to known and emerging threats. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.			
Title: 14) DBPAP ***Description:*** Development of Immunoassays ***FY 2018 Plans:*** Continue (CRP) development of immunoassays and nucleic acid based genomic assays to support fielded and developmental systems. ***FY 2019 Plans:*** Continue development of immunoassays and nucleic acid based genomic assays to support fielded and developmental systems. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	1.765	1.843
Title: 15) DBPAP ***Description:*** QA/QC Testing ***FY 2018 Plans:*** Continue (CRP) QA/QC testing to encompass the transition and fielding of biological detection assays. ***FY 2019 Plans:*** Continue QA/QC testing to encompass the transition and fielding of biological detection assays. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.	-	1.147	2.430
Title: 16) DBPAP ***Description:*** Accreditation Audits	-	1.323	0.063

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Continue (CRP) 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 2019 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 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.			
Title: 17) DBPAP ***Description:*** Unified Culture Collection ***FY 2018 Plans:*** Continue (CRP) development of prototypes/information for strains contained in Unified Culture Collection. ***FY 2019 Plans:*** Continue development of prototypes/information for strains contained in Unified Culture Collection. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	-	2.118	1.426
Title: 18) EID TX ***Description:*** Nonclinical	2.578	-	-
Title: 19) AV TX ***Description:*** Enabling Technologies ***FY 2018 Plans:*** Clinical: Conduct clinical trials studying efficacy to include continued resistance monitoring. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	10.933	1.100	-
Title: 20) AV TX ***Description:*** Nonclinical	-	22.142	0.500

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Non-clinical: Continue efficacy studies with Non Human Primates infected with Ebola virus. ***FY 2019 Plans:*** Non-clinical: Continue efficacy studies with Non Human Primates infected with Ebola virus. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 21) VAC BOT - Recombinant Botulinum Vaccine ***Description:*** Manufacturing ***FY 2018 Plans:*** Initiate and complete cGMP and PPQ runs for drug product fill-finish(vialing/fill and finish bottling the product)of drug substance in preparation for the Phase 3 Clinical Trial. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project is entering completion and all activities will be closed.	22.092	4.500	-
Title: 22) VAC BOT - Recombinant Botulinum Vaccine ***Description:*** Analytical Testing ***FY 2018 Plans:*** Continue drug substance comparability efforts. Initiate and completion of drug product GMP con lots and testing in preparation for the Phase 3 Clinical Trial. ***FY 2019 Plans:*** Complete drug substance comparability efforts. Phase III Clinical Trial activities ramp up with patient recruitment, preparation in anticipation of first subject/first vaccination. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to accelerated development effort.	2.652	31.629	23.136
Title: 23) VAC BOT ***Description:*** Program Management ***FY 2018 Plans:***	4.605	2.010	7.306

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support. ***FY 2019 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 24) VAC NGA ***Description:*** NonClinical ***FY 2019 Plans:*** Qualify assays and reference standards. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	5.000
Title: 25) VAC PLG ***Description:*** NonClinical ***FY 2018 Plans:*** Continue pivotal animal efficacy and reproductive toxicity studies to meet FDA licensure (in life activities, and immunological testing). Continue ongoing requirements for safeguarding biological select agents and toxins. ***FY 2019 Plans:*** Continue pivotal animal efficacy and reproductive toxicity studies to meet FDA licensure (in life activities, and immunological testing). Complete the first 2-Tier Dose Titration Study and initiate the second 2-Tier Dose Titration Study. Continue ongoing requirements for safeguarding biological select agents and toxins. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	9.043	14.001	16.491
Title: 26) VAC PLG ***Description:*** Clinical Trials ***FY 2018 Plans:***	3.011	19.854	15.569

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continued in-life portions of the Phase 3 clinical trial to evaluate expanded safety and efficacy. ***FY 2019 Plans:*** Continued in-life portions of the Phase 3 clinical trial to evaluate expanded safety and efficacy. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 27) VAC PLG ***Description:*** Manufacturing and Analytical Testing ***FY 2018 Plans:*** Initiate warm base manufacturing to prepare for FDA pre-approval inspections. ***FY 2019 Plans:*** Continue warm base manufacturing to prepare for FDA pre-approval inspections. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	0.475	11.501	3.310
Title: 28) VAC PLG ***Description:*** Program Management ***FY 2018 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. ***FY 2019 Plans:*** Continue to provide strategic/tactical planning, Government systems engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	13.858	2.001	11.168
Title: 29) VAC SIP ***Description:*** Storage, Distribution, Potency Testing ***FY 2018 Plans:***	2.433	2.703	2.892

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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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program. ***FY 2019 Plans:*** Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program and support product availability for Interim Fielding Capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	92.313	136.553	107.815

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	Continuing	Continuing
• JM8788: *NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)*	5.095	6.938	5.842	-	5.842	2.919	4.826	2.644	4.704	Continuing	Continuing
• JX0005: *DOD BIOLOGICAL VACCINE PROCUREMENT (VACCINES)*	0.185	0.183	0.183	-	0.183	0.183	0.182	0.182	0.182	Continuing	Continuing
• JX0210: *DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)*	1.005	0.995	0.975	-	0.975	0.972	0.874	0.788	0.764	Continuing	Continuing

Remarks

D. Acquisition Strategy

MCM PLATFORM TECHNOLOGIES (MCMPT)

The goal of the MCMPT is to rapidly counter a broad-spectrum of threat agents using standardized discovery, design, manufacturing, and testing processes to reduce the MCM development risks. BA5 Efforts will focus on establishing advanced platform technologies within the DoD's Advanced Development Manufacturing (ADM) facility and evaluating that capability through nonclinical and clinical testing. The early stage efforts (BA4) are to develop standardized design capabilities to support a rapid response. Once established, future programs will be able to leverage this capability for the development of specific medical countermeasures. It is anticipated that these efforts will leverage the Other Transactions Authority through the medical OTA consortium.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

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 and resulting bio-toxins. To meet the requirement to prevent or minimize the effects from MDR Bacterial exposures, the CMDR-B program will follow an integrated product development process and undergo independent regulatory affairs processes to achieve an FDA approved drug. The CMDR-B program is establishing collaborative relationships with DoD, other USG entities, and commercial partners in order to populate the MDR pipeline which will help reduce program risk, potentially lower program cost, and accelerate delivery of MCMs to the Warfighter. 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 CMDR-B program also has a partnership with DHHS/BARDA to manufacture developmental drug product that will support an Interim Fielding Capability for a plague therapeutic for post-exposure protection and treatment. The CMDR-B program intends to have a Milestone B Decision Review in 1QFY19. Results from the program investment in Non-Human Primate Pivotal efficacy testing, conducted in TMRR phase, in FY17 may result in Technical Readiness Level (TRL) 8 mature candidates being ready for further development.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS program was a MS A to MS C - Limited Deployment acquisition strategy, with MS C approval granted in Dec 2016 for limited production and fielding. NGDS 1 will replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17.

The NGDS 2 program addresses CBR agents and concepts of employment (COEs) that the NGDS 1 Film Array does not address. More than one materiel solution is required to expand the scope of CBR agent diagnostics across multiple echelons of care. NGDS 2 will employ a family of systems approach to bridge identified capability gaps for man-portable diagnostics, immunoassay diagnostics, and chemical diagnostics systems. NGDS 2 initiated prototyping of a man-portable diagnostic capability in FY17, while continuing to conduct risk reduction efforts for the other capabilities. Separate decisions will be utilized to proceed with further development and production for each capability, based on individual determinations of technology maturity to meet user requirements. Development efforts are anticipated to be cost-plus awards under the medical Other Transactions Authority (OTA), to take advantage of non-traditional Defense contractor offerings.

CRITICAL REAGENTS PROGRAM (CRP)

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. This program will transition to the Defense Biological Products Assurance Program (DBPAP) in FY18.

DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The Defense Biological Products Assurance Program's (DBPAP) 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.

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. The MCM was unsuccessful in the Phase 3 clinical trials, removing the expectation of FDA approval. In June 2016, the recommendation was made to end the EID - Flu product development contract and transition the program to AV Tx. It was determined that the influenza product, Favipiravir, would not meet contract requirements and program key performance parameters. The FDA informed the sponsor that the product under development did not provide a clinically significant benefit and was unlikely to be approved for the current indication. As a result, the program will package select data while removing all non-essential activities, allowing the contract to end with the current PoP in March 2017. The requirement for a broad-spectrum Antiviral will continue under the AV Tx Program.

ANTI-VIRAL THERAPEUTICS (AV TX)

The acquisition strategy combined the Hemorrhagic Fever Virus (HFV) and Emerging Infectious Diseases Therapeutics (EID TX) Program efforts beginning in FY17, into a single program 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 was conducted targeting award in FY16. The candidate selected for entry into the EMD phase of development will be executed under the Antiviral Therapeutic program in FY17. The candidate selected 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 a 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.

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 be 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.

NEXT GENERATION ANTHRAX VACCINE (VAC NGA)

The Next Generation Anthrax vaccine program strategy supports the development and qualification of immunological assays and required reference materials to support potential future anthrax vaccine programs. Once qualified, these assays will provide the DOD with data to support future decisions related to the anthrax pre-exposure vaccine program.

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.

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), Q-Fever and to support product availability for Interim Fielding Capabilities. 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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - HW S - ADAMANT BOT A/B establishment	C/CPFF	TBD : TBD	0.000	0.000		0.450	Jan 2018	2.961	Jan 2019	-		2.961	Continuing	Continuing	0.000
CMDR-B - Advanced Development Contract	C/CPIF	TBD : TBD	0.000	0.000		0.000		3.334	Jan 2019	-		3.334	Continuing	Continuing	0.000
NGDS - HW C - IVD Assay Development and Maturation Activities	Various	TBD : TBD	0.000	0.000		5.088	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
NGDS - HW C - Man Portable Diagnostic System	C/CPFF	MRIGlobal : Kansas City, MO	0.000	5.168	Aug 2017	7.060	Dec 2017	3.428	Dec 2018	-		3.428	Continuing	Continuing	0.000
CRP - HW C - ADAMANT	C/CPFF	Nanotherapeutics. Inc. : Alachua, FL	0.000	5.439		0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : Various	12.622	0.643	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - HW C - Scale-up of Select Biological Threat Agent Reference Materials	MIPR	Various : Various	0.000	0.000		2.043	Jun 2018	0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : Various	0.000	0.000		1.826	Jun 2018	1.327	Jun 2019	-		1.327	Continuing	Continuing	0.000
AV TX - Enabling Technologies (Joint Mobile Emerging Disease Intervention Clinical Capability)	Various	Various : Various	0.000	5.124	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AV TX - Pivotal Animal Efficacy Studies (Clinical)	C/FP	Gilead Sciences : San Francisco, CA	0.000	0.000		0.700	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV TX - Gilead Filo Candidate	C/FP	Gilead Sciences : San Francisco, CA	0.000	0.000		17.160	Nov 2017	0.333	Nov 2018	-		0.333	Continuing	Continuing	0.000
VAC BOT - HW S - Manufacturing, Validation and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	7.970	16.492	Dec 2016	36.139	Dec 2017	1.000	Dec 2018	-		1.000	Continuing	Continuing	0.000
VAC BOT - HW S - Manufacturing Tech Transfer	MIPR	Battelle Memorial Institute : Columbus, OH	12.336	1.023	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - HW S - Manufacturing, Validation, and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	11.255	8.008	Dec 2016	19.500	Dec 2017	8.376	Dec 2018	-		8.376	Continuing	Continuing	0.000
		Subtotal	44.183	41.897		89.966		20.759		-		20.759	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - ES C - Studies and WIPT Support	MIPR	Various : Various	0.200	0.000		0.971	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
CRP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : Various	5.227	1.005	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - ES C - Select Biological Threat Agent Reference Material Regulatory/Quality Assurance (QA) Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	3.113	0.518	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : Various	0.000	0.000		0.820	Jun 2018	2.075	Jun 2019	-		2.075	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DBPAP - ES C - Select Biological Threat Agent Reference Material Regulatory/Quality Assurance (QA) Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		1.280	Jun 2018	1.071	Jun 2019	-		1.071	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	23.974	3.754	Dec 2016	0.000		5.136	Dec 2018	-		5.136	Continuing	Continuing	0.000
VAC PLG - TD/D C - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	C/CPAF	Various : Various	19.623	3.497	Dec 2016	3.000	Dec 2017	3.436	Dec 2018	-		3.436	Continuing	Continuing	0.000
VAC SIP - Storage and Distribution of Vaccines	SS/FP	Fisher BioServices : Rockville, MD	0.990	0.333	Dec 2016	0.423	Dec 2017	0.437	Feb 2019	-		0.437	Continuing	Continuing	0.000
		Subtotal	53.127	9.107		6.494		12.155		-		12.155	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - OTHT C - Test and evaluate interagency	MIPR	TBD : TBD	0.300	0.000		0.300	Mar 2018	0.842	Dec 2018	-		0.842	Continuing	Continuing	0.000
VAC BOT - DTE C - Clinical Trials - Nonclinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	78.985	2.500	Dec 2016	0.000		17.000	Dec 2018	-		17.000	Continuing	Continuing	0.000
VAC NGA - DTE C - TBD	Various	TBD : TBD	0.000	0.000		0.000		5.000	Jan 2019	-		5.000	Continuing	Continuing	0.000
VAC PLG - DTE C - Clinical Trials/Non-Clinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	86.459	4.549	Dec 2016	15.877	Dec 2017	30.538	Dec 2018	-		30.538	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC SIP - OTHT C - Potency Testing of Vaccines	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	9.075	1.194	Dec 2016	1.926	Dec 2017	2.100	Dec 2018	-		2.100	Continuing	Continuing	0.000
		Subtotal	174.819	8.243		18.103		55.480		-		55.480	Continuing	Continuing	N/A

Remarks

Rate of program activities has decreased while the current CONOPS and capability are assessed by the Services.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - PM/MS C - Management	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.050	Jan 2018	0.113	Jan 2019	-		0.113	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.746	Jan 2019	-		0.746	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		0.448	Jan 2019	-		0.448	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Contractor Systems Engineering/Program Management Support	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.000		0.447	Jan 2019	-		0.447	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - PM/MS S - Product Management Support	MIPR	Various : Various	0.000	2.938	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - PM/MS S - Product Management Support #2	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	2.374	2.051	Dec 2016	0.136	Dec 2017	0.842	Dec 2018	-		0.842	Continuing	Continuing	0.000
NGDS - PM/MS SB - Product Management Systems Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.900	0.786	Dec 2016	2.231	Dec 2017	0.504	Dec 2018	-		0.504	Continuing	Continuing	0.000
CRP - PM/MS C - Product Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	4.701	1.186	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - PM/MS C - Guardian Support	Allot	Various : Various	0.000	0.390		0.000		0.000		-		0.000	Continuing	Continuing	0.000
CRP - PM/MS C - Product Management Support #2	SS/FFP	Various : Various	10.658	0.509	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - PM/MS C - Product Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		1.043	Jan 2018	2.449	Nov 2018	-		2.449	Continuing	Continuing	0.000
DBPAP - PM/MS C - Product Management Support #2	SS/FFP	Various : Various	0.000	0.000		1.123	Feb 2018	0.805	Feb 2019	-		0.805	Continuing	Continuing	0.000
DBPAP - PM/MS C - Guardian	Allot	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.000		0.691	Jun 2018	1.051	Jan 2019	-		1.051	Continuing	Continuing	0.000
EID TX - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM	6.341	0.209	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		MCS) : Fort Belvoir, VA													
EID TX - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.943	2.150	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EID TX - Contractor Systems Engineering/ Program Management Support	C/FP	Various : Various	7.061	0.219	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	2.432	Jan 2017	1.232	Jan 2018	0.075	Jan 2019	-		0.075	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	1.326	Jan 2017	1.573	Jan 2018	0.046	Jan 2019	-		0.046	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support #3	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.602	Jan 2018	0.046	Jan 2019	-		0.046	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support #4	C/FP	Various : Various	0.000	2.051	Jan 2017	1.975	Jan 2018	0.000		-		0.000	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	15.734	1.178	Dec 2016	2.000	Dec 2017	2.738	Dec 2018	-		2.738	Continuing	Continuing	0.000
VAC BOT - PM/ MS S - JPEO-CBD	Allot	JPEO Chem/Bio Defense (JPEO-	0.000	4.402	Oct 2016	0.000		4.568	Dec 2018	-		4.568	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MANAGEMENT SUPPORT		CBD) : Aberdeen Proving Ground, MD													
VAC PLG - PM/MS S - Joint Vaccine Acquisition Program Management Office	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	19.636	6.000	Dec 2016	2.000	Dec 2017	4.188	Dec 2018	-		4.188	Continuing	Continuing	0.000
VAC PLG - PM/MS S - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	38.590	4.333	Dec 2017	6.980	Dec 2017	0.000	Dec 2018	-		0.000	Continuing	Continuing	0.000
VAC SIP - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.309	0.906	Mar 2017	0.300	Mar 2018	0.355	Mar 2019	-		0.355	Continuing	Continuing	0.000
VAC SIP - SBIR/STTR - SBIR/STTR Tax	Allot	USA Research Dev & Engr Cmd (RDECOM) : Aberdeen Proving Ground, MD	0.000	0.000		0.054	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	111.247	33.066		21.990		19.421		-		19.421	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	383.376	92.313		136.553		107.815		-		107.815	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

