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**Department of Defense
Fiscal Year (FY) 2023 Budget Estimates**

April 2022



Chemical and Biological Defense Program

Defense-Wide Justification Book Volume 4 of 5

Research, Development, Test & Evaluation, Defense-Wide

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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