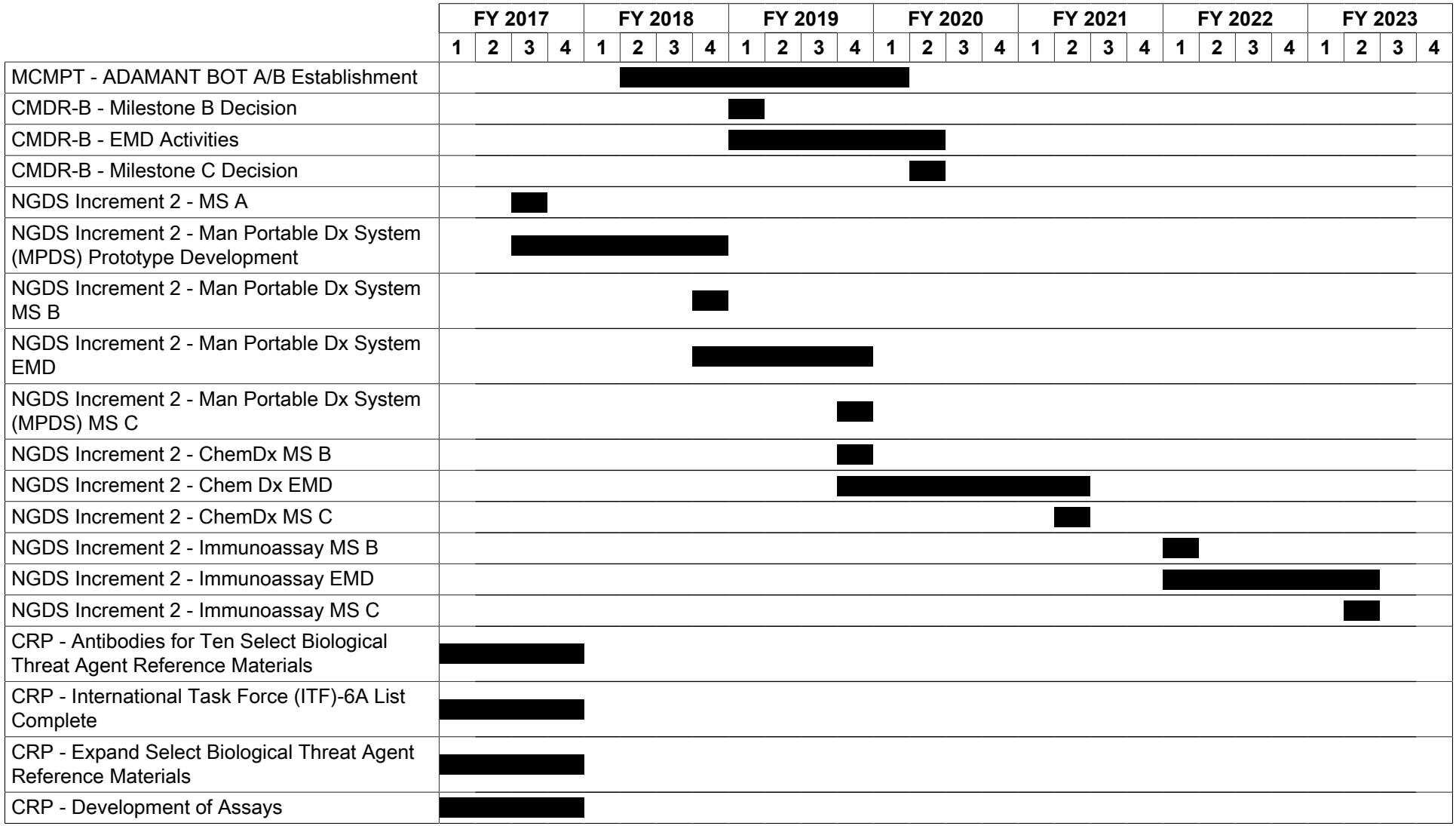

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

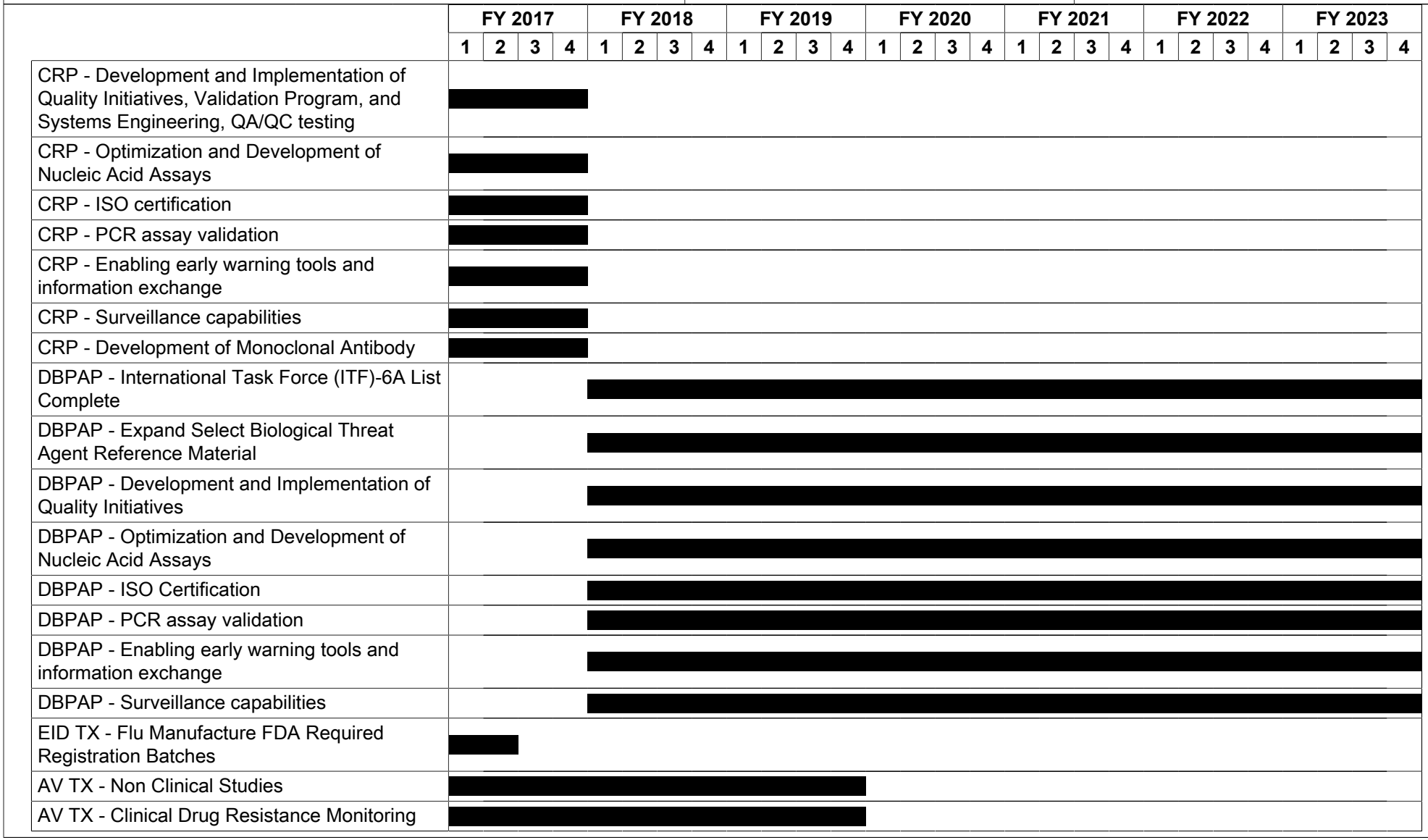

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

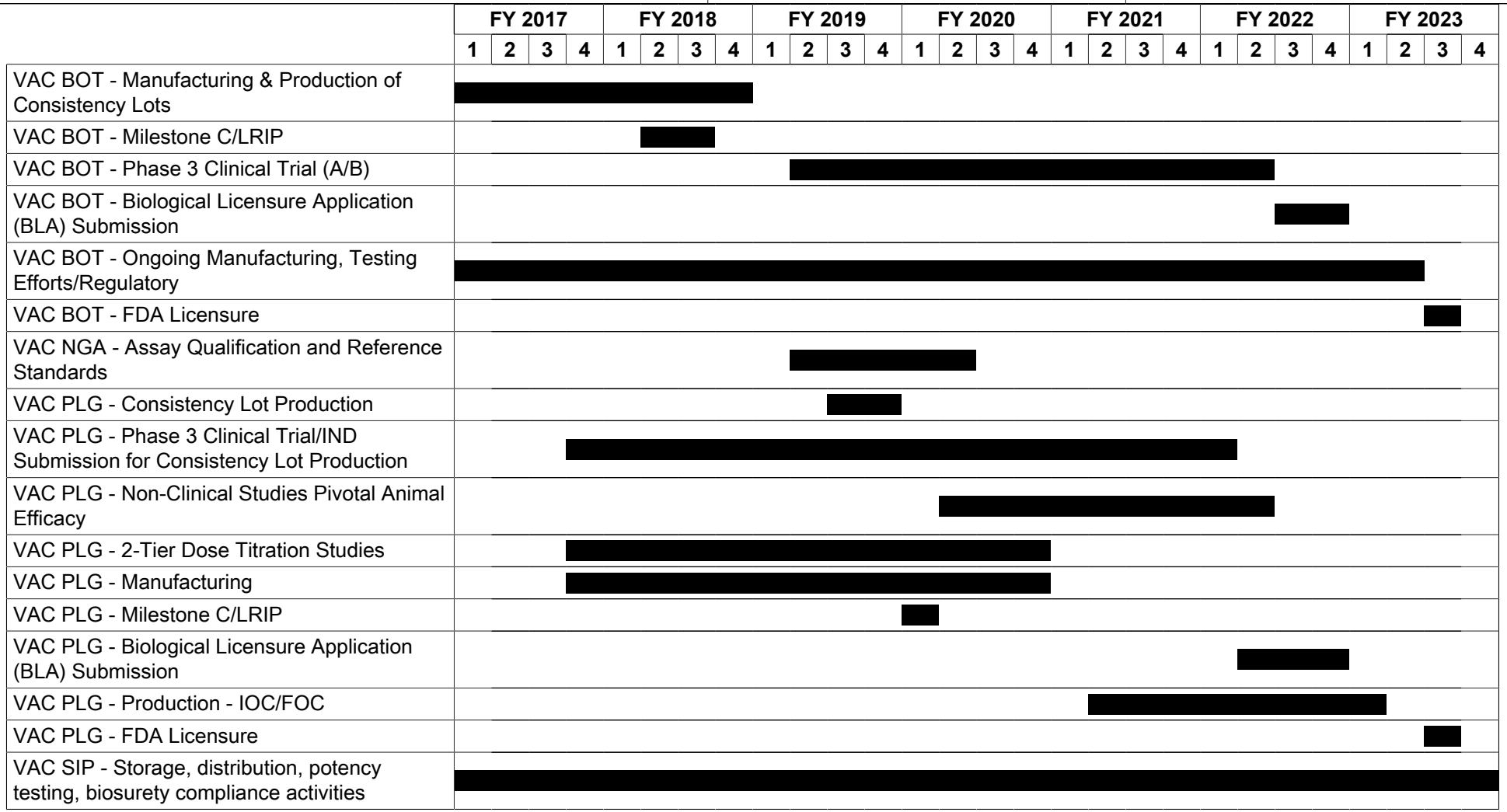

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MCMPT - ADAMANT BOT A/B Establishment	2	2018	1	2020
CMDR-B - Milestone B Decision	1	2019	1	2019
CMDR-B - EMD Activities	1	2019	2	2020
CMDR-B - Milestone C Decision	2	2020	2	2020
NGDS Increment 2 - MS A	3	2017	3	2017
NGDS Increment 2 - Man Portable Dx System (MPDS) Prototype Development	3	2017	4	2018
NGDS Increment 2 - Man Portable Dx System MS B	4	2018	4	2018
NGDS Increment 2 - Man Portable Dx System EMD	4	2018	4	2019
NGDS Increment 2 - Man Portable Dx System (MPDS) MS C	4	2019	4	2019
NGDS Increment 2 - ChemDx MS B	4	2019	4	2019
NGDS Increment 2 - Chem Dx EMD	4	2019	2	2021
NGDS Increment 2 - ChemDx MS C	2	2021	2	2021
NGDS Increment 2 - Immunoassay MS B	1	2022	1	2022
NGDS Increment 2 - Immunoassay EMD	1	2022	2	2023
NGDS Increment 2 - Immunoassay MS C	2	2023	2	2023
CRP - Antibodies for Ten Select Biological Threat Agent Reference Materials	1	2017	4	2017
CRP - International Task Force (ITF)-6A List Complete	1	2017	4	2017
CRP - Expand Select Biological Threat Agent Reference Materials	1	2017	4	2017
CRP - Development of Assays	1	2017	4	2017
CRP - Development and Implementation of Quality Initiatives, Validation Program, and Systems Engineering, QA/QC testing	1	2017	4	2017
CRP - Optimization and Development of Nucleic Acid Assays	1	2017	4	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CRP - ISO certification	1	2017	4	2017
CRP - PCR assay validation	1	2017	4	2017
CRP - Enabling early warning tools and information exchange	1	2017	4	2017
CRP - Surveillance capabilities	1	2017	4	2017
CRP - Development of Monoclonal Antibody	1	2017	4	2017
DBPAP - International Task Force (ITF)-6A List Complete	1	2018	4	2023
DBPAP - Expand Select Biological Threat Agent Reference Material	1	2018	4	2023
DBPAP - Development and Implementation of Quality Initiatives	1	2018	4	2023
DBPAP - Optimization and Development of Nucleic Acid Assays	1	2018	4	2023
DBPAP - ISO Certification	1	2018	4	2023
DBPAP - PCR assay validation	1	2018	4	2023
DBPAP - Enabling early warning tools and information exchange	1	2018	4	2023
DBPAP - Surveillance capabilities	1	2018	4	2023
EID TX - Flu Manufacture FDA Required Registration Batches	1	2017	2	2017
AV TX - Non Clinical Studies	1	2017	4	2019
AV TX - Clinical Drug Resistance Monitoring	1	2017	4	2019
VAC BOT - Manufacturing & Production of Consistency Lots	1	2017	4	2018
VAC BOT - Milestone C/LRIP	2	2018	3	2018
VAC BOT - Phase 3 Clinical Trial (A/B)	2	2019	2	2022
VAC BOT - Biological Licensure Application (BLA) Submission	3	2022	4	2022
VAC BOT - Ongoing Manufacturing, Testing Efforts/Regulatory	1	2017	2	2023
VAC BOT - FDA Licensure	3	2023	3	2023
VAC NGA - Assay Qualification and Reference Standards	2	2019	2	2020
VAC PLG - Consistency Lot Production	3	2019	4	2019
VAC PLG - Phase 3 Clinical Trial/IND Submission for Consistency Lot Production	4	2017	1	2022

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
VAC PLG - Non-Clinical Studies Pivotal Animal Efficacy	2	2020	2	2022
VAC PLG - 2-Tier Dose Titration Studies	4	2017	4	2020
VAC PLG - Manufacturing	4	2017	4	2020
VAC PLG - Milestone C/LRIP	1	2020	1	2020
VAC PLG - Biological Licensure Application (BLA) Submission	2	2022	4	2022
VAC PLG - Production - IOC/FOC	2	2021	1	2023
VAC PLG - FDA Licensure	3	2023	3	2023
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	-	51.903	47.388	62.092	-	62.092	38.576	40.607	31.746	25.740	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 fielded ATNAA product, the oxime (2-PAM) and atropine in a dual chambered autoinjector. (2) The Advanced Anticonvulsant System (AAS), 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; (3) Bioscavenger - Plasma (BSCAV-P), a new capability, to be used as a prophylaxis against nerve agents; (4) Improved Nerve Agent Treatment System (INATS) an enhanced chemical warfare 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 non-clinical studies to demonstrate the safety of pyridostigmine bromide (PB) as a pretreatment for nerve agents in addition to soman.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) AUTOINJ	2.846	3.241	1.000
Description: Manufacturing			
FY 2018 Plans: Continue manufacturing of autoinjector consistency lots.			
FY 2019 Plans: Continue manufacturing of autoinjector consistency lots.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Decrease due to change in program/project technical parameters.			
Title: 2) AUTOINJ ***Description:*** Testing ***FY 2018 Plans:*** Continue storage stability and bioequivalency testing for autoinjector. ***FY 2019 Plans:*** Continue storage stability and bioequivalency testing for atropine, 2PAM, diazepam & dual drug delivery autoinjectors. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	1.980	2.500	9.000
Title: 3) AUTOINJ ***Description:*** FDA ***FY 2018 Plans:*** Initiate FDA preparation, filing, and meetings for single and dual drug autoinjectors. ***FY 2019 Plans:*** Continue FDA preparation, filing, and meetings for single and dual drug autoinjectors.	0.218	0.500	0.500
Title: 4) AUTOINJ ***FY 2018 Plans:*** Initiate prototype development of single and dual drug autoinjector ***FY 2019 Plans:*** Continue prototype development of single and dual drug autoinjector. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	2.250	2.191
Title: 5) AUTOINJ ***FY 2018 Plans:*** Initiate human factors and environmental testing for single and dual drug autoinjectors. ***FY 2019 Plans:***	-	1.350	1.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Continue human factors and environmental testing for single and dual drug autoinjectors. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 6) AAS ***FY 2019 Plans:*** Continue non-clinical efficacy studies in non-human primates to address FDA concerns. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	-	-	9.640
Title: 7) BSCAV-P ***Description:*** Non-clinical ***FY 2018 Plans:*** Continue pilot nonclinical toxicity and pharmacokinetic (PK) and efficacy studies. ***FY 2019 Plans:*** Continue/complete pilot nonclinical toxicity and pharmacokinetic (PK) and efficacy studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	7.018	4.337	8.000
Title: 8) BSCAV-P ***Description:*** Manufacturing ***FY 2018 Plans:*** Continue cGMP manufacturing for clinical and nonclinical studies. ***FY 2019 Plans:*** Continue cGMP manufacturing for clinical and nonclinical studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	15.809	8.505	13.001
Title: 9) BSCAV-P ***Description:*** Clinical	4.100	3.255	2.000

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Continue phase 1 clinical pharmacokinetic (PK) and safety studies. ***FY 2019 Plans:*** Continue phase 1 clinical pharmacokinetic (PK) and safety studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 10) BSCAV-P ***Description:*** Manufacturing ***FY 2018 Plans:*** Initiate Human Clinical Phase 2/3 Study for expanded safety. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	6.600	4.830	-
Title: 11) BSCAV-P ***Description:*** Non-clinical ***FY 2018 Plans:*** Continue nonclinical studies to evaluate drug-drug interactions in small animal models. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	3.400	2.520	-
Title: 12) INATS ***Description:*** Non-clinical	1.500	-	-
Title: 13) INATS ***Description:*** Manufacturing	1.800	-	-
Title: 14) INATS ***Description:*** Clinical ***FY 2018 Plans:***	3.000	5.400	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Complete centrally acting phase 1 clinical trial. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 15) INATS ***Description:*** Manufacturing ***FY 2018 Plans:*** Continue large-scale centrally acting current Good Manufacturing Practice (cGMP) efforts and manufacturing of clinical trial material. ***FY 2019 Plans:*** Continue large-scale centrally acting current Good Manufacturing Practice (cGMP) efforts and manufacturing of clinical trial material. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.	3.632	2.294	6.304
Title: 16) INATS ***FY 2018 Plans:*** Initiate & complete centrally acting reformulation efforts and bridging studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to delay of a Milestone decision.	-	6.406	-
Title: 17) INATS ***Description:*** Clinical ***FY 2019 Plans:*** Initiate Centrally Acting phase two clinical trial. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	3.116
Title: 18) INATS ***Description:*** Studies	-	-	5.516

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2019 Plans: Continue Centrally Acting animal & efficacy studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 19) INATS ***Description:*** Studies ***FY 2019 Plans:*** Continue Pyridostigmine Bromide (PB) safety studies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to fact of life change in the program/project.	-	-	0.824
Accomplishments/Planned Programs Subtotals	51.903	47.388	62.092

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JM6677: *ADVANCED ANTICONVULSANT SYSTEM (AAS)*	0.000	0.000	0.360	-	0.360	0.360	2.700	2.700	4.000	Continuing	Continuing

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. That single source is experiencing manufacturing and quality issues leading to risk that 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 nerve 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.

BIOSCAVENGER (BSCAV)

Used a serial evaluation of candidates to achieve competitive prototyping in the Technology Maturation and Risk Reduction 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. 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 product packaging and will submit a Biologics License Application and seek FDA approval. The SDD phase will culminate in FDA licensure of the Bioscavenger. During the Production and Deployment phase, the Bioscavenger-Plasma (BSCAV-P) program, in conjunction with a commercial partner, will pursue full rate production. Any post-marketing surveillance requested by the FDA will be the responsibility of the contractor. 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)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The INATS' evolutionary Acquisition Strategy has expanded to insert a centrally-acting (CA) anticholinergic agent. This strategy employs an incremental approach to provide independent, and more rapid development and delivery in a combined treatment regimen of (1) an improved oxime, and (2) CA capabilities, and to evaluate safety of PB when treating exposure of other traditional and novel organophosphorous nerve agents. In the Technology Maturation and Risk Reduction (TM&RR) phase, close collaborations will occur with 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 nonclinical studies to evaluate safety of pyridostigmine bromide (PB) when used to counter other traditional and novel organophosphorus nerve agents. In the Engineering and Manufacturing Development (EMD) phase for the oxime and CA components, the Government will engage with commercial partner(s) 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 commercial partner(s) will also oversee the manufacture of improved oxime and CA formulations and delivery system that is stable under operationally relevant temperatures. The Government will submit a New Drug Application and seek FDA approval for the INATS products. 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.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - HW S - Autoinjector - Manufacturing of Consistency Lots	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	2.236	Dec 2016	3.000	Dec 2017	1.000	Dec 2018	-		1.000	Continuing	Continuing	0.000
AUTOINJ - HW C - Dual Drug Delivery Device (D4) Prototype Development	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	0.000	0.500	Jul 2017	0.000		5.000	Nov 2018	-		5.000	Continuing	Continuing	0.000
AUTOINJ - HW C - Prototype Development	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		2.125	Oct 2017	2.000	Nov 2018	-		2.000	Continuing	Continuing	0.000
BSCAV-P - HW S - cGMP Manufacturing and Process Validation	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	22.043	13.695	Jan 2017	7.055	Jan 2018	11.222	Jan 2019	-		11.222	Continuing	Continuing	0.000
BSCAV-P - HW S - Evaluation of Alternative Source Material	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	13.100	6.024	Dec 2016	3.844	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
INATS - HW C - cGMP Efforts and Manufacture of Material	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.665	4.774	Dec 2016	2.163	Dec 2017	5.494	Dec 2018	-		5.494	Continuing	Continuing	0.000
INATS - HW C - Reformulation & Bridging Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		5.135	Oct 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	37.808	27.229		23.322		24.716		-		24.716	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - TD/D S - Autoinjector - FDA NDA coordination	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.190	Jun 2017	0.363	Oct 2017	1.000	Nov 2018	-		1.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - ILS S - Regulatory Support	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.664	0.260	Jun 2017	0.275	Jun 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	0.664	0.450		0.638		1.000		-		1.000	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - DTE S - Autoinjector - Stability Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	1.760	Jun 2017	2.215	Oct 2017	2.000	Nov 2018	-		2.000	Continuing	Continuing	0.000
AUTOINJ - DTE C - Human Factors Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		1.200	Oct 2017	1.386	Nov 2018	-		1.386	Continuing	Continuing	0.000
AAS - DTE C - Non-clinical studies	C/CPFF	TBD : TBD	0.000	0.000		0.000		9.158	Nov 2018	-		9.158	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	3.310	Jan 2017	2.326	Jan 2018	1.445	Jan 2019	-		1.445	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Nonclinical Studies to evaluate drug-drug interactions	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	1.870	Jan 2017	1.924	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Pilot Nonclinical PK Efficacy Studies	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	7.663	6.340	Jan 2017	4.152	Jan 2018	6.256	Jan 2019	-		6.256	Continuing	Continuing	0.000
INATS - DTE S - Centrally Acting Animal & Efficacy Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		4.800	Nov 2018	-		4.800	Continuing	Continuing	0.000
INATS - DTE S - Centrally Acting Phase 2 Clinical Trial	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		2.804	Nov 2018	-		2.804	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - DTE S - Pyridostigmine Bromide (PB) Safety Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		0.788	Nov 2018	-		0.788	Continuing	Continuing	0.000
INATS - DTE S - Nonclinical Studies for PB	C/CPFF	Battelle Memorial Institute : Columbus, OH	4.600	1.140	Jan 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE S - INATS - Centrally Acting Phase 1 Trial	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	2.240	Dec 2016	4.797	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	12.263	16.660		16.614		28.637		-		28.637	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - PM/MS S - Autoinjector - Program Support	PO	JPM Chem/Bio Medical Systems (JPM CBMS) : Fort Detrick, MD	0.000	0.358	Dec 2016	0.938	Dec 2017	1.305	Nov 2018	-		1.305	Continuing	Continuing	0.000
AAS - PM/MS C - Medical Countermeasure Systems (MCS)	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.727	0.000		0.000		0.482	Nov 2018	-		0.482	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - MCS Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	4.286	1.657	Mar 2017	1.031	Mar 2018	1.011	Mar 2019	-		1.011	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - Product Management Support	C/FFP	Various : Various	4.322	1.457	Jun 2017	1.210	Jun 2018	1.187	Jun 2019	-		1.187	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSCAV-P - PM/MS S - Product Management Support #2	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.396	0.240	Mar 2017	0.240	Mar 2018	0.247	Mar 2019	-		0.247	Continuing	Continuing	0.000
BSCAV-P - PM/MS C - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	4.225	2.334	Mar 2017	1.665	Mar 2018	1.633	Mar 2019	-		1.633	Continuing	Continuing	0.000
INATS - PM/MS S - Product Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.460	0.165	Dec 2016	0.170	Dec 2017	0.176	Dec 2018	-		0.176	Continuing	Continuing	0.000
INATS - PM/MS S - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.950	0.528	Mar 2017	0.630	Mar 2018	0.704	Mar 2019	-		0.704	Continuing	Continuing	0.000
INATS - PM/MS S - Product Management Support #2	C/FFP	Various : Various	0.985	0.825	Jun 2017	0.930	Jun 2018	0.994	Jun 2019	-		0.994	Continuing	Continuing	0.000
		Subtotal	18.351	7.564		6.814		7.739		-		7.739	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	69.086	51.903		47.388		62.092		-		62.092	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

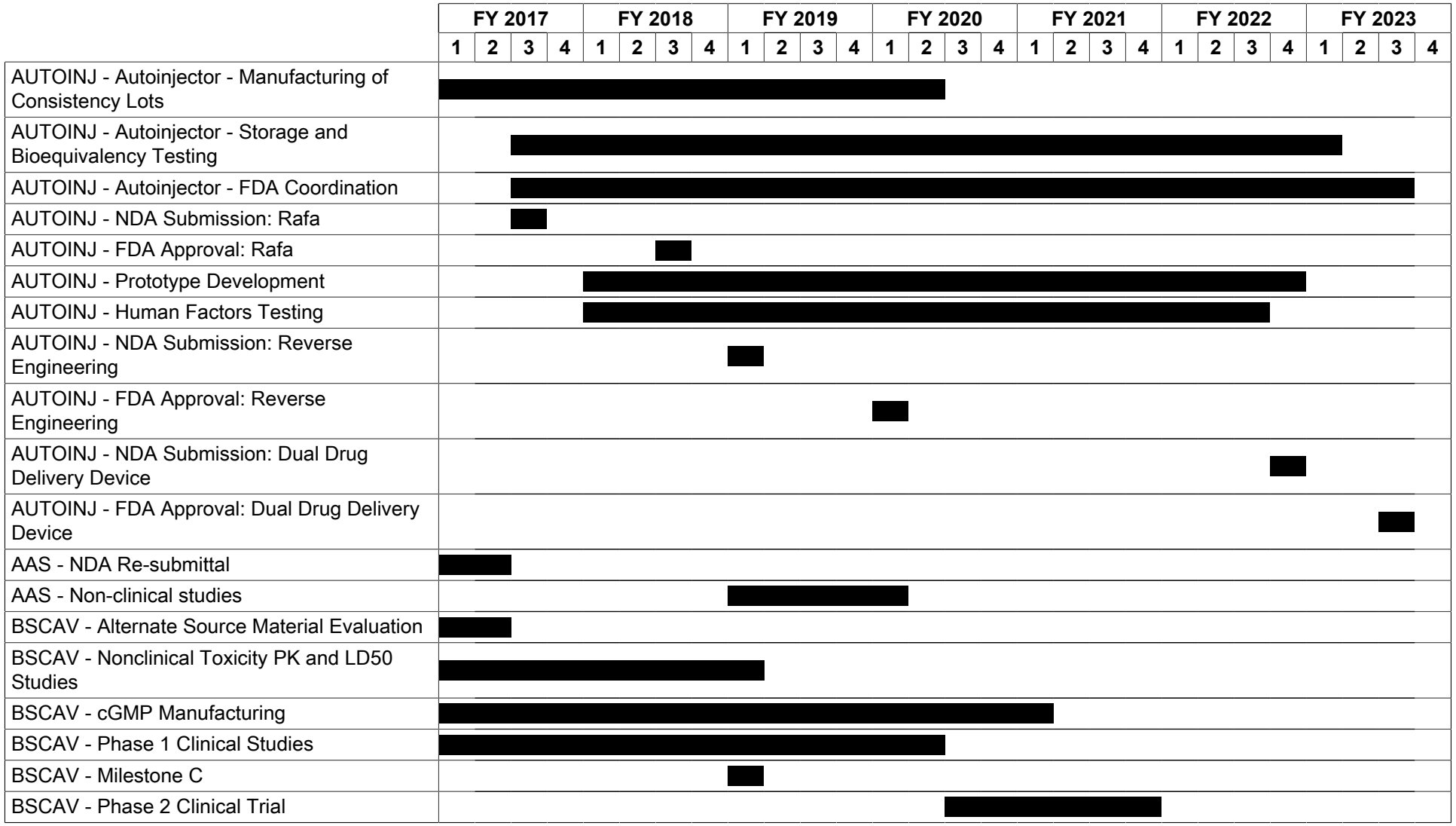

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

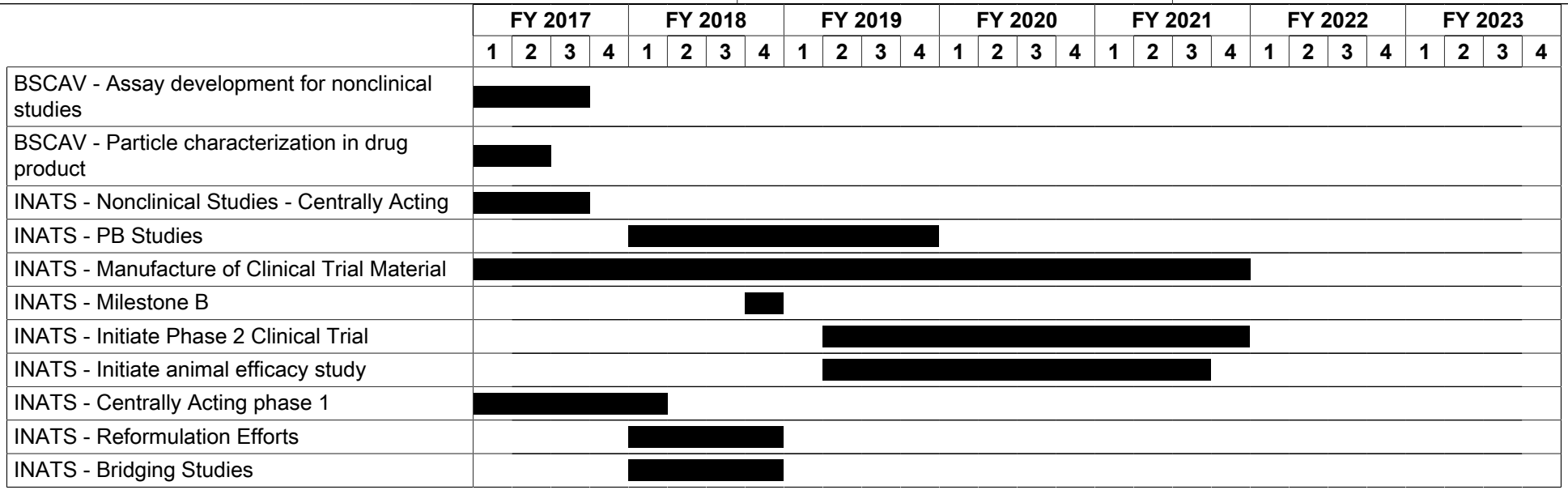

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AUTOINJ - Autoinjector - Manufacturing of Consistency Lots	1	2017	2	2020
AUTOINJ - Autoinjector - Storage and Bioequivalency Testing	3	2017	1	2023
AUTOINJ - Autoinjector - FDA Coordination	3	2017	3	2023
AUTOINJ - NDA Submission: Rafa	3	2017	3	2017
AUTOINJ - FDA Approval: Rafa	3	2018	3	2018
AUTOINJ - Prototype Development	1	2018	4	2022
AUTOINJ - Human Factors Testing	1	2018	3	2022
AUTOINJ - NDA Submission: Reverse Engineering	1	2019	1	2019
AUTOINJ - FDA Approval: Reverse Engineering	1	2020	1	2020
AUTOINJ - NDA Submission: Dual Drug Delivery Device	4	2022	4	2022
AUTOINJ - FDA Approval: Dual Drug Delivery Device	3	2023	3	2023
AAS - NDA Re-submittal	1	2017	2	2017
AAS - Non-clinical studies	1	2019	1	2020
BSCAV - Alternate Source Material Evaluation	1	2017	2	2017
BSCAV - Nonclinical Toxicity PK and LD50 Studies	1	2017	1	2019
BSCAV - cGMP Manufacturing	1	2017	1	2021
BSCAV - Phase 1 Clinical Studies	1	2017	2	2020
BSCAV - Milestone C	1	2019	1	2019
BSCAV - Phase 2 Clinical Trial	3	2020	4	2021
BSCAV - Assay development for nonclinical studies	1	2017	3	2017
BSCAV - Particle characterization in drug product	1	2017	2	2017
INATS - Nonclinical Studies - Centrally Acting	1	2017	3	2017

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
INATS - PB Studies	1	2018	4	2019
INATS - Manufacture of Clinical Trial Material	1	2017	4	2021
INATS - Milestone B	4	2018	4	2018
INATS - Initiate Phase 2 Clinical Trial	2	2019	4	2021
INATS - Initiate animal efficacy study	2	2019	3	2021
INATS - Centrally Acting phase 1	1	2017	1	2018
INATS - Reformulation Efforts	1	2018	4	2018
INATS - Bridging Studies	1	2018	4	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
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 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
TE5: *TEST & EVALUATION (EMD)*	-	2.744	9.548	9.056	-	9.056	7.788	7.990	7.394	7.394	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the Chemical Biological Defense Portfolio (CBDP) Product Director, Test, Equipment, Strategy, and Support (PD TESS). Budget Item will continue as Chem Bio Material Assessment Infrastructure (CBMAI) beginning in fiscal year 2019. PD TESS/CBMAI provides test infrastructure products for testing and evaluating chemical and biological defense systems throughout the life cycle acquisition process. PD TESS/CBMAI products are aligned in two groups to include: (1) Laboratory; (2) Field. The program name changed to highlight the Assessment function, which includes: analysis and analytical products conducted in support of infrastructure improvements.

(1) Laboratory: The products for this area are the Non-Traditional Agent Defense Test System (NTADTS) improvements and 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 Aerosol-Vapor Chemical Agent Detector (AVCAD) (formerly Next Generation Chemical Detector (NGCD 1)), Proximity Chemical Agent Detector (PCAD) (formerly NGCD 2), Multiphase Chemical Agent Detector (MPCAD) (formerly NGCD 3), Wearable Chemical Agent Detector (WCAD) (formerly NGCD 4), 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 Test Grid, Open Architecture Data Management System (OADMS), Joint Ambient Breeze Tunnel (JABT) and 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 simulant cloud; and provide status of all of the equipment in the network at Dugway Proving Ground (DPG). The OADMS is an open architecture all-inclusive mobile management service functioning wirelessly, capable of integrating, controlling, commanding and managing all assets required to conduct chemical and biological (CB) tests at any Major Range Test Facility Base (MRTFB). 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 MRTFB for CB Testing. The JABT and ASC improvements will provide a tech refresh to existing infrastructure and allow establishment of test data correlation between laboratory-tunnels-field for test results. The Multi Commodity Agent Chamber (MCAC) is an agent chamber that will be configurable for use by multiple commodities with emphasis placed on CBRN Sensor Integration on Robotic Platforms (C-SIRP). The CBD acquisition programs supported are the Joint Expeditionary Collective Protection (JECP), Next Generation Chemical Detector (NGCD), Joint Biological Tactical Detection System (JBTDS), Uniform Integrated Protection Ensemble (UIPE), CBRN Sensor Integration on Robotic Platforms (C-SIRP), and the Joint USFK Point and Integrated Threat Recognition (JUPITR) Enhanced Capability Demonstration (ECD).

Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Title: 1) PD TESS - Program Management ***Description:*** Program Management ***FY 2018 Plans:*** Continue Government Integrated Product Team program management, systems engineering and IPT support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	0.853	2.700	-
Title: 2) PD TESS- Tech Refresh ***Description:*** Initiated a methodology and design change study to Upgrade referee equipment and fixtures at West Desert Test Center. ***FY 2018 Plans:*** Initiate upgrades for obsolescence of referee equipment and fixtures. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	1.948	-
Title: 3) PD TESS - Non-Traditional Agent Defense Test System (NTADTS) ***Description:*** The NTADTS infrastructure is multi-component advanced threat test system designed to test CBDP equipment against advanced threats in all states of matter and under environmental conditions. ***FY 2018 Plans:*** Continue to transition additional validated test subsystems to the CB T&E community. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	0.485	2.800	-
Title: 4) PD TESS - Test Grid ***Description:*** Provided the network referee and dissemination equipment in the data management system (DMS) to synchronize test and meta data under a single GPS clock for accuracy.	1.406	-	-
Title: 5) PD TESS - Joint Ambient Breeze Tunnel (JABT) ***Description:*** Conducted study on methodology and design changes to prevent future impacts of wind channeling effects in the ASC and algorithm changes in the Test Grid Data Management System (DMS).	-	0.900	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Complete upgrades and transition. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.			
Title: 6) PD TESS - Active Standoff Chamber - (ASC) ***Description:*** Replaced and improved the data network of the chamber test data collection and data recoding system to the Test Grid Data Management System (DMS) for accuracy. ***FY 2018 Plans:*** Complete upgrades and transition. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred to another funding line.	-	1.200	-
Title: 7) CBMAI - Program Management ***Description:*** Program Management ***FY 2019 Plans:*** Continue Government Integrated Product Team program management, systems engineering, and IPT Support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	2.750
Title: 8) CBMAI - Non-Traditional Agent Defense Test System (NTADTS) ***Description:*** The NTADTS infrastructure is multi-component advanced threat test system designed to test CBDP equipment against advanced threats in all states of matter and under environmental conditions. ***FY 2019 Plans:*** Complete transition of validated aerosol dissemination infrastructure. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.750
Title: 9) CBMAI - Open Architecture Data Management System (OADMS) ***Description:*** Provides a plug-and-play capability to the Test Grid using Open Architecture protocol to integrate legacy systems.	-	-	1.200

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2019 Plans: Conduct software modifications to the DMS. Miniaturize the dissemination system to meet requirements for portable capabilities. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Title: 10) CBMAI - Integrated Early Warning ***Description:*** The stand-off chamber is to review, redesign and upgrade a passive stand-off chamber for testing of modified passive FT-IR systems. ***FY 2019 Plans:*** Upgrade test infrastructure (TI) to support single and multi pixel standoff detection both proximal and long range applications. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	2.500
Title: 11) CBMAI - Multi Commodity Agent Chamber (MCAC) ***Description:*** Environmentally controlled live agent test chamber to support component and system level tests that provide T&E level data representative of operational agent exposure across commodities (test modules). ***FY 2019 Plans:*** Modify chamber to support programs of records such as Chemical Sensor Integration on Robotic Platforms (C-SIRP) and Chemical Surface Detection (CSD). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	1.606
Title: 12) Upgrades, V&V, Transitions ***Description:*** Upgrades, Validation & Verification (V&V), and Transitions ***FY 2019 Plans:*** Conduct infrastructure upgrades, conduct V&V against requirements, and prepare for transition. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	0.250
Accomplishments/Planned Programs Subtotals	2.744	9.548	9.056

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• TE7: *TEST & EVALUATION (OP SYS DEV)*	2.551	6.605	6.318	-	6.318	5.416	5.733	5.733	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.

CHEMICAL BIOLOGICAL MATERIEL ASSESSMENT INFRASTRUCTURE (CBMAI)

CBMAI 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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) TE5 / *TEST & EVALUATION (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - HW S - Test Grid	C/CPFF	Harris : Inc, Herdnon, VA	0.000	0.754	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Test Grid- Top Level Drawings	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.002	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Test Grid #2	MIPR	Various : Various	0.000	0.340	Dec 2016	0.000		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	5.913	0.310	Dec 2016	0.000		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	3.113	0.485	Dec 2016	4.063	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - ASC Component Upgrades	C/CPFF	Various : Various	0.000	0.000		0.960	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - ASC Component Upgrades #2	MIPR	Various : Various	0.000	0.000		0.240	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades	C/CPFF	TBD : TBD	0.000	0.000		0.585	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades #2	MIPR	Various : Various	0.000	0.000		0.315	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - Open Architecture Data Management System (OADMS) Software Modifications	C/CPFF	Various : Various	0.000	0.000		0.000		1.200	Dec 2018	-		1.200	Continuing	Continuing	0.000
CBMAI - HW S - NTA Defense Test System Fabrication/Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.750	Dec 2018	-		0.750	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - HW S - Standoff Detection	C/CPFF	Various : Various	0.000	0.000		0.000		2.500	Dec 2018	-		2.500	Continuing	Continuing	0.000
CBMAI - HW S - Multi Commodity Agent Chamber (MCAC)	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.000		1.606	Dec 2018	-		1.606	Continuing	Continuing	0.000
		Subtotal	9.026	1.891		6.163		6.056		-		6.056	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - OTHT S - Upgrades, V&V, Transition	Various	Various : Various	0.000	0.000		0.000		0.250	Jan 2019	-		0.250	Continuing	Continuing	0.000
		Subtotal	0.000	0.000		0.000		0.250		-		0.250	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - Test Infrastructure - PM/MS S - Program Management/ Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	9.225	0.853	Nov 2016	3.385	Dec 2017	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - PM/MS S - Program Management/ Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		0.000		2.750	Dec 2018	-		2.750	Continuing	Continuing	0.000
		Subtotal	9.225	0.853		3.385		2.750		-		2.750	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) TE5 / *TEST & EVALUATION (EMD)*	

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	18.251	2.744		9.548		9.056		-		9.056	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

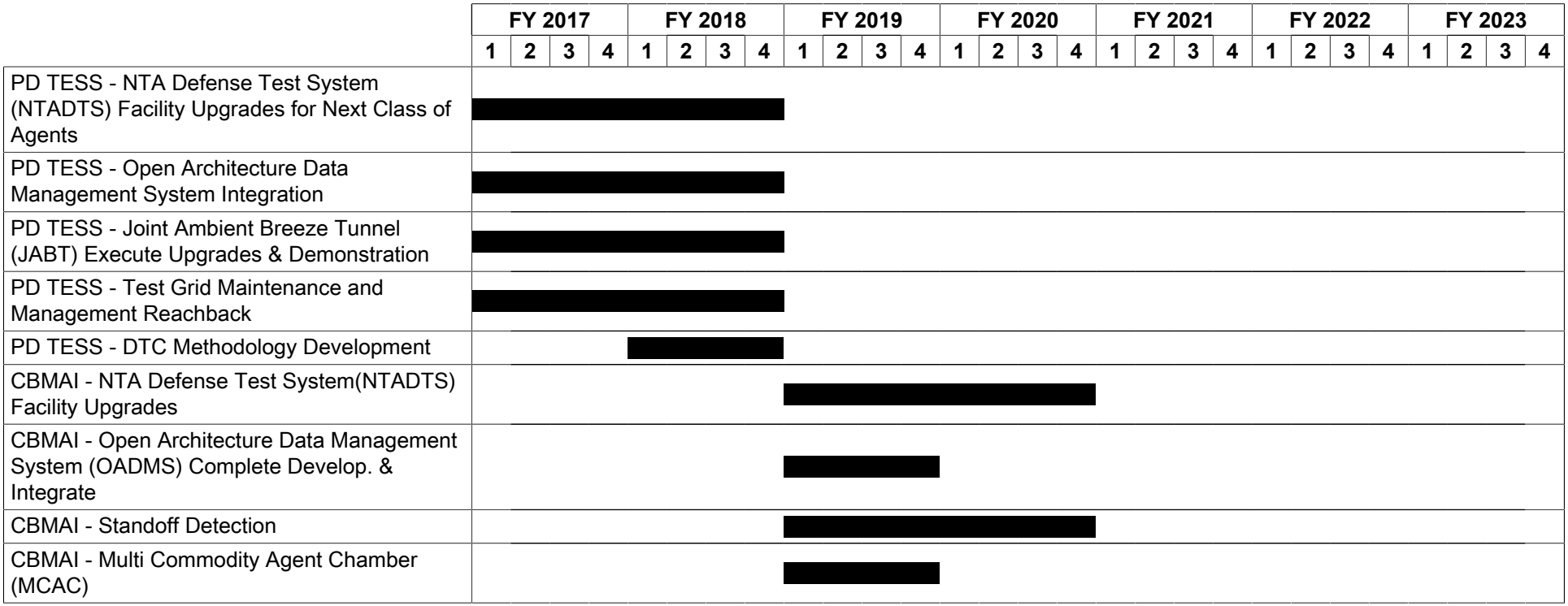

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents	1	2017	4	2018
PD TESS - Open Architecture Data Management System Integration	1	2017	4	2018
PD TESS - Joint Ambient Breeze Tunnel (JABT) Execute Upgrades & Demonstration	1	2017	4	2018
PD TESS - Test Grid Maintenance and Management Reachback	1	2017	4	2018
PD TESS - DTC Methodology Development	1	2018	4	2018
CBMAI - NTA Defense Test System(NTADTS) Facility Upgrades	1	2019	4	2020
CBMAI - Open Architecture Data Management System (OADMS) Complete Develop. & Integrate	1	2019	4	2019
CBMAI - Standoff Detection	1	2019	4	2020
CBMAI - Multi Commodity Agent Chamber (MCAC)	1	2019	4	2019

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605384BP / *CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	89.172	104.348	102.883	-	102.883	107.245	108.834	107.215	107.572	Continuing	Continuing
DT6: *JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)*	-	4.262	3.600	3.600	-	3.600	3.600	3.600	3.600	3.600	Continuing	Continuing
DW6: *MAJOR RANGE AND TEST FACILITY BASE (MRTFB)*	-	49.017	53.164	54.056	-	54.056	55.486	56.574	56.310	56.666	Continuing	Continuing
LS6: *LABORATORY SUPPORT*	-	9.150	13.864	13.537	-	13.537	12.844	13.101	13.108	13.107	Continuing	Continuing
MS6: *RDT&E MGT SUPPORT*	-	26.417	32.220	31.234	-	31.234	33.815	34.059	32.697	32.699	Continuing	Continuing
O49: *JOINT CONCEPTS, STUDIES, AND ANALYSES (JCSA)*	-	0.326	1.500	0.456	-	0.456	1.500	1.500	1.500	1.500	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 Concepts, Studies, and Analysis (JCSA) 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 and BTB-ECBC, also part of the MRTFB, 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.

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605384BP / *CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)*

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 Concepts, Studies, and Analysis (JCSA) program (Project 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.

The FY 2019 funding request was reduced by $5.573 million to account for the availability of prior year execution balances.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605384BP / *CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	85.754	104.348	103.954	-	103.954
Current President's Budget	89.172	104.348	102.883	-	102.883
Total Adjustments	3.418	0.000	-1.071	-	-1.071
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	5.217	-			
• SBIR/STTR Transfer	-1.799	-			
• Other Adjustments	0.000	-	-1.071	-	-1.071

Change Summary Explanation

Funding: FY17 (+$3.914M): Program reprogrammings to support high priority CBDP efforts.
FY17 (+$1.303M): Program reprogrammings to support CBDP Defense Finance and Accounting System transactions.
FY17 (-$1.799M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$0.264M): Application of revised inflation guidance.
FY19 (-$5.573M): Reduction to account for the availability of prior year execution balances.
FY19 (+$4.766M): Program adjustments to balance overall portfolio efforts.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DT6: *JOINT DOCTRINE AND TRAINING SUPPORT (RDT&E MGT SUPPORT)*	-	4.262	3.600	3.600	-	3.600	3.600	3.600	3.600	3.600	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 2017	FY 2018	FY 2019
Title: 1) JRO DT	4.262	3.600	3.600
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. Specifically, support is needed to: 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. 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.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: 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. ***FY 2019 Plans:*** Support Joint and Multi-service doctrine development. This includes preparation of various Joint publications which then inform MTTPs. Continue to support COCOM scenario development and controller/evaluator training by providing SMEs to exercises. Continue to support training efforts at various Joint Senior Leadership schools.			
Accomplishments/Planned Programs Subtotals	4.262	3.600	3.600

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DW6: *MAJOR RANGE AND TEST FACILITY BASE (MRTFB)*	-	49.017	53.164	54.056	-	54.056	55.486	56.574	56.310	56.666	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) and Non Traditional Agent (NTA) 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), and the Biological Test Branch of the Edgewood Chemical and Biological Center (BTB-ECBC), both part of the Major Range and Test Facility Base (MRTFB) located at Dugway Proving Ground (DPG). Project provides overhead (institutional) funding required to operate WDTC and BTB-ECBC in compliance with Section 232 of the National Defense Authorization Act (NDAA) for FY03 (Public Law 107-314 - December 2002).

WDTC and BTB-ECBC are the reliance centers for all DoD CB defense testing and provide 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 and BTB-ECBC use 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.

The Secretary of the Army has been directed to conduct additional research addressing existing gaps in scientific knowledge encompassing the Biological Select Agents and Toxins (BSAT) Program. The transition of the Bio-Testi Branch (BTB) to Edgewood Chemical Biological Center (ECBC) will enable the DoD BSAT Biosafety Program to meet end to end enterprise tracking, reporting, and auditability requirements within an approved Governance, Risks, and Compliance framework. The laboratory commanders and directors are best able to identify potential risk through the use of local risk assessments and are responsible to promote cultures of safety and responsibility. Direct liaison with and oversight by the Executive Agent Responsible Officer will ensure laboratory directors or MRTFB commander are empowered and supported in their operational environment. The ultimate responsibility for the safe and secure receipt, storage, handling, shipment and transfer of BSAT resides with the laboratory director or MRTFB commander in accordance with Army, Navy, Air Force, and Federal policies and regulations. The implementation of a structured BSAT Biosafety Program includes clear standards and procedures, policy and regulations, peer review, quality control, accountability and oversight, adequate resources and infrastructure, and continuous process improvement. Through these means employees and members of the public are protected against the hazards associated with BSAT.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) BTB TEST - Civilian Labor	-	4.188	4.133

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Maintain BTB-ECBC, MRTFB technical test capability and operations to include institutional civilian labor costs. These civilian personnel will 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. ***FY 2019 Plans:*** Maintain BTB-ECBC, MRTFB technical test capability and operations to include institutional civilian labor costs. These civilian personnel will 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 2) BTB TEST - LSTF 24-Hour Support ***FY 2018 Plans:*** Provide dedicated and specially trained, 24-hour, support staff who operate and maintain all critical control systems, such as, test specific heating, ventilation, and air conditioning (HVAC) systems and decontamination systems within Life Sciences Test Facility (LSTF) Complex ***FY 2019 Plans:*** Provide dedicated and specially trained, 24-hour, support staff who operate and maintain all critical control systems, such as, test specific heating, ventilation, and air conditioning (HVAC) systems and decontamination systems within Lother Solomon Test Facility (LSTF) Complex and the Baker Lab. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	0.700	0.900
Title: 3) BTB TEST - Sustainment ***FY 2018 Plans:*** Provides for ongoing sustainment of existing test instrumentation and equipment at BTB-ECBC, in support of their operations. Support 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 2019 Plans:***	-	0.800	1.412

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Provides for ongoing sustainment of existing test instrumentation and equipment at BTB-ECBC, in support of their operations. Support 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. Also provides for additional office and laboratory equipment required for the inspection and certification for Building 2029 Lother Solomon Test Facility (LSTF) Annex. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 4) BTB TEST - Support ***FY 2018 Plans:*** Support the BTB-ECBC 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. Will provide the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits. ***FY 2019 Plans:*** Support the BTB-ECBC 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. Will provide the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits.	-	0.600	0.600
Title: 5) WDTC, MRTFB - Civilian Labor ***FY 2018 Plans:*** Will maintain WDTC technical test capability and operations to include institutional civilian labor costs. These civilian personnel will 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. ***FY 2019 Plans:*** Will maintain WDTC technical test capability and operations to include institutional civilian labor costs. These civilian personnel will 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	23.770	24.504	25.306

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 6) WDTC, MRTFB - Sustainment ***FY 2018 Plans:*** Provide for ongoing sustainment of existing test instrumentation and equipment at WDTC,in support of their operations. Support 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 2019 Plans:*** Will provide for ongoing sustainment of existing test instrumentation and equipment at WDTC in support of their operations. Will support 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 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	9.994	5.828	5.200
Title: 7) WDTC, MRTFB - Support ***FY 2018 Plans:*** Will provide 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, and CCTF. ***FY 2019 Plans:*** Will provide WDTC with a dedicated and specially trained 24-hour support staff to operate and maintain all critical control systems such as test specific HVAC systems and decontamination systems within WDTC's MTF and CCTF. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.919	2.016	1.946
Title: 8) WDTC, MRTFB - Contractor Labor, Overhead ***FY 2018 Plans:*** Will support 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. Will provide the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits. ***FY 2019 Plans:***	12.417	13.508	13.540

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Will support 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. Will provide the additional support through contractual efforts to support variable workload rates and address capacity shortfalls created by civilian authorization limits. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 9) NON-TRADITIONAL AGENT (NTA) TEST ***FY 2018 Plans:*** Will maintain synthesis capability of Class 1 NTA compounds and other NTA classes in support of program of record test and evaluation. Will develop NTA test methods for uniform materials and protective masks. Will develop chemical dissemination and challenge monitoring methods for other NTA classes. ***FY 2019 Plans:*** Will develop NTA test methods for uniform materials and protective masks. Will upgrade large and small filter test infrastructure to accommodate NTA compounds. Will assess existing decontamination test infrastructure to accommodate NTA testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.917	1.020	1.019
Accomplishments/Planned Programs Subtotals	49.017	53.164	54.056

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
LS6: *LABORATORY SUPPORT*	-	9.150	13.864	13.537	-	13.537	12.844	13.101	13.108	13.107	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project (LS6/Laboratory Support) 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) RDT&E 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 2017	FY 2018	FY 2019
Title: 1) LABINF - Edgewood Chemical Biological Center Surety Facility Sustainment	8.650	12.264	11.927
FY 2018 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. Modernization efforts include bringing laboratories up to state of the art standards by completing the following: toxic lab demolition, done IAW environmental law and standards, installing new stainless steel bench top fume hoods with security sash, new case work for existing fume hoods, new case work with acid and flammable cabinets, new epoxy coated floors and walls, new energy efficient security windows, and upgrades to the electrical systems.			
FY 2019 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. Modernization efforts include bringing laboratories up to state of the art standards by completing the following: toxic lab demolition, done IAW environmental law and standards, installing new stainless steel bench top fume hoods with security sash, new case work for existing fume hoods, new case work with acid and flammable cabinets, new epoxy coated floors and walls, new energy efficient security windows, and upgrades to the electrical systems.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 2) LABINF - USAMRIID/USAMRICD Infrastructure Support	0.500	1.600	1.610
FY 2018 Plans: Continue to 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.			
FY 2019 Plans: Continues support to laboratory infrastructure for 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. Activities supported include laboratory support operations, maintenance and repair of existing capabilities (including scientific equipment and information systems), chemical agent security, quality systems compliance, chemical and biological safety, and research protections.			
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	9.150	13.864	13.537

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MS6: *RDT&E MGT SUPPORT*	-	26.417	32.220	31.234	-	31.234	33.815	34.059	32.697	32.699	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 3170.01I 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 Biological Select Agent and Toxin (BSAT) Biosafety Program Office (BBPO) will advise the Executive Agent Responsible Official (EA RO) for the DoD BSAT Biosafety Program on biosafety and all matters that pertain to risk associated with BSAT operations, provide oversight of DoD BSAT laboratory biosafety operations, serve as a unified DoD interface with external regulatory agencies, ensure safety and standardization of procedures used in DoD BSAT laboratories, and identify industry-wide best practices to enhance biosafety across the full spectrum of DoD BSAT operations. As the EA RO for BSAT the program is tasked with technical review, inspection, and harmonization of biosafety protocols and procedures across DoD laboratories that handle BSAT. As such, the program manages the Biosafety and Scientific Review Panel, inspection of DoD laboratories, harmonization of DoD BSAT-related regulations and procedures, coordinating interaction and information with the CDC, establishing a Defense Business System to track and manage BSAT across DoD, providing laboratory biosafety oversight, and advancing BSAT-related scientific research to address knowledge gaps. This office was established in March 2016 and prior to FY 2018 is funded within the OSD Management line.

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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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*

The CBRND T&E Executive directly supports OSD T&E oversight of 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 2017	FY 2018	FY 2019
Title: 1) OSD BIOSAFETY	-	2.719	2.138
FY 2018 Plans: Achieve full program staffing. Provide oversight of DoD BSAT inspection activities. Implement Quality Management System. Continue development of BSAT training products. Execute regular council stakeholder meetings. Continue to advance BSAT training and conduct protocol reviews, and publish guidance and procedures from biannual BSRP meetings. Continue coordination with CDC. Maintain and improve the Defense BSAT Business System. Implement third-party testing. Perform laboratory site visits, and fund research to address safety-related scientific knowledge gaps.			
FY 2019 Plans: Maintain program staffing. Develop and maintain BSAT training products. Maintain Quality Management System, and Defense BSAT Business System. Conduct life cycle management. Continue to perform laboratory site visits. Execute regular stakeholders meetings. Conduct observation of laboratory inspection and maintain oversight of DoD BSAT inspection program. Conduct protocol reviews, publish guidance and procedures from quarterly BSRP meetings. Maintain interagency engagement. Fund research to address safety-related scientific knowledge gaps.			
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.			
Title: 2) JRO MGT	5.361	6.500	5.700
FY 2018 Plans: 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.			
FY 2019 Plans: Continue to 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. Continue to chair the CWMD Working Group for the Protection FCB. Continue to serve as the Joint Staff focal point for CBRN reports,			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
assessments, meetings, agreements, concepts and studies, ATDs, and JCTDs. Continue to lead the CBDP Enterprise POM development. Continue to prepare various JCIDS documents, including AoAs, IS ICDs, CDDs, and CPDs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 3) JTIWG ***FY 2018 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. Continue efforts to identify and mitigate critical Test and Evaluation Gaps in order to reduce cost/test schedule impacts to near-term PORs. Continue to align and streamline policies and processes to support more efficient and effective management and sustainment of test infrastructure and methodologies. ***FY 2019 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; 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. Continue efforts to identify and mitigate critical Test and Evaluation Gaps in order to reduce cost/test schedule impacts to near-term PORs. Continue to align and streamline policies and processes to support more efficient and effective management and sustainment of test infrastructure and methodologies. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	3.793	7.389	6.989
Title: 4) OSD MGT ***FY 2018 Plans:***	10.392	9.117	7.777

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
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. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 5) PAIO MGT ***FY 2018 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 Joint Service Chemical Biological Information System database management. ***FY 2019 Plans:*** Continue to develop assessments to support RDA Planning. Continue providing 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. Continue to provide Joint Service Chemical Biological Information System database management and complete the JSCBIS modernization effort. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to fact of life change in the program/project.	6.871	6.495	8.630
Accomplishments/Planned Programs Subtotals	26.417	32.220	31.234

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 CONCEPTS, STUDIES, AND ANALYSES (JCSA)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
O49: *JOINT CONCEPTS, STUDIES, AND ANALYSES (JCSA)*	-	0.326	1.500	0.456	-	0.456	1.500	1.500	1.500	1.500	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objectives of the Joint Concepts, Studies, and Analyses (JCSA) 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 2017	FY 2018	FY 2019
Title: 1) JCDE	0.326	-	-
Title: 2) JCSA	-	1.500	0.456
Description: This program was formerly called Joint Combat Development and Experimentation (JCDE) and will continue the analysis performed under that program. In addition, JCSA will perform Advanced Threat Analysis with several more categories of threat than JCDE. JCSA updates the best representative agents for consideration in requirements and testing. JCSA also conducts detailed quantitative analyses to determine detection and challenge levels from key representative threats determined in the FY15 Advanced Threat Studies. JCSA also updates detailed operational risk analyses to support CBDP leadership decisions.			
FY 2018 Plans: Funds in JCDE were transferred to this program, Joint Concepts Studies and Analyses (JCSA), to perform strategic level studies in lieu of direct tactical level experimentation, to better define overarching properties. 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.			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 CONCEPTS, STUDIES, AND ANALYSES (JCSA)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue to perform Advanced Threat Analysis with several more categories of threat. Continue to update best representative agents for consideration in requirements and testing. Continue to conduct detailed quantitative analyses to determine detection and challenge levels from key representative threats determined in the FY15 Advanced Threat Studies. Continue to update detailed operational risk analyses to support CBDP leadership decisions. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	0.326	1.500	0.456

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 6: *RDT&E Management Support*	**R-1 Program Element (Number/Name)** PE 0605502BP / *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	18.426	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.426
SB6: *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*	-	18.426	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.426

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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	18.426	0.000	0.000	-	0.000
Total Adjustments	18.426	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	18.426	-			
• Other Adjustments	0.000	-	-	-	-

Change Summary Explanation

Funding: FY17 - Funding transferred and applied to SBIR program (+$18,426K).

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605502BP / *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*				Project (Number/Name) SB6 / *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
SB6: *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*	-	18.426	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.426
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 CBDP 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

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 6	**R-1 Program Element (Number/Name)** PE 0605502BP / *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*	**Project (Number/Name)** SB6 / *SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)*

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 2017	FY 2018	FY 2019
Title: 1) SBIR/STTR ***Description:*** Small Business Innovative Research.	18.426	-	-
Accomplishments/Planned Programs Subtotals	18.426	-	-

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 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	-	32.213	45.677	48.741	-	48.741	43.159	44.044	47.207	43.309	Continuing	Continuing
CA7: *CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV*	-	5.957	6.393	6.299	-	6.299	6.397	6.485	11.815	11.815	Continuing	Continuing
CM7: *HOMELAND DEFENSE (OP SYS DEV)*	-	1.594	1.652	4.365	-	4.365	4.365	4.348	4.348	6.215	Continuing	Continuing
C07: *COLLECTIVE PROTECTION (OP SYS DEV)*	-	3.460	5.127	3.856	-	3.856	3.765	2.905	0.953	0.703	Continuing	Continuing
DE7: *DECONTAMINATION SYSTEMS (OSD)*	-	0.000	0.000	0.445	-	0.445	0.445	0.000	0.000	0.000	0.000	0.890
IP7: *INDIVIDUAL PROTECTION (OP SYS DEV)*	-	1.359	1.747	2.056	-	2.056	2.092	2.021	2.663	2.663	Continuing	Continuing
IS7: *INFORMATION SYSTEMS (OP SYS DEV)*	-	10.293	12.203	15.552	-	15.552	16.951	16.492	15.163	13.211	Continuing	Continuing
MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	-	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	Continuing	Continuing
TE7: *TEST & EVALUATION (OP SYS DEV)*	-	2.551	6.605	6.318	-	6.318	5.416	5.733	5.733	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 (CBD) 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 Chemical Biological defense equipment against emerging chemical and biological 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 systems; (4) the upgrade and modernization of contamination mitigation and decontamination systems; (5) the upgrade and modernization of individual protective equipment; (6) the upgrade and modernization of information systems; (7) the Software Support Activity (SSA); (8) the upgrade and modernization of medical systems; (9) upgrade and modernization of BSL3 systems; and (10) revitalization and technical upgrade of existing instrumentation and equipment at Dugway Proving Ground (DPG) supporting WDTC and BTB-ECBC.

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Chemical and Biological Defense Program	Date: February 2018
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	33.361	45.677	51.510	-	51.510
Current President's Budget	32.213	45.677	48.741	-	48.741
Total Adjustments	-1.148	0.000	-2.769	-	-2.769
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.135	-			
• SBIR/STTR Transfer	-1.013	-			
• Other Adjustments	0.000	-	-2.769	-	-2.769

Change Summary Explanation

Funding: FY17 (-$0.135M): Program reprogrammings.
FY17 (-$1.013M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY19 (-$2.769M): Adjustment due to fact of life change to NGDS Inc 2.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CA7: *CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV*	-	5.957	6.393	6.299	-	6.299	6.397	6.485	11.815	11.815	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides the technology upgrade and refresh effort for the Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS). The program supports Dismounted Reconnaissance, Surveillance, and CBRN Sensitive Site Assessment missions which enables more detailed and near real-time CBRN information flow for the Warfighter.

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 and emerging threats. This project provides the technology upgrade and refresh effort for the Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS) to address and mitigate technology/equipment obsolescence. Experimentation and demonstration will be used in this phase to reduce risk and inform supporting materiel solutions, CONOPS and TTPs.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) CBRN DRS	5.957	6.393	6.299
Description: Provide analysis of the existing components of CBRN Dismounted Reconnaissance Sets, Kits, and Outfits Increment 1 to ensure current requirements baseline can be met. Funds will be use to identify potential obsolescence in current components, identify concerns with current components (technical, human factors, sustainment), assess the current market, procurement and testing of candidates that could correct concerns, and integrate the new items into the product baseline.			
FY 2018 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.			
FY 2019 Plans: Continue market analyses on emerging technologies for potential upgrades to the system. Continue obsolescence management activities for existing field components. Continue purchasing components for testing. Continue testing of potential candidates. Initiate changes to product baseline.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	5.957	6.393	6.299

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

CBRN DISMOUNTED RECONNAISSANCE SYSTEMS

CA4 The Chemical Biological Radiological Dismounted Reconnaissance Systems (CBRN DRS) Inc 2 program will provide an Advanced Capabilities Set (ACS) for use by Joint Technical Forces in sensitive site assessment, exploitation and elimination missions in conjunction with their existing baseline CBRN DRS Inc1 system. The ACS will be comprised of Government (GOTS) and commercial off-the-shelf (COTS) equipment to the greatest extent possible. Requirements analysis will support Materiel Development Decision and provide guidance for the Analysis of Material Approaches (AoMA) to identify potential solutions. Efforts will culminate in an approved Capabilities Development Document and a Milestone B. Contracting efforts will be initiated under the Joint Enterprise Research, Development, Acquisition and Production contract mechanism. The contract will cover a base period of performance for development/integration with options for Low-Rate and Full Rate Production (FRP).

CA7 The Chemical Biological Radiological 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 a 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, well-managed acquisition program. CBRN DRS systems will be produced using a workshare approach between Organic assets and Contractor production facilities.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - HW C - HW - Product Development	MIPR	Defense Logistics Agency : Philadelphia, PA	0.000	0.925	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CBRN DRS - HW - Product Development	MIPR	Various : Various	0.549	0.597	Jul 2017	1.562	Mar 2018	1.576	Mar 2019	-		1.576	Continuing	Continuing	0.000
		Subtotal	0.549	1.522		1.562		1.576		-		1.576	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - ES - Market Analysis	MIPR	Various : Various	1.561	0.000	May 2017	1.425	Jan 2018	0.327	Jan 2019	-		0.327	Continuing	Continuing	0.000
CBRN DRS - ES C - Market Analysis	FFRDC	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.301	0.970	Apr 2017	0.000		1.000	Jan 2019	-		1.000	Continuing	Continuing	0.000
CBRN DRS - ES - Obsolescence Management	MIPR	Various : Various	1.040	0.000	Dec 2016	0.950	Jan 2018	0.485	Feb 2019	-		0.485	Continuing	Continuing	0.000
		Subtotal	2.902	0.970		2.375		1.812		-		1.812	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - OTE - Candidate Testing	Various	Various : Various	1.471	1.555	Mar 2017	1.400	Mar 2018	2.000	Mar 2019	-		2.000	Continuing	Continuing	0.000
CBRN DRS - DTE C - OTE - Candidate Testing	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	0.942	Jun 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			1.471	2.497		1.400		2.000		-		2.000	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - PM - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.514	0.968	Dec 2016	1.056	Dec 2017	0.911	Dec 2018	-		0.911	Continuing	Continuing	0.000
Subtotal			0.514	0.968		1.056		0.911		-		0.911	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.436	5.957		6.393		6.299		-		6.299	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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*

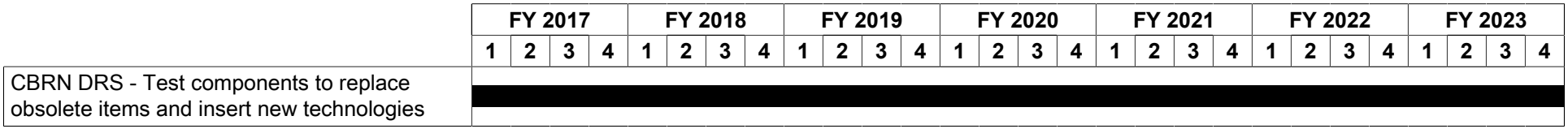

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** CA7 / *CONTAMINATION AVOIDANCE OPERATIONAL SYS DEV*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CBRN DRS - Test components to replace obsolete items and insert new technologies	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
CM7: *HOMELAND DEFENSE (OP SYS DEV)*	-	1.594	1.652	4.365	-	4.365	4.365	4.348	4.348	6.215	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, Concept of Operations (CONOPS) and Tactics, Techniques and Procedures (TTP)s.

WMD-CST - 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. Efforts in the program element support upgrades of key components of the WMD CST Program that have become obsolete, or are no longer being supported by the manufacturer.

CALS - This program element supports the evaluation of analytical components for technical refreshment of the Common Analytical Laboratory System (CALS). Efforts in the program element support upgrades of key components of the CALS system that have become obsolete, or are no longer being supported by the manufacturer. This allows the CALS users to maintain their operational capability and operational effectiveness.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) CALS - Integrated Logistics (ILS) and Asset Integration ***FY 2019 Plans:*** Conduct component and system level logistics evaluations to assess viability of candidate analytical upgrade components. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.500
Title: 2) CALS - Component Test and Evaluation ***FY 2019 Plans:*** Conduct system related test activities including costs of test candidate selection, testing hardware, engineering data to assess the performance of the system, test planning, execution of testing, data interpretation and reporting. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.	-	-	0.225
Title: 3) CALS - Systems Engineering and Program Management	-	-	2.185

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 Plans: Provide 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, engineering design and development of the system. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project funding transferred from another funding line.			
Title: 4) WMD CST - Component Test and Evaluation ***FY 2018 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. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	1.073	0.937	0.940
Title: 5) WMD CST - System Engineering and Program Management ***FY 2018 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). ***FY 2019 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). ***FY 2018 to FY 2019 Increase/Decrease Statement:***	0.521	0.715	0.515

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Increase/Decrease due to change in program/project technical parameters.			
Accomplishments/Planned Programs Subtotals	1.594	1.652	4.365

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

COMMON ANALYTICAL LABORATORY SYSTEM (CALS)

The Common Analytical Laboratory System (CALS) will be developed 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 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. CALS 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) entered DT first and to reached an early Milestone C - Low Rate Initial Production (LRIP) (FY17) followed by a Full Rate Production (FRP) Decision prior to the Milestone C (LRIP) (FY19) and (FRP) Decision for the FC (1st Quarter, FY20) 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.

WMD - CIVIL SUPPORT TEAMS (WMD CST)

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - ILS S - Integrated Logistics Support	Various	TBD : TBD	0.000	0.000		0.000		0.500	Dec 2018	-		0.500	Continuing	Continuing	0.000
WMD CST - ES C - Science & Engineering Program Management Support	Various	Battelle Memorial Institute : Aberdeen, MD	1.077	0.000		0.510	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	1.077	0.000		0.510		0.500		-		0.500	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - OTHT C - Test & Evaluation	Various	TBD : TBD	0.000	0.000		0.000		0.225	Dec 2018	-		0.225	Continuing	Continuing	0.000
WMD CST - OTHT C - CBRN COTS Component	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	2.894	1.073	Mar 2017	0.937	Mar 2018	0.940	Mar 2019	-		0.940	Continuing	Continuing	0.000
		Subtotal	2.894	1.073		0.937		1.165		-		1.165	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - PM/MS SB - Program Management Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		2.185	Nov 2018	-		2.185	Continuing	Continuing	0.000
WMD CST - PM/MS SB - CBRN COTS	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.035	0.521	Mar 2017	0.205	Jan 2018	0.515	Jan 2019	-		0.515	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	1.035	0.521		0.205		2.700		-		2.700	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.006	1.594		1.652		4.365		-		4.365	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

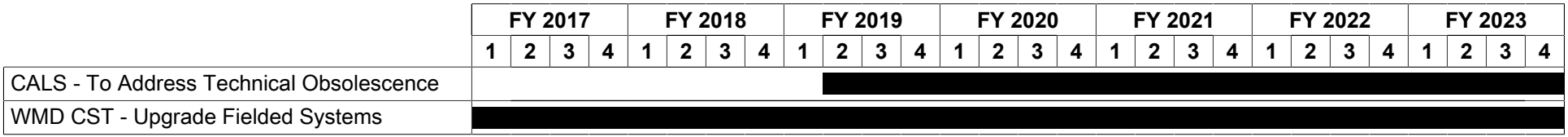

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** CM7 / *HOMELAND DEFENSE (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CALS - To Address Technical Obsolescence	2	2019	4	2023
WMD CST - Upgrade Fielded Systems	1	2017	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
C07: *COLLECTIVE PROTECTION (OP SYS DEV)*	-	3.460	5.127	3.856	-	3.856	3.765	2.905	0.953	0.703	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the upgrade and modernization of Collective Protection (CP) equipment and systems including Modernization Protection (MODPROT) for fielded CP systems and Joint Expeditionary Collective Protection (JECP).

MODPROT provides upgrades, improvements and modernizations to fielded 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, Modular Collective Protection Equipment systems, and Collectively Protected Field Hospitals. Funding increases the Collective Protection System Backfit program M98 filter set life extension, and identifies and tests replacements for obsolete M93 Gas Particulate Filter Unit (GPFU) components used in numerous hard shelter systems. The M93 GPFU improvements also address current electromagnetic interference requirements. MODPROT also addresses obsolescence issues in test quality standards for gas filters and tests sealants and coatings to mitigate corrosion on filter systems to extend service life of these systems.

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 1 includes standalone CP systems and kits to provide existing host platforms and structures with CBRN protection. Phase 2 includes kits to provide other host platforms and structures that were not explicitly designed in Phase 1. 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. Funding will develop a field leakage test capability that allows Warfighters to validate the integrity of JECP and other fielded collective protection systems, integrate newly developed filtration material into existing M98 Gas Particulate Filter Sets to provide the Warfighter with improved protection against toxic industrial chemicals and toxic industrial materials while maintaining current performance characteristics against Chemical Warfare Agents and meeting military standards, develop a CP kit for non-CP environmental control units and improve on the current tent liner restraint systems.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MODPROT Collective Protection Modernization	-	0.800	0.667
Description: Modular Collective Protection Equipment (MCPE) M93 Gas Particulate Filter Unit (GPFU) 100-cfm main fan and system control module improvements and Collectively Protected Field Hospital obsolescence issues specific to Chemically Protected Deployable Medical System (CPDEPMEDS) System components.			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2018 Plans: Obtain test articles of vendor provided M93 GPFU replacement components for evaluation against Government electromagnet interference (EMI) standards. Review existing test reports. Obtain test articles and perform surveillance testing to determine Collective Protection System Backfit (CPSBKFT) M98 filter set service life extension times. Evaluate collective protection equipment types and quantities required to upgrade legacy components based on the new CPDEPMEDS configuration. ***FY 2019 Plans:*** Continue EMI testing M93 GPFU, continue evaluating CPDEPMEDS ColPro equipment and complete environmental guard bed testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.			
Title: 2) MODPROT Collective Protection Modernization ***Description:*** M59 gas particulate filter unit electromagnetic interference (EMI) qualification to modern standards. Improved non-destructive production acceptance leak test method for gas filters. Corrosion mitigation for collective protection system components. ***FY 2019 Plans:*** Obtain government owned test articles for M59 GPFU for evaluation against government electromagnet interference standards. Review current test reports and test procedures. Begin market survey for M18A1 gas filter leak test detectors and tracer gas replacement and also for sealants, coatings, and materials to mitigate M98 filter housing corrosion. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	-	-	0.365
Title: 3) JECP Field Leakage Test Capability ***Description:*** Improve field leakage test capability, simulate test methods and field operator procedures. ***FY 2018 Plans:*** Develop technical data package to include: level three drawings and technical manuals. Update design and conduct user evaluation for candidate solutions. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	0.786	0.485	-
Title: 4) JECP Filtration Improvements	2.137	3.640	2.824

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Improve M98 filter set capability. ***FY 2018 Plans:*** Continue design and form-fit-function development. Fabricate prototypes and perform required testing. Perform detailed cost/ benefit analysis. Develop and update drawing packages. Develop and update logistics package. ***FY 2019 Plans:*** Finalize the design and form-fit-function development. Continue to test prototypes. Finalize drawing packages. Finalize logistics package. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.			
Title: 5) JECP Chemical/Biological Hardened Environmental Control Unit Improvements ***Description:*** Environment Control Unit (ECU) Collective Protection (ColPro) kit development for non-ColPro ECUs. ***FY 2018 Plans:*** Finalize prototype development and conduct prototype testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	0.537	0.080	-
Title: 6) JECP Liner and Liner Restraint System Improvements ***Description:*** Tent kit liner and liner restraint system improvements. ***FY 2018 Plans:*** Continue updates to the drawing package and technical manuals. Implement engineering changes. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to change in program/project schedule.	-	0.122	-
Accomplishments/Planned Programs Subtotals	3.460	5.127	3.856

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

D. Acquisition Strategy

MODERNIZATION PROTECTION (MODPROT)

Modernizing Collective Protection leverages mature technology from contractor developed components to address and replace obsolete components of various fielded collective protection systems. Modernization efforts will also use items developed by the government that have transitioned from lower to higher technology readiness levels that can be inserted into fielded systems. A combination of competitive and sole source contracts to various industry vendors and project orders to various government activities will be used to adapt previously developed components to modernize systems. Robust component and system level testing will validate both government and contractor furnished improvements. The improvements will be added into the specific system's updated technical data packages to be used in engineering change proposals and provided to the item managers.

JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)

JECP Family of Systems (FoS) (Phase 1 and Phase 2) involves multiple contract types throughout the Engineering and Manufacturing Development and Production and Deployment Phases of the program. Having achieved a Full Rate Production (FRP) decision for Phase 1 Systems in December 2016, the program exercised Fixed Price Incentive production options in FY17 & FY18 under the current Leidos contract to meet Initial Operational Capability. A competitive build-to-print follow-on production task order under the Joint Enterprise Research, Development, Acquisition, and Production (JE-RDAP) Contract will be awarded in FY19 to support production of Phase 1 Systems to meet Full Operational Capability (FOC). Phase 2 systems will be developed starting in FY18 as engineering changes to the Phase 1 systems under a separate JE-RDAP competitive task order and will undergo limited developmental and operational testing in pursuit of a FRP decision in FY21. Production options will be included in the task order to meet FOC for Phase 2 systems. Additionally, BA7 funding will develop incremental improvements to fielded JECP FoS. BA7 efforts include a range of improvements intended to enhance filtration protection, provide a field leakage test capability and update various environmental control unit types for use with collective protection. These efforts involve a simplified acquisition procurement contract and exploitation of commercial off-the-shelf items. BA7 product development and testing will continue through FY19 with an expectation to achieve production readiness at the end of FY19.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - HW C - Compatibility Engineering M93 GPFU	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.080	Nov 2017	0.032	Nov 2018	-		0.032	Continuing	Continuing	0.000
MODPROT - HW C - Compatibility Engineering M98 Filter Set	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.072	Nov 2017	0.020	Nov 2018	-		0.020	Continuing	Continuing	0.000
MODPROT - HW C - Compatibility Engineering Non Destructive Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.041	Nov 2018	-		0.041	Continuing	Continuing	0.000
JECP - HW C - Environmental Control Unit Improvements	MIPR	28th Test and Evaluation Squadron : Eglin AFB, FL	0.000	0.090	Nov 2016	0.080	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JECP - HW C - Liner Restrain System Improvements	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.000	0.000		0.122	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JECP - HW S - Field Leakage Test Capability Development	MIPR	28th Test and Evaluation Squadron : Eglin AFB, FL	0.000	0.070	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JECP - HW S - Field Leakage Test Capability Development #2	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.000	0.270	Oct 2016	0.485	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JECP - HW C - Improved M98 Filter Set Development	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.596	Feb 2017	1.302	Nov 2017	1.408	Nov 2018	-		1.408	Continuing	Continuing	0.000
JECP - HW C - Improved M98 Fitter Set Design Improvements	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	1.192	Oct 2016	0.960	Nov 2017	0.775	Nov 2018	-		0.775	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	0.000	2.218		3.101		2.276		-		2.276	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - ES C - Engineering Support	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.042	Nov 2017	0.115	Nov 2018	-		0.115	Continuing	Continuing	0.000
MODPROT - ES C - Engineering Support #2	MIPR	US Army Natick Soldier RD&E Center : Natick, MA	0.000	0.000		0.000		0.060	Nov 2018	-		0.060	Continuing	Continuing	0.000
MODPROT - ES C - Engineering Support #3	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.006	Nov 2017	0.135	Nov 2018	-		0.135	Continuing	Continuing	0.000
JECP - ES S - Systems Engineering Oversight	MIPR	Various : Various	0.000	0.496	Oct 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	0.000	0.496		0.048		0.310		-		0.310	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - DTE C - M93 GPFU Environmental Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.162	Nov 2017	0.170	Nov 2018	-		0.170	Continuing	Continuing	0.000
MODPROT - DTE C - M59 GPFU Environmental Testing	MIPR	Edgewood Chemical Biological Center	0.000	0.000		0.000		0.060	Nov 2018	-		0.060	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		(ECBC) : Aberdeen Proving Ground, MD													
MODPROT - DTE C - M98 Filter Set Improvement Testing	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.323	Nov 2017	0.165	Nov 2018	-		0.165	Continuing	Continuing	0.000
JECP - DTE C - Test & Evaluation IPT	MIPR	28th Test and Evaluation Squadron : Eglin AFB, FL	0.000	0.133	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JECP - DTE C - Improved M98 Filter Set Developmental Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.755	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	0.000	0.133		1.240		0.395		-		0.395	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - PM/MS S - Program Management Support	Various	Various : Various	0.000	0.000		0.115	Nov 2017	0.234	Nov 2018	-		0.234	Continuing	Continuing	0.000
JECP - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.613	Nov 2016	0.623	Nov 2017	0.641	Nov 2018	-		0.641	Continuing	Continuing	0.000
		Subtotal	0.000	0.613		0.738		0.875		-		0.875	Continuing	Continuing	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	3.460		5.127		3.856		-		3.856	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

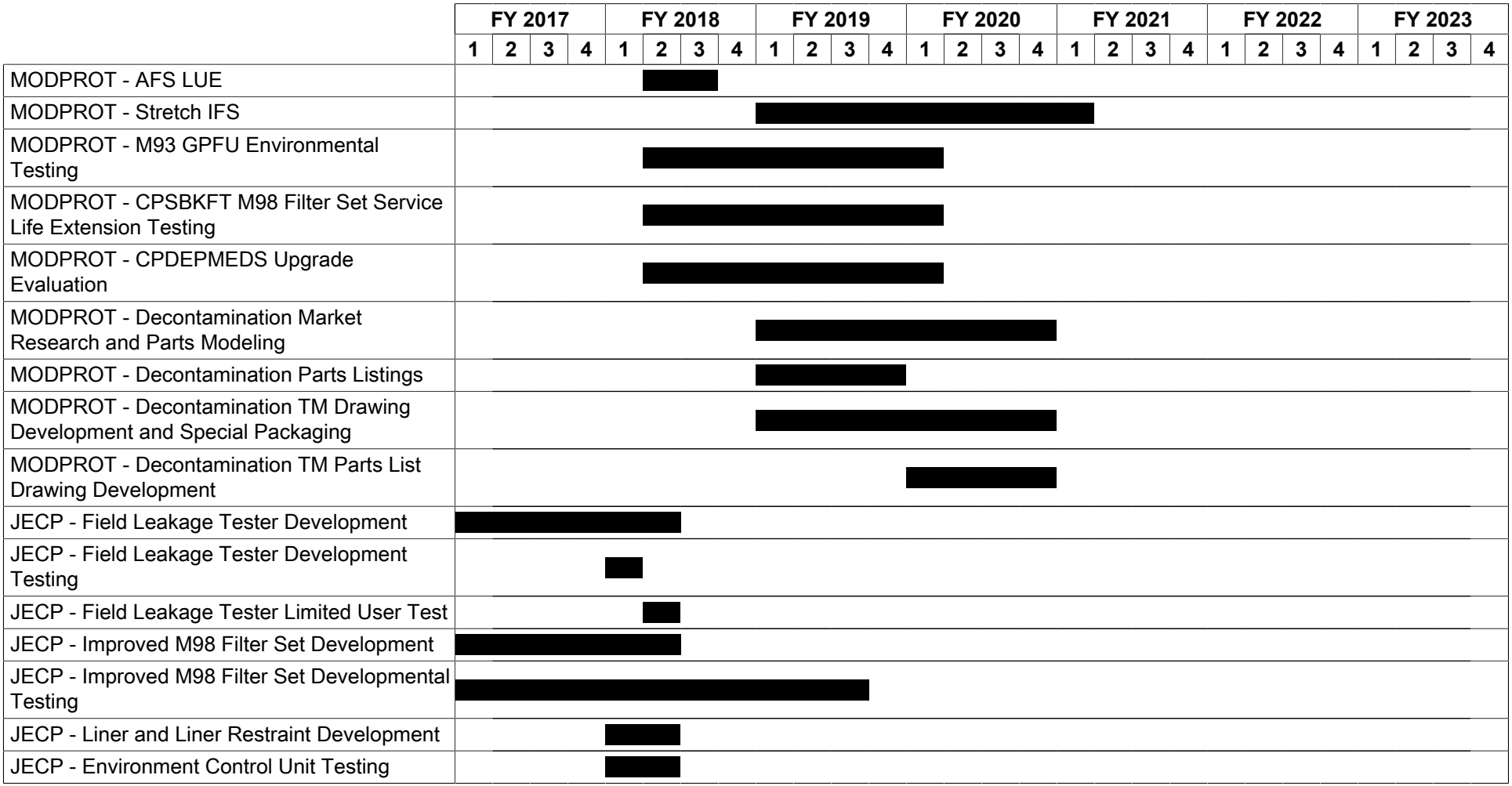

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** C07 / *COLLECTIVE PROTECTION (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MODPROT - AFS LUE	2	2018	3	2018
MODPROT - Stretch IFS	1	2019	1	2021
MODPROT - M93 GPFU Environmental Testing	2	2018	1	2020
MODPROT - CPSBKFT M98 Filter Set Service Life Extension Testing	2	2018	1	2020
MODPROT - CPDEPMEDS Upgrade Evaluation	2	2018	1	2020
MODPROT - Decontamination Market Research and Parts Modeling	1	2019	4	2020
MODPROT - Decontamination Parts Listings	1	2019	4	2019
MODPROT - Decontamination TM Drawing Development and Special Packaging	1	2019	4	2020
MODPROT - Decontamination TM Parts List Drawing Development	1	2020	4	2020
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
JECP - Liner and Liner Restraint Development	1	2018	2	2018
JECP - Environment Control Unit Testing	1	2018	2	2018

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) DE7 / *DECONTAMINATION SYSTEMS (OSD)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
DE7: *DECONTAMINATION SYSTEMS (OSD)*	-	0.000	0.000	0.445	-	0.445	0.445	0.000	0.000	0.000	0.000	0.890
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Modernize (MODPROT) Decon addresses obsolescence issues with decontamination equipment and the need to modernize the Joint Services fielded chemical and biological protection with capabilities meeting or exceeding the Services requirements.

Efforts in the MODPROT Decon program element will address obsolescence and technical data concerns, beginning with the 1) Joint Services Transportable Decontamination System-Small Scale (M26 JSTDS-SS) through validation and verification of technical manual changes as well as technical data for spare and repair parts, and 2) the Power Driven Decontamination Apparatus (M12A1 PDDA) by updating technical references and performing the necessary validation and verification before publishing an updated technical manual.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MODPROT Decontamination Modernization	-	-	0.445
Description: 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. ***FY 2019 Plans:*** Conduct market research and parts modeling for the modernization and upgrade of contamination mitigation systems and Transportable Decontamination defense systems. Complete technical manual and technical data package updates incorporating the system changes. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to change in program/project schedule.			
Accomplishments/Planned Programs Subtotals	-	-	0.445

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

MODERNIZATION PROTECTION (MODPROT)

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** DE7 / *DECONTAMINATION SYSTEMS (OSD)*

Modernizing Decontamination leverages mature technology from contractor developed components to address and replace obsolete components of various fielded decontamination systems. Modernization efforts will also use items developed by the government that have transitioned from lower to higher technology readiness levels that can be inserted into fielded systems. A combination of competitive and sole source contracts to various industry vendors and project orders to various government activities will be used to adapt previously developed components to modernize systems. Robust component and system level testing will validate both government and contractor furnished improvements. The improvements will be added into the specific system's updated technical data packages to be used in engineering change proposals and provided to the item managers.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) DE7 / *DECONTAMINATION SYSTEMS (OSD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - HW S - Market Research and Parts Modeling	MIPR	TBD : TBD	0.000	0.000		0.000		0.094	Nov 2018	-		0.094	0.000	0.094	0.000
		Subtotal	0.000	0.000		0.000		0.094		-		0.094	0.000	0.094	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - TD/D C - Tech Manual Updates	MIPR	Edgewood Chemical Biological Center (ECBC) : Rock Island, IL	0.000	0.000		0.000		0.100	Nov 2018	-		0.100	0.000	0.100	0.000
MODPROT - TD/D S - Tech Data Package Update	MIPR	Edgewood Chemical Biological Center (ECBC) : Rock Island, IL	0.000	0.000		0.000		0.150	Nov 2018	-		0.150	0.000	0.150	0.000
		Subtotal	0.000	0.000		0.000		0.250		-		0.250	0.000	0.250	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - PM/MS C - Management Support	Various	TBD : TBD	0.000	0.000		0.000		0.101	Nov 2018	-		0.101	0.000	0.101	0.000
		Subtotal	0.000	0.000		0.000		0.101		-		0.101	0.000	0.101	N/A

	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		0.445		-		0.445	0.000	0.445	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** DE7 / *DECONTAMINATION SYSTEMS (OSD)*

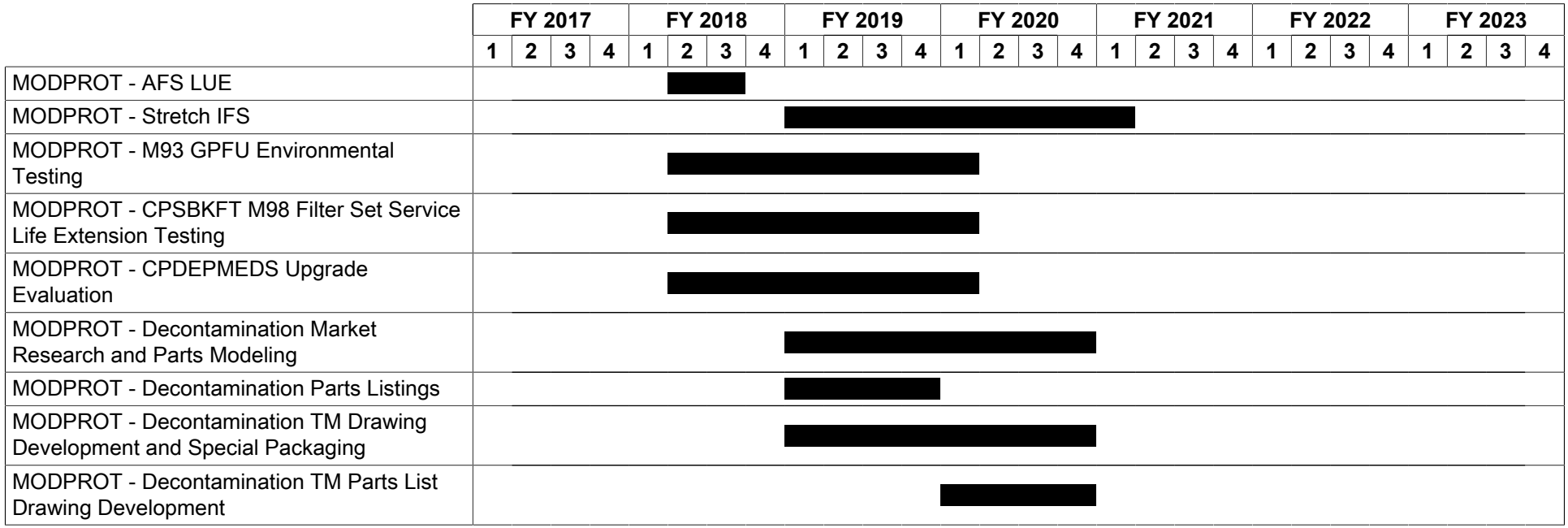

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** DE7 / *DECONTAMINATION SYSTEMS (OSD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MODPROT - AFS LUE	2	2018	3	2018
MODPROT - Stretch IFS	1	2019	1	2021
MODPROT - M93 GPFU Environmental Testing	2	2018	1	2020
MODPROT - CPSBKFT M98 Filter Set Service Life Extension Testing	2	2018	1	2020
MODPROT - CPDEPMEDS Upgrade Evaluation	2	2018	1	2020
MODPROT - Decontamination Market Research and Parts Modeling	1	2019	4	2020
MODPROT - Decontamination Parts Listings	1	2019	4	2019
MODPROT - Decontamination TM Drawing Development and Special Packaging	1	2019	4	2020
MODPROT - Decontamination TM Parts List Drawing Development	1	2020	4	2020

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	Project (Number/Name) IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
IP7: *INDIVIDUAL PROTECTION (OP SYS DEV)*	-	1.359	1.747	2.056	-	2.056	2.092	2.021	2.663	2.663	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Modernize Individual Protection (MODPROT) addresses obsolescence issues with Individual Protective equipment and the need to modernize the Joint Services fielded chemical and biological protection with capabilities meeting or exceeding the Services requirements.

MODPROT will modernize current chemical protective footwear by conducting 1) Limited User Evaluation (LUE) in support of the Alternative Source Qualification plan for a suitable replacement to the Alternative Footwear Solutions (AFS) and 2) modernizing the Integrated Footwear System (IFS). MODPROT will also conduct a modernization effort of the Joint Service Lightweight Integrated Suit Technology (JSLIST) Block 1 Glove Upgrade Flame Resistant (JB1GU FR) glove, and reverse engineering of maintenance and repair procedures for the Joint Services Mask Leakage Tester (JSMLT).

JSGPM provides for filter modernization and enhancements against Toxic Industrial Chemicals (TICs) and Toxic Industrial Materials (TIMs) on the Joint Service General Purpose Mask (JSGPM). Filter upgrades will be provided for fielded Protection systems to enhance respiratory and ocular protection.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) MODPROT Individual Protection Modernization	-	0.051	-
Description: Alternative Footwear Solution (AFS) Limited User Evaluation (LUE)			
FY 2018 Plans: Initiate and conduct a coordinated LUE with Defense Logistics Agency through the Army Test and Evaluation Command as part of the Alternative Source Qualification to determine vendors' ability to meet AFS requirements.			
FY 2018 to FY 2019 Increase/Decrease Statement: Decrease due to change in program/project schedule.			
Title: 2) MODPROT Individual Protection Modernization	-	-	0.129
Description: Improve Integrated Footwear System (IFS)			
FY 2019 Plans: Initiate and conduct a comparison of the current IFS to the stretch IFS.			
FY 2018 to FY 2019 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Increase due to change in program/project schedule.			
Title: 3) JSGPM	1.359	1.696	1.927
Description: Product Qualification and Integration testing ***FY 2018 Plans:*** Conduct Product Qualification Testing (PQT) of the Cobalt-Zinc, zirconium hydroxide, Argentum(Silver), TEDA (triethylene diamine)(CoZZAT) technology and begin the Metal Organic Framework (MOF) integration into the M61 filter. ***FY 2019 Plans:*** Conduct Product Qualification Testing (PQT) of the Cobalt-Zinc, zirconium hydroxide, Argentum (Silver), TEDA (triethylene diamine) (CoZZAT) technology and begin the Metal Organic Framework (MOF) integration into the M61 filter. Initiate Next Generation Filter Developmental Testing (DT). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase/Decrease due to change in program/project schedule.			
Accomplishments/Planned Programs Subtotals	1.359	1.747	2.056

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
• JI0003: *JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)*	65.374	48.493	16.927	-	16.927	18.166	0.000	0.000	0.000	0.000	148.960

Remarks

D. Acquisition Strategy

MODERNIZATION PROTECTION (MODPROT)

Modernize Individual Protection, as part of the Alternative Source Qualification test and evaluation approach, conducts an evaluation of the Moulded Airboss Lightweight Overboot (MALO) as a potential substitute to the Alternative Footwear Solutions (AFS) CBRN Protective Overboot. Part of this evaluation includes a performance assessment of the MALO physical properties relative to the AFS and its performance requirements. MODPROT will also conduct an evaluation of the stretchy Integrated Footwear System (IFS) as a potential substitute for the current version of the IFS CBRN Protective sock.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - HW C - Stretch Integrated Footwear System Assessment	MIPR	Navy Clothing and Textile Research Facility (NCTRF) : Natick, MA	0.000	0.000		0.000		0.100	Nov 2018	-		0.100	Continuing	Continuing	0.000
JSGPM - HW C - Filter Prototypes #2 (C2A1)	C/FFP	3M Canada : Brockville Ontario, CN	0.062	0.000		0.250	Mar 2018	0.075	Nov 2018	-		0.075	Continuing	Continuing	0.000
JSGPM - HW C - Filter Prototypes #2 (C2A1) #2	C/FFP	AVON Protection Systems Inc. : Cadillac, MI	0.075	0.000		0.250	Feb 2018	0.075	Nov 2018	-		0.075	Continuing	Continuing	0.000
JSGPM - HW C - Filter Prototypes #1 (CoZZAT)	C/FFP	AVON Protection Systems Inc. : Cadillac, MI	1.170	0.301	Nov 2016	0.250	Feb 2018	0.350	Nov 2018	-		0.350	Continuing	Continuing	0.000
JSGPM - HW C - Filter Prototypes #1 (CoZZAT) #2	C/FFP	3M Canada : Brockville Ontario, CN	0.588	0.074	Dec 2016	0.250	Mar 2018	0.350	Nov 2018	-		0.350	Continuing	Continuing	0.000
		Subtotal	1.895	0.375		1.000		0.950		-		0.950	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSGPM - ES C - System Filter Bed Design Analysis (CoZZAT)	MIPR	Various : Various	0.976	0.000		0.314	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JSGPM - ES C - IPT, Program, Engineering, and Technical Support	MIPR	Various : Various	0.000	0.226	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	0.976	0.226		0.314		0.000		-		0.000	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - DTE C - Alternate Footwear Solution LUE	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.000		0.051	Nov 2017	0.000		-		0.000	Continuing	Continuing	0.000
JSGPM - DTE C - System Filters (CoZZAT)	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.250	0.400	Nov 2016	0.116	Nov 2017	0.640	Nov 2018	-		0.640	Continuing	Continuing	0.000
JSGPM - DTE C - Environmental Conditioning/Dust Emission Testing - M61 Canisters	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.200	Jul 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	1.250	0.600		0.167		0.640		-		0.640	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.029	Nov 2018	-		0.029	Continuing	Continuing	0.000
JSGPM - PM/MS C - Program Management and Technical Support	MIPR	Various : Various	1.439	0.158	Nov 2016	0.266	Nov 2017	0.437	Nov 2018	-		0.437	Continuing	Continuing	0.000
		Subtotal	1.439	0.158		0.266		0.466		-		0.466	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.560	1.359		1.747		2.056		-		2.056	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

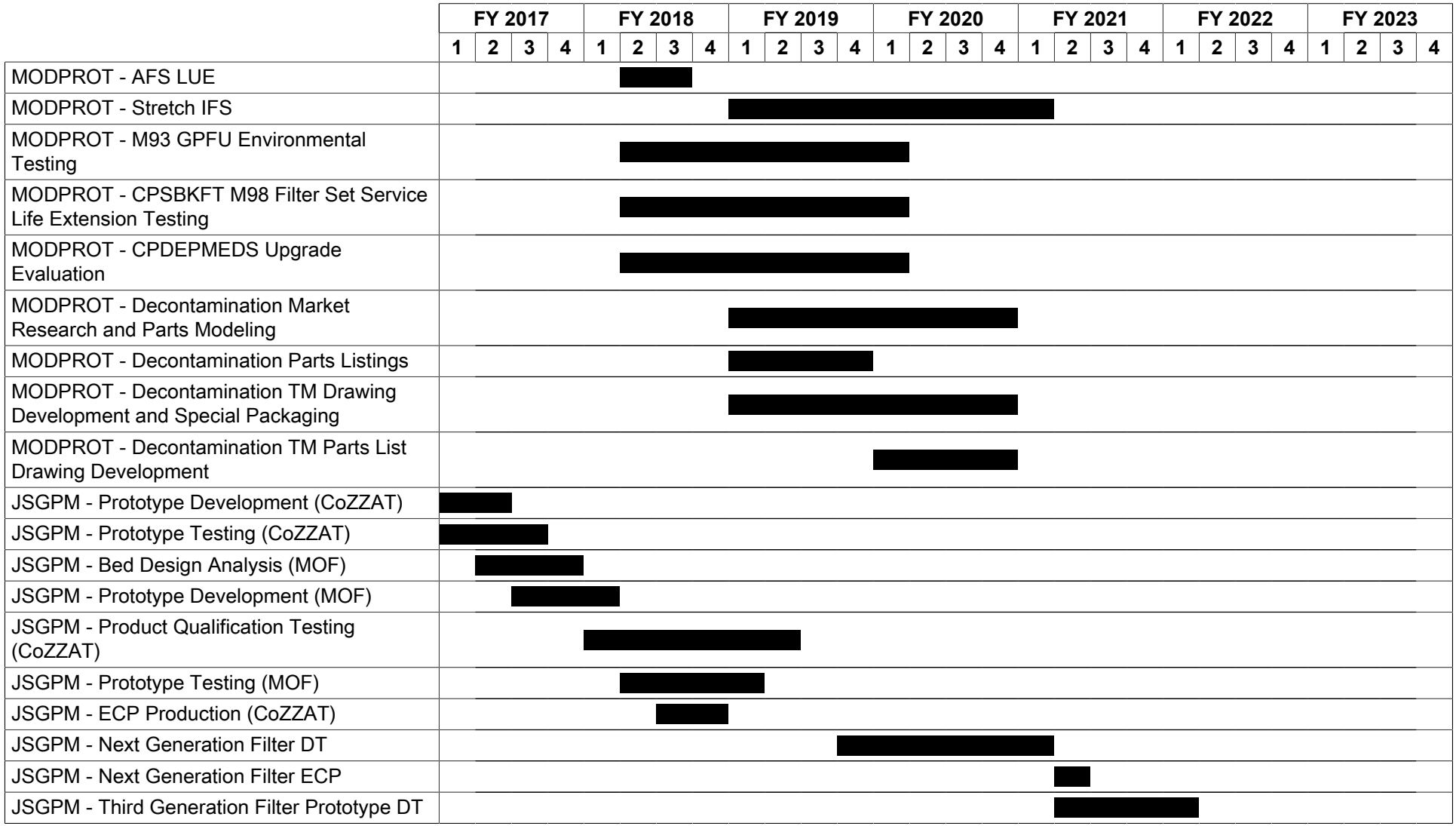

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

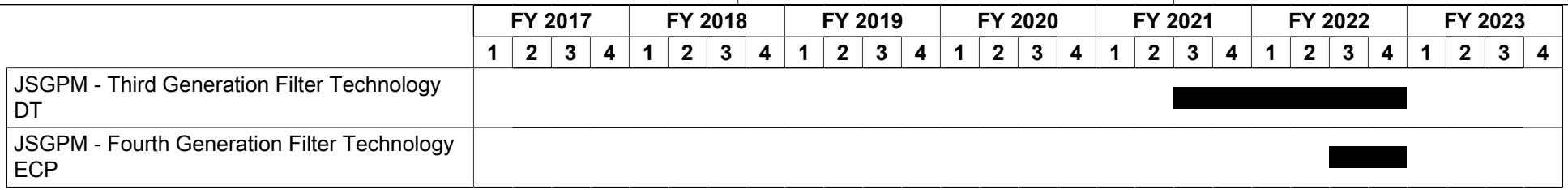

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IP7 / *INDIVIDUAL PROTECTION (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MODPROT - AFS LUE	2	2018	3	2018
MODPROT - Stretch IFS	1	2019	1	2021
MODPROT - M93 GPFU Environmental Testing	2	2018	1	2020
MODPROT - CPSBKFT M98 Filter Set Service Life Extension Testing	2	2018	1	2020
MODPROT - CPDEPMEDS Upgrade Evaluation	2	2018	1	2020
MODPROT - Decontamination Market Research and Parts Modeling	1	2019	4	2020
MODPROT - Decontamination Parts Listings	1	2019	4	2019
MODPROT - Decontamination TM Drawing Development and Special Packaging	1	2019	4	2020
MODPROT - Decontamination TM Parts List Drawing Development	1	2020	4	2020
JSGPM - Prototype Development (CoZZAT)	1	2017	2	2017
JSGPM - Prototype Testing (CoZZAT)	1	2017	3	2017
JSGPM - Bed Design Analysis (MOF)	2	2017	4	2017
JSGPM - Prototype Development (MOF)	3	2017	1	2018
JSGPM - Product Qualification Testing (CoZZAT)	1	2018	2	2019
JSGPM - Prototype Testing (MOF)	2	2018	1	2019
JSGPM - ECP Production (CoZZAT)	3	2018	4	2018
JSGPM - Next Generation Filter DT	4	2019	1	2021
JSGPM - Next Generation Filter ECP	2	2021	2	2021
JSGPM - Third Generation Filter Prototype DT	2	2021	1	2022
JSGPM - Third Generation Filter Technology DT	3	2021	4	2022
JSGPM - Fourth Generation Filter Technology ECP	3	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program											Date: February 2018	
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)*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
IS7: *INFORMATION SYSTEMS (OP SYS DEV)*	-	10.293	12.203	15.552	-	15.552	16.951	16.492	15.163	13.211	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 Biosurveillance Portal (BSP), the Joint Effects Model (JEM) and the Joint Warning and Reporting Network (JWARN). This project also provides for the Software Support Activity (SSA) and Chemical Biological Radiological and Nuclear Information Systems (CBRN-IS). 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 is an enterprise solution that provides End to End easily accessible sets of CBRN Enterprise capabilities through web services utilizing Service Oriented Architecture. Provides timely, fused, and easily accessible CBRN defense information to the Joint warfighter, CBDP community of interest, civil and international partners. CBRN-IS provides a collaborative environment that allows users to collect and disseminate CBRN warning and reporting data, provide detailed CBRN hazard predictions, aid in decision support, and make relevant CBRN defense information available in near-real time. CBRN-IS provides an environment that supports the implementation of Integrated Early Warning (IEW) capabilities that allow users to access netted sensor information, data fusion, disease modeling, biosurveillance data, source term estimation data, incident management tools, and planning and analysis capabilities. CBRN-IS provides net centric, cloud based tools and capabilities that are aligned with the current and future DoD IT/Cyber computing environments including Army Common Operating Environment (COE) and the Joint Information Environment (JIE). The CBRN-IS enterprise makes CBRN decision aids readily accessible from any desktop through a standard web browser simplifying interoperability, reducing integration and deployment costs and increases cybersecurity protection.

The Joint Effects Model (JEM) is a web-based software application that supplies the 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 versions 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. JEM will also 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.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

The Joint Warning and Reporting Network (JWARN) is an accredited 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.

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 (CDD) released early in the program. "Agile Software Development" 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 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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) was a 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 facilitates 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

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

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 BSP Program will utilize BA7 funding to execute modernization, bug fixes, provide support at the fielded locations and maintain training. There will be two Production Capability Drops (CDs) and two Engineering CDs in FY18. CDs will be evaluated following Developmental Testing (DT) through End-to-End Testing using users to validate delivered capability as part of the IT Box process thus reducing risk to the program and ensuring a quality product is delivered to the warfighter.

As software-intensive systems, JEM, JWARN, and BSP have no separately identifiable unit production components. BSP, 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.

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 biosurveillance and other critical CBRN information.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) BSP	-	0.960	3.150
Description: Modernization Efforts			
FY 2018 Plans: Initial authorization of BA7 funds will be utilized to modernize/upgrade program cloud host provider hardware and maintain compatibility of previously delivered/fielded capabilities to ensure continuity of effort to the User.			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
BA7 funds will be utilized to modernize/upgrade program cloud host provider hardware and maintain compatibility of previously delivered/fielded capabilities to ensure continuity of effort to the User. BA7 will also be used to perform refresher training and ongoing support at fielded locations. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 2) CBRN-IS ***Description:*** Modernization Efforts ***FY 2018 Plans:*** Continue installations of CBRN IS on milCloud and other data centers. ***FY 2019 Plans:*** Continue to modernize fielded capabilities throughout the lifecycle of the program to ensure compatibility with Service architectures, cloud-hosted environments, and system requirements, to include tech refresh of system hardware and software to maintain compatibility with new technologies and standards. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	-	0.289	2.352
Title: 3) JEM ***Description:*** Command and Control (C2) Modernization Efforts ***FY 2018 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. Increased funding planned for the emerging cyber security threats. Strong possibility that there will be significant increases in information assurance and cyber security arena. ***FY 2019 Plans:*** Continue to update fielded JEM 1 and JEM 2 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 1 and JEM 2 baselines. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	1.657	1.656	1.795

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Minor change due to routine program adjustments.			
Title: 4) JEM ***Description:*** Pre-Planned Product Improvement (P3I) ***FY 2018 Plans:*** Continue to 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 architecture and overall performance of all JEM increments through software updates and deficiency resolution. Both increments of JEM software will be supported until all service C2 systems with Increment 1 software are fielded with Increment 2 software. ***FY 2019 Plans:*** Continue to test and integrate fielded JEM 1 and 2 software with science and technology upgrades and model enhancements to improve JEM accuracy and precision. Improve architecture and overall performance of all JEM increments through software updates and deficiency resolution. Both increments of JEM software will be supported until all service C2 systems with JEM 1 software are fielded with JEM 2 software. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	3.124	3.318	3.597
Title: 5) JWARN ***Description:*** System Modernization/Update Development ***FY 2018 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 2019 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 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	3.342	3.858	2.801
Title: 6) JWARN	0.554	0.533	0.387

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Description: Program Management Support ***FY 2018 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 2019 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 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) JWARN ***Description:*** IT BOX Test & Evaluation (T&E) ***FY 2018 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. ***FY 2019 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. Conduct developmental and operational testing on JWARN software updates and modernization efforts to support Army's Common Operational Environment version 3 (COE v3). Develop training guides and courseware to reflect major upgrades to JWARN 2 in support of COE v3. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.410	0.431	0.313
Title: 8) SSA Policies, Standards and Guidelines ***FY 2018 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). ***FY 2019 Plans:***	0.262	0.244	0.246

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
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). ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 9) SSA Integrated Architecture ***FY 2018 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. ***FY 2019 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.256	0.254	0.253
Title: 10) SSA Chemical, Biological, Radiological, Nuclear (CBRN) Data Model ***FY 2018 Plans:*** Continue updating 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. ***FY 2019 Plans:*** Continue updating 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.256	0.237	0.236
Title: 11) SSA Cybersecurity/Information Assurance (CS/IA) ***FY 2018 Plans:***	0.432	0.423	0.422

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
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. ***FY 2019 Plans:*** 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	10.293	12.203	15.552

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

BIOSURVEILLANCE PORTAL (BSP)

The Biosurveillance Portal (BSP) program will continue to meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. 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 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). There are two planned Production Capability Drops and two Engineering Capability Drops planned in each FY. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD to verify capabilities prior to delivery to the Warfighter. User Feedback Events (UFEs) will be conducted with identified Users to elicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) was achieved in July 2016. A Full Operational Test & Evaluation will be conducted prior to Final Operational Capability to be delivered in 3QFY20.

CBRN INFORMATION SYSTEMS

CBRN-IS acquisition strategy utilizes a Family-of-Systems (FoS) approach to align multiple programs of record capabilities to the CBRN-IS architecture and operational environment. CBRN-IS enterprise will initially integrate appropriate JPEO-CBD products into a FoS framework beginning with the Joint Warning and Reporting (JWARN) and Joint Effects Model (JEM) program capabilities. CBRN-IS leverages the concepts of CBRN Hazard Awareness and Understanding and DISA Enterprise Services to integrate current CBRN capabilities, and other information and intelligence services, applications, and systems to provide increased situational awareness and decision

support to commanders for CBRN defense. The strategy supports the implementation of integrated early warning capabilities by incorporating the inclusion of mature science and technology products and emerging technologies from existing advanced technology demonstrations (ATD) and experimental capability demonstrations (ECD). CBRN-IS utilizes the Agile software development process with the IT Box acquisition strategy to provide for the spiral development and fielding of modular capability packages.

JOINT EFFECTS MODEL (JEM)

JEM 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.

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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.

As part of this strategy a single JEM integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in March 2017.

The current contractor for JEM 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1, CD 2.2, and CD 2.3 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The contract awarded in March 2017 includes scope for developing the remaining capabilities under the JEM 2.0 contract. The contract utilizes full and open competition and is referred to as the JEM development, modernization and sustainment contract.

An over-arching MS B and Build Decision for RDP-1 were approved by the MDA in Q4 FY14, and a CD1.1 Fielding Decision and a RDP-2 Build Decision were approved in Q3 FY16. Each subsequent RDP will have a single Build Decision and each CD will have an associated Fielding Decision.

It is anticipated JEM 2 capabilities will transition to CBRN-IS in Fiscal Year 2023.

JOINT WARNING & REPORTING NETWORK (JWARN)

JWARN 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-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

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).

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) 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 (MS 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 JWARN Program will find an appropriate Sensor Connectivity Capability (SCC) 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).

The current contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) and RDP-2 documents. It is anticipated that the JRO will release further RDP-3 and RDP-4 prior to contract completion.

As part of the strategy for a single JWARN integrator, a follow-on contract Request for Proposal (RFP) is targeted for release Q4 FY17 with a targeted award date of Q3 FY18. The follow-on contractor for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The follow-on contract in FY18 will include scope for developing the remaining capabilities under the JEM 2.0 contract. The JWARN follow-on contract will utilize full and open competition and will be referred to as the JWARN software development and maintenance contract.

It is anticipated JWARN 2 capabilities will transition to CBRN IS in Fiscal Year 2023.

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - BSP- SW S - BSP Modernization	MIPR	Various : Various	0.000	0.000		0.960	Dec 2017	3.150	Dec 2018	-		3.150	Continuing	Continuing	0.000
JEM - SW S - Increment 1 - Modernization	C/CPAF	Northrop Grumman Corp. : San Diego, CA	9.817	1.953	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JEM - SW S - Increment 2 - Modernization	C/CPAF	General Dynamics Information Technologies : Fairfax, VA	0.100	2.828	Apr 2017	4.974	Apr 2018	5.392	Apr 2019	-		5.392	Continuing	Continuing	0.000
JWARN - 1- SW S - Modernization	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	12.260	0.743	Dec 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2- SW S - Modernization	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	0.000	1.901	Dec 2016	3.858	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2- SW S - Modernization Follow-On	C/CPAF	TBD : TBD	0.000	0.000		0.000		2.801	Jun 2019	-		2.801	Continuing	Continuing	0.000
SSA - SW S - Development Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.717	0.469	Dec 2016	0.445	Dec 2017	0.444	Dec 2018	-		0.444	Continuing	Continuing	0.000
		Subtotal	24.894	7.894		10.237		11.787		-		11.787	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - ES S - milCloud support	MIPR	Various : Various	0.000	0.000		0.289	Dec 2017	2.352	Dec 2018	-		2.352	Continuing	Continuing	0.000
JWARN - 1&2 - ES S - Modernization	MIPR	Various : Various	0.424	0.787	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - TD/D C - Information Assurance Activities	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.888	0.291	Nov 2016	0.268	Dec 2017	0.268	Dec 2018	-		0.268	Continuing	Continuing	0.000
		Subtotal	3.312	1.078		0.557		2.620		-		2.620	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JWARN - 1- OTE S - FOT&E	MIPR	Various : Various	4.015	0.404	Nov 2016	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JWARN - 2- OTE S	MIPR	Various : Various	0.000	0.070	Nov 2016	0.431	Dec 2017	0.313	Dec 2018	-		0.313	Continuing	Continuing	0.000
SSA - OTHT S - Integration Verification and Valuation (IV&V)	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	2.856	0.446	Dec 2016	0.445	Dec 2017	0.445	Dec 2018	-		0.445	Continuing	Continuing	0.000
		Subtotal	6.871	0.920		0.876		0.758		-		0.758	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JWARN - PM/MS S - Program management	MIPR	Various : Various	1.304	0.401	Dec 2016	0.533	Dec 2017	0.387	Dec 2018	-		0.387	Continuing	Continuing	0.000
		Subtotal	1.304	0.401		0.533		0.387		-		0.387	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	36.381	10.293		12.203		15.552		-		15.552	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

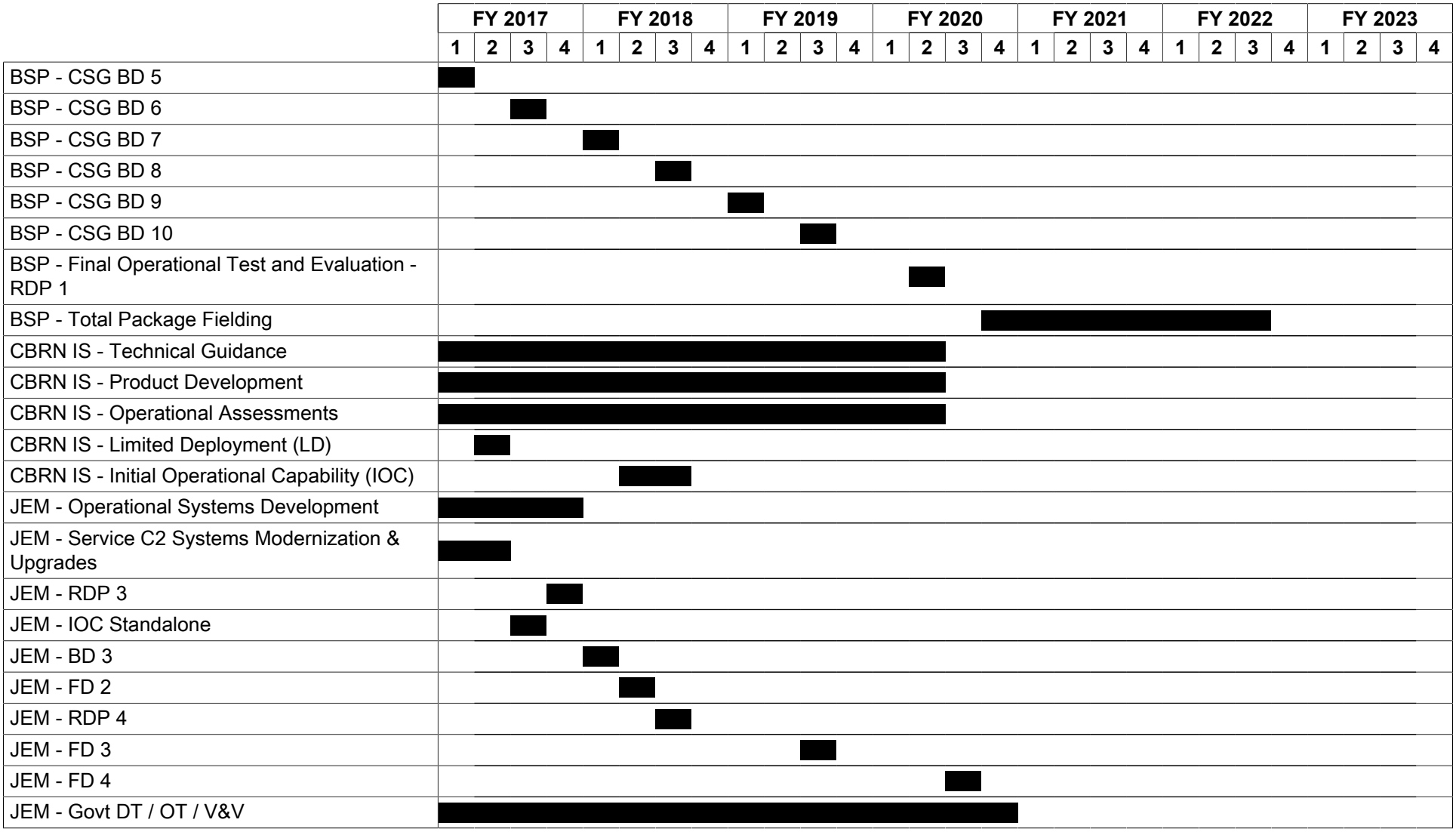

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IS7 / *INFORMATION SYSTEMS (OP SYS DEV)*

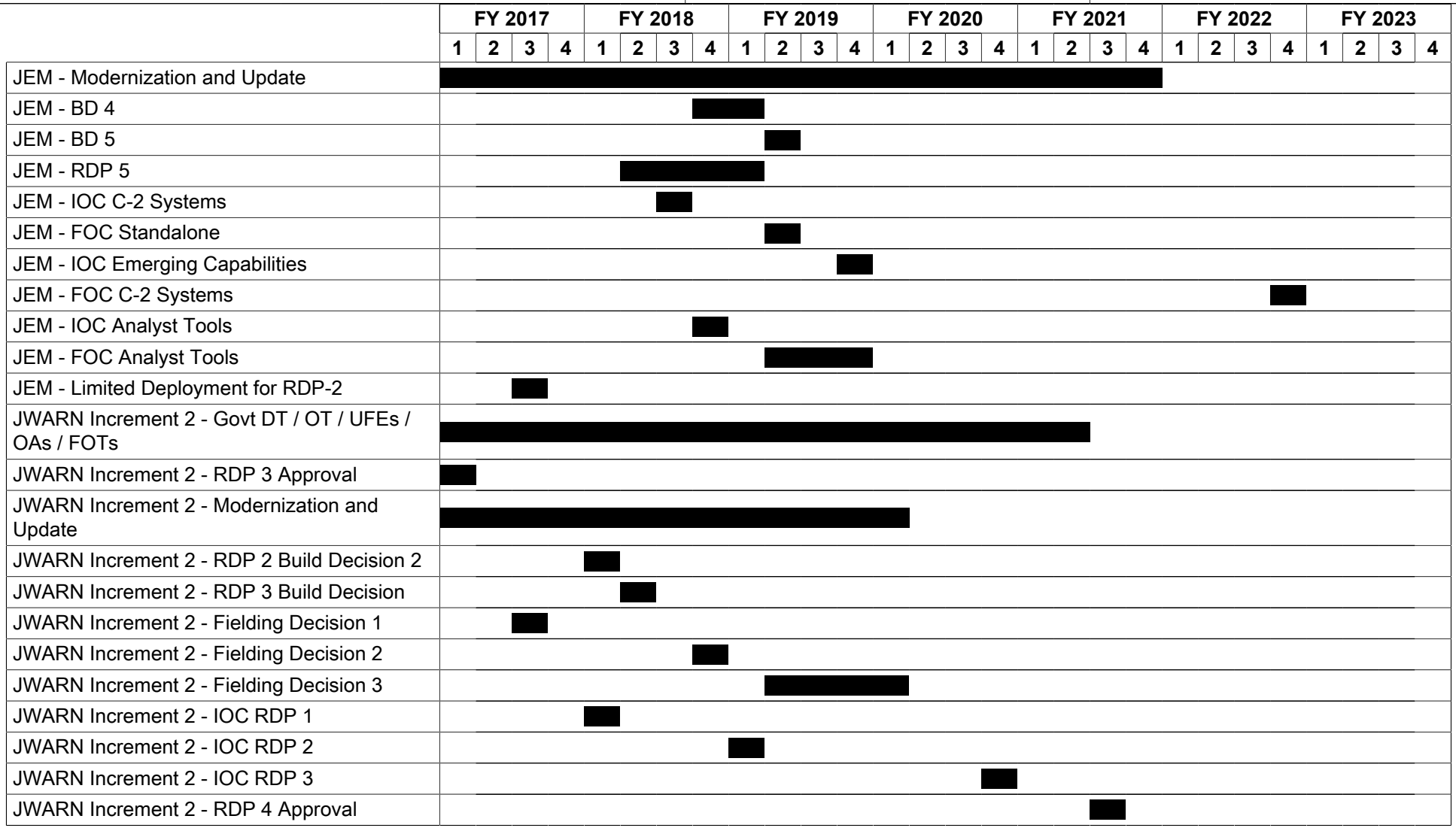

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IS7 / *INFORMATION SYSTEMS (OP SYS DEV)*

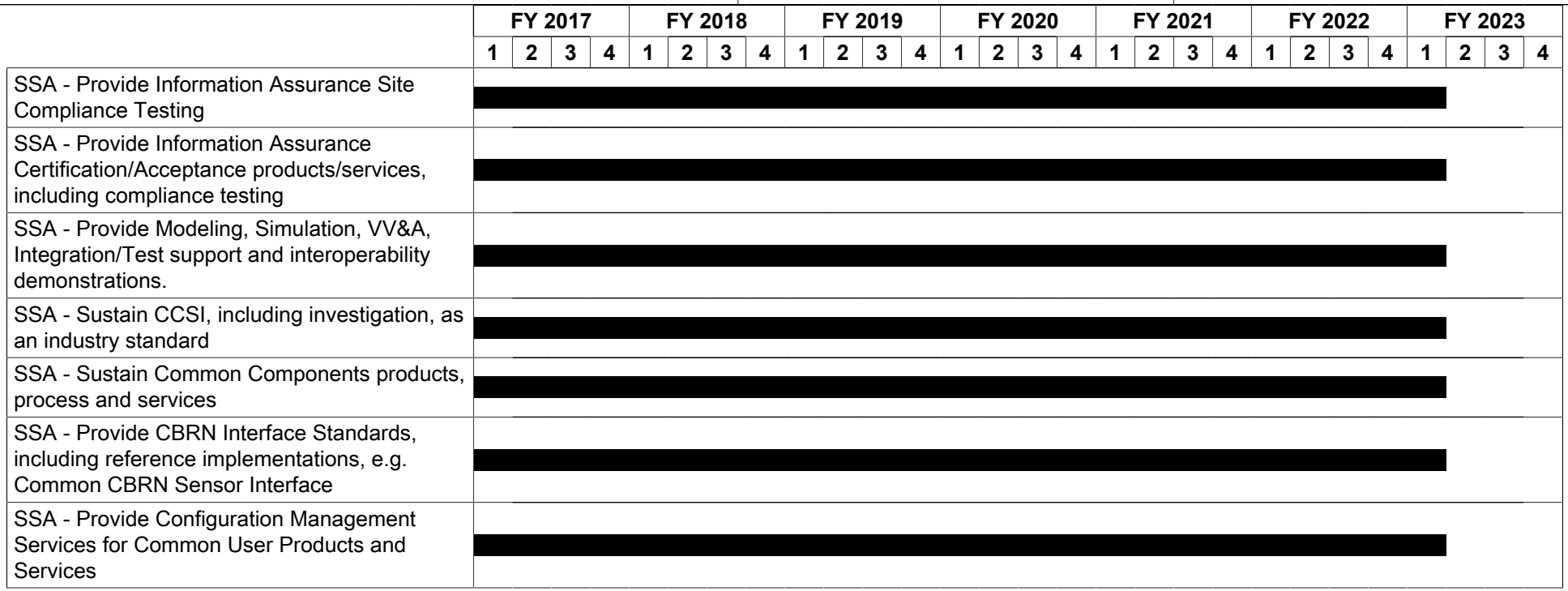

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** IS7 / *INFORMATION SYSTEMS (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BSP - CSG BD 5	1	2017	1	2017
BSP - CSG BD 6	3	2017	3	2017
BSP - CSG BD 7	1	2018	1	2018
BSP - CSG BD 8	3	2018	3	2018
BSP - CSG BD 9	1	2019	1	2019
BSP - CSG BD 10	3	2019	3	2019
BSP - Final Operational Test and Evaluation - RDP 1	2	2020	2	2020
BSP - Total Package Fielding	4	2020	3	2022
CBRN IS - Technical Guidance	1	2017	2	2020
CBRN IS - Product Development	1	2017	2	2020
CBRN IS - Operational Assessments	1	2017	2	2020
CBRN IS - Limited Deployment (LD)	2	2017	2	2017
CBRN IS - Initial Operational Capability (IOC)	2	2018	3	2018
JEM - Operational Systems Development	1	2017	4	2017
JEM - Service C2 Systems Modernization & Upgrades	1	2017	2	2017
JEM - RDP 3	4	2017	4	2017
JEM - IOC Standalone	3	2017	3	2017
JEM - BD 3	1	2018	1	2018
JEM - FD 2	2	2018	2	2018
JEM - RDP 4	3	2018	3	2018
JEM - FD 3	3	2019	3	2019
JEM - FD 4	3	2020	3	2020

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JEM - Govt DT / OT / V&V	1	2017	4	2020
JEM - Modernization and Update	1	2017	4	2021
JEM - BD 4	4	2018	1	2019
JEM - BD 5	2	2019	2	2019
JEM - RDP 5	2	2018	1	2019
JEM - IOC C-2 Systems	3	2018	3	2018
JEM - FOC Standalone	2	2019	2	2019
JEM - IOC Emerging Capabilities	4	2019	4	2019
JEM - FOC C-2 Systems	4	2022	4	2022
JEM - IOC Analyst Tools	4	2018	4	2018
JEM - FOC Analyst Tools	2	2019	4	2019
JEM - Limited Deployment for RDP-2	3	2017	3	2017
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	1	2017	2	2021
JWARN Increment 2 - RDP 3 Approval	1	2017	1	2017
JWARN Increment 2 - Modernization and Update	1	2017	1	2020
JWARN Increment 2 - RDP 2 Build Decision 2	1	2018	1	2018
JWARN Increment 2 - RDP 3 Build Decision	2	2018	2	2018
JWARN Increment 2 - Fielding Decision 1	3	2017	3	2017
JWARN Increment 2 - Fielding Decision 2	4	2018	4	2018
JWARN Increment 2 - Fielding Decision 3	2	2019	1	2020
JWARN Increment 2 - IOC RDP 1	1	2018	1	2018
JWARN Increment 2 - IOC RDP 2	1	2019	1	2019
JWARN Increment 2 - IOC RDP 3	4	2020	4	2020
JWARN Increment 2 - RDP 4 Approval	3	2021	3	2021
SSA - Provide Information Assurance Site Compliance Testing	1	2017	1	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2017	1	2023
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2017	1	2023
SSA - Sustain CCSI, including investigation, as an industry standard	1	2017	1	2023
SSA - Sustain Common Components products, process and services	1	2017	1	2023
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2017	1	2023
SSA - Provide Configuration Management Services for Common User Products and Services	1	2017	1	2023

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	-	6.999	11.950	9.850	-	9.850	3.728	6.060	6.532	2.969	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).

JBAIDS is a commercial off the shelf system that provides 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.

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 successfully achieved MS C Limited Deployment in December 2016.

FY19, JBAIDS efforts will oversee the configuration management of the system to include program management and monitoring obsolescence.

FY19, NGDS 1 efforts will complete the development of additional assays needed for JBAIDS replacement as well as for additional threat agents (e.g., Alpha Virus, and Orthopox).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) Joint Biological Agent Identification and Diagnostic System (JBAIDS)	0.374	0.203	-
Description: Logistic Support, Engineering Studies, and Software Security Testing			
FY 2018 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Continue sustainment contract, software security and RMF FISMA. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.			
Title: 2) JBAIDS ***Description:*** Development and Submission of Pre-EUA Packages to FDA ***FY 2018 Plans:*** Continue development and submissions of Pre-EUA packages to the FDA. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	0.068	0.203	-
Title: 3) JBAIDS ***FY 2018 Plans:*** Maintain the Defense Logistics Agency Electronic-Cataloging capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	0.052	-
Title: 4) JBAIDS ***Description:*** Program Management and Obsolescence Monitoring ***FY 2019 Plans:*** Continue to monitor obsolescence and strategic planning, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.	-	-	0.468
Title: 5) NGDS 1 ***Description:*** NGDS 1 Development of Plague, Tularemia, and Q-Fever assays.	4.527	-	-
Title: 6) NGDS 1 ***Description:*** NGDS 1 Program Management	2.030	-	3.640

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
FY 2019 Plans: Continue strategic/tactical planning, Government system engineering, program/financial management, costing, technology assessment, contracting, scheduling, acquisition oversight, regulatory and technical support. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) NGDS 1 ***Description:*** Development of FDA-Cleared Medical Diagnostic Assays. ***FY 2018 Plans:*** Initiate development of additional FDA cleared medical diagnostic assay for the Alphavirus's (Eastern Equine Encephalitis/ Venezuela Equine Encephalitis/Western Equine Encephalitis) and Orthopox (Variola major-Smallpox, Variola minor, Pan-Orthopox, Monkeypox). ***FY 2019 Plans:*** Continue development of additional FDA cleared medical diagnostic assay for the Alphavirus's (Eastern Equine Encephalitis/ Venezuela Equine Encephalitis/Western Equine Encephalitis) and Orthopox (Variola major-Smallpox, Variola minor, Pan-Orthopox, Monkeypox). Continue development of additional assays and sample validation protocols to meet JBAIDS equivalence ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	11.492	5.742
Accomplishments/Planned Programs Subtotals	6.999	11.950	9.850

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 JBAIDS program is preparing for full replacement by NGDS Increment 1 systems, beginning in FY17.

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

The NGDS program was a MS A to MS C - Limited Deployment acquisition strategy, with MS C approval granted in Dec 2016 for limited production and fielding. NGDS 1 will replace the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17.

The NGDS 2 program addresses CBR agents and concepts of employment (COEs) that the NGDS 1 Film Array does not address. More than one materiel solution is required to expand the scope of CBR agent diagnostics across multiple echelons of care. NGDS 2 will employ a family of systems approach to bridge identified capability gaps for man-portable diagnostics, immunoassay diagnostics, and chemical diagnostics systems. NGDS 2 initiated prototyping of a man-portable diagnostic capability in FY17, while continuing to conduct risk reduction efforts for the other capabilities. Separate decisions will be utilized to proceed with further development and production for each capability, based on individual determinations of technology maturity to meet user requirements. Development efforts are anticipated to be cost-plus awards under the medical Other Transactions Authority (OTA), to take advantage of non-traditional Defense contractor offerings.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - NGDS 1 - HW C - Assay Development	C/CPFF	BioFire Dx : Salt Lake City, UT	7.939	2.820	Dec 2016	4.876	Dec 2017	3.761	Dec 2018	-		3.761	Continuing	Continuing	0.000
		Subtotal	7.939	2.820		4.876		3.761		-		3.761	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - ES S - Engineering Support	MIPR	Various : Various	1.308	0.918	Jan 2017	2.527	Jun 2018	1.981	Feb 2019	-		1.981	Continuing	Continuing	0.000
		Subtotal	1.308	0.918		2.527		1.981		-		1.981	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBAIDS - OTHT S - EUA packages	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.978	0.000	Mar 2017	0.203	Mar 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBAIDS - OTHT S - EUA packages #2	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	0.068	Feb 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGDS - DTE S - Operational Assessment/ MOT&E	MIPR	Various : Various	4.910	0.789	Jan 2017	0.372	Jan 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	5.888	0.857		0.575		0.000		-		0.000	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBAIDS - PM/MS S - Project Management	MIPR	Various : Various	1.719	0.037	Jan 2017	0.052	Jan 2018	0.468	Jan 2019	-		0.468	Continuing	Continuing	0.000
JBAIDS - PM/MS S - Sustainment contract: CLS, software updates	PO	Various : Various	0.789	0.337	Jan 2017	0.203	Jan 2018	0.000	Jan 2019	-		0.000	Continuing	Continuing	0.000
NGDS - PM/MS C - PM/MS - Program Management Support	Allot	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000	Jan 2017	0.089	Jan 2018	1.407	Jan 2019	-		1.407	Continuing	Continuing	0.000
NGDS - PM/MS S - Product Management Support	MIPR	Various : Various	0.000	1.673	Jan 2017	0.000		1.389	Jan 2019	-		1.389	Continuing	Continuing	0.000
NGDS - PM/MS S - Program Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	3.931	0.357	Jan 2017	3.628	Jan 2018	0.844	Jan 2019	-		0.844	Continuing	Continuing	0.000
		Subtotal	6.439	2.404		3.972		4.108		-		4.108	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.574	6.999		11.950		9.850		-		9.850	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

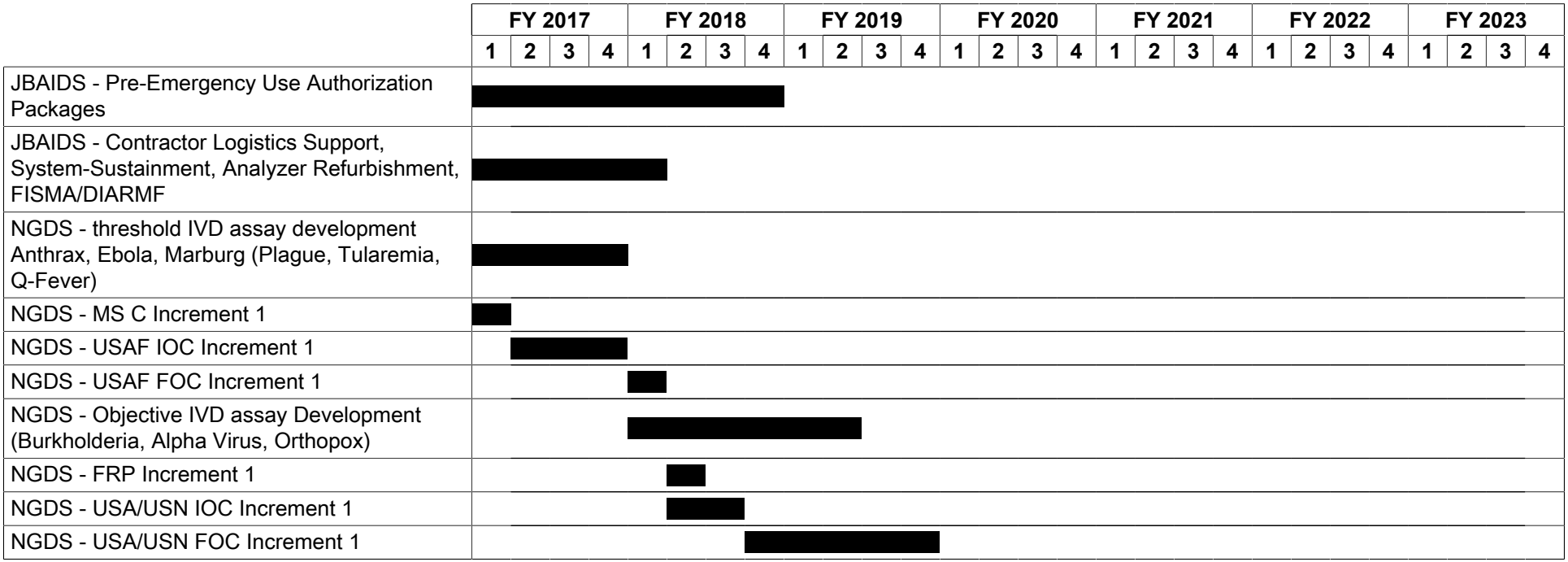

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** MB7 / *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JBAIDS - Pre-Emergency Use Authorization Packages	1	2017	4	2018
JBAIDS - Contractor Logistics Support, System-Sustainment, Analyzer Refurbishment, FISMA/DIARMF	1	2017	1	2018
NGDS - threshold IVD assay development Anthrax, Ebola, Marburg (Plague, Tularemia, Q-Fever)	1	2017	4	2017
NGDS - MS C Increment 1	1	2017	1	2017
NGDS - USAF IOC Increment 1	2	2017	4	2017
NGDS - USAF FOC Increment 1	1	2018	1	2018
NGDS - Objective IVD assay Development (Burkholderia, Alpha Virus, Orthopox)	1	2018	2	2019
NGDS - FRP Increment 1	2	2018	2	2018
NGDS - USA/USN IOC Increment 1	2	2018	3	2018
NGDS - USA/USN FOC Increment 1	4	2018	4	2019

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program			Date: February 2018
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 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
TE7: *TEST & EVALUATION (OP SYS DEV)*	-	2.551	6.605	6.318	-	6.318	5.416	5.733	5.733	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) 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), which is the only U.S. laboratory equipped to test for aerosolized bio-safety level-3 (BSL-3) agents, (2) Major Test Chambers (Materiel Test Facility (MTF) which house the secondary containment modules (SCMs) for NTA testing, as well as other detector test chambers and Building 4165) at WDTC (which houses the small item decontamination test fixture, the dynamic test chamber and the Individual Protection Ensemble Mannequin System (IPEMS) chamber as well as several smaller labs (3) the CB Test Grid at WDTC which includes all dissemination, field referee equipment, and support equipment (generators, CP) and will include all upgraded test grid equipment transitioned from PD CCATTI and (4) the Combined Chemical Test Facility (CCTF) which includes the majority of chemical analytical equipment including Nuclear Magnetic Resonance (NMR) spectrometer, Gas Chromatograph (GC), GC-Mass Spectrometer (GC-MS), MS triple quads, Miniature Chemical Agent Monitoring System (MINICAMS), GASMETs, Liquid Chromatography MS (LCMS) and the majority of the laboratory hood space at WDTC.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: 1) BTB UPGRADE	-	0.925	0.885
FY 2018 Plans: Continues to provide instrumentation and equipment to BTB-ECBC, 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. Provides for enhanced laboratory referee capability and management.			
FY 2019 Plans: Continues to provide instrumentation and equipment to BTB-ECBC, in support of the CB Defense mission. Continues to provide for BSL-3 biological laboratory equipment for the Lother Solomon Test Facility (LSTF) Annex. Provides for enhancement of the biological decontamination capability. Provides for enhanced laboratory referee capability and management.			
FY 2018 to FY 2019 Increase/Decrease Statement: Minor change due to routine program adjustments.			
Title: 2) ECBC-BTB - MRTFB	1.483	-	-
Title: 3) WDTC - MRTFB	0.030	1.220	1.087
Description: Major Test Chambers (MTF and Building 4165)			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
FY 2018 Plans: Modernization in the chambers will include: (a) Continued enhancements of an aerosol generation and sampling capability; (b) Additional upgrades to agent surety monitor and analytical instrumentation; (c) Continued enhancement of TIC detection; and (d) expanded NTA test and detection capability. ***FY 2019 Plans:*** Continue modernization of the chambers to include: (a) Enhancements of an aerosol generation and sampling capability; (b) Additional upgrades to agent surety monitor and analytical instrumentation; (c) Enhancement of TIC detection; and (d) expanded NTA test and detection capability. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 4) WDTC - MRTFB ***Description:*** CB Test Grid ***FY 2018 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. ***FY 2019 Plans:*** Continue modernization efforts to 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. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.446	1.384	1.358
Title: 5) WDTC - MRTFB ***Description:*** Combined Chemical Test Facility (CCTF) ***FY 2018 Plans:***	0.592	3.076	2.988

Exhibit R-2A, RDT&E Project Justification: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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 2017	FY 2018	FY 2019
Will provide for continued revitalization and upgrade of existing instrumentation and equipment at the CCTF at WDTC in support of their chemical test mission. Upgrade of chemical laboratory fume hoods will continue in FY18. Modernization will result in improved test fixtures which will reduce risk to personnel and provide improved test capabilities. Will continue efforts to enhance NTA test capability in these fixtures. ***FY 2019 Plans:*** Provide for continued revitalization and upgrade of existing instrumentation and equipment at the CCTF at WDTC in support of their chemical test mission. Upgrade of chemical laboratory fume hoods will continue in FY19. Modernization will result in improved test fixtures which will reduce risk to personnel and provide improved test capabilities. Continue efforts to enhance NTA test capability in these fixtures. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	2.551	6.605	6.318

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

BIO TEST BRANCH T&E UPGRADE (BTB UPGRADE)

Test and evaluation Range Instrumentation/Technology Upgrades is a continuing project. It provides for technical upgrades to Bio Test Branch (ECBC) capabilities for Biological testing of DoD CB materiel, weapons, and weapons systems from concept through production. Technical and Facility upgrades will utilize full and open competition as appropriate through ECBC contract resources.

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. Upgrades will utilize MIPRS and contracts.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2017 Cost	FY 2017 Award Date	FY 2018 Cost	FY 2018 Award Date	FY 2019 Base Cost	FY 2019 Base Award Date	FY 2019 OCO Cost	FY 2019 OCO Award Date	FY 2019 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BTB UPGRADE - OTHT S - T&E Upgrade	C/FFP	TBD : TBD	0.000	0.000		0.925	Mar 2018	0.885	Apr 2019	-		0.885	Continuing	Continuing	0.000
T&E UPGRAD - OTHT S - Technology Upgrades - WDTC, UT	MIPR	Various : Various	19.545	2.551	Mar 2017	5.680	Mar 2018	5.433	Mar 2019	-		5.433	Continuing	Continuing	0.000
		Subtotal	19.545	2.551		6.605		6.318		-		6.318	Continuing	Continuing	N/A

	Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.545	2.551		6.605		6.318		-		6.318	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2019 Chemical and Biological Defense Program		Date: February 2018
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)*

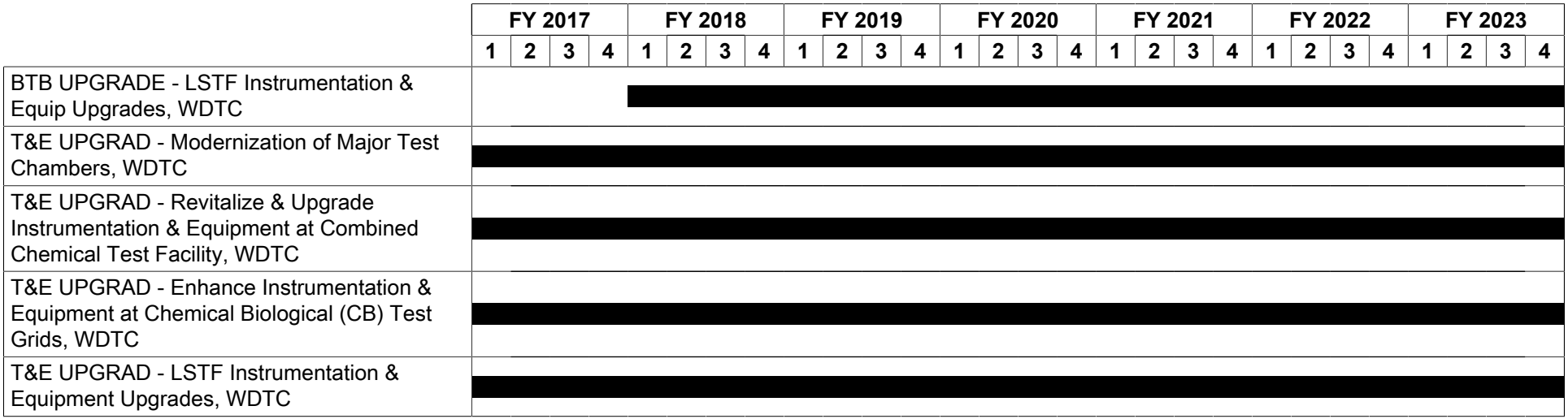

Exhibit R-4A, RDT&E Schedule Details: PB 2019 Chemical and Biological Defense Program		Date: February 2018
Appropriation/Budget Activity 0400 / 7	**R-1 Program Element (Number/Name)** PE 0607384BP / *CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)*	**Project (Number/Name)** TE7 / *TEST & EVALUATION (OP SYS DEV)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BTB UPGRADE - LSTF Instrumentation & Equip Upgrades, WDTC	1	2018	4	2023
T&E UPGRAD - Modernization of Major Test Chambers, WDTC	1	2017	4	2023
T&E UPGRAD - Revitalize & Upgrade Instrumentation & Equipment at Combined Chemical Test Facility, WDTC	1	2017	4	2023
T&E UPGRAD - Enhance Instrumentation & Equipment at Chemical Biological (CB) Test Grids, WDTC	1	2017	4	2023
T&E UPGRAD - LSTF Instrumentation & Equipment Upgrades, WDTC	1	2017	4	2023

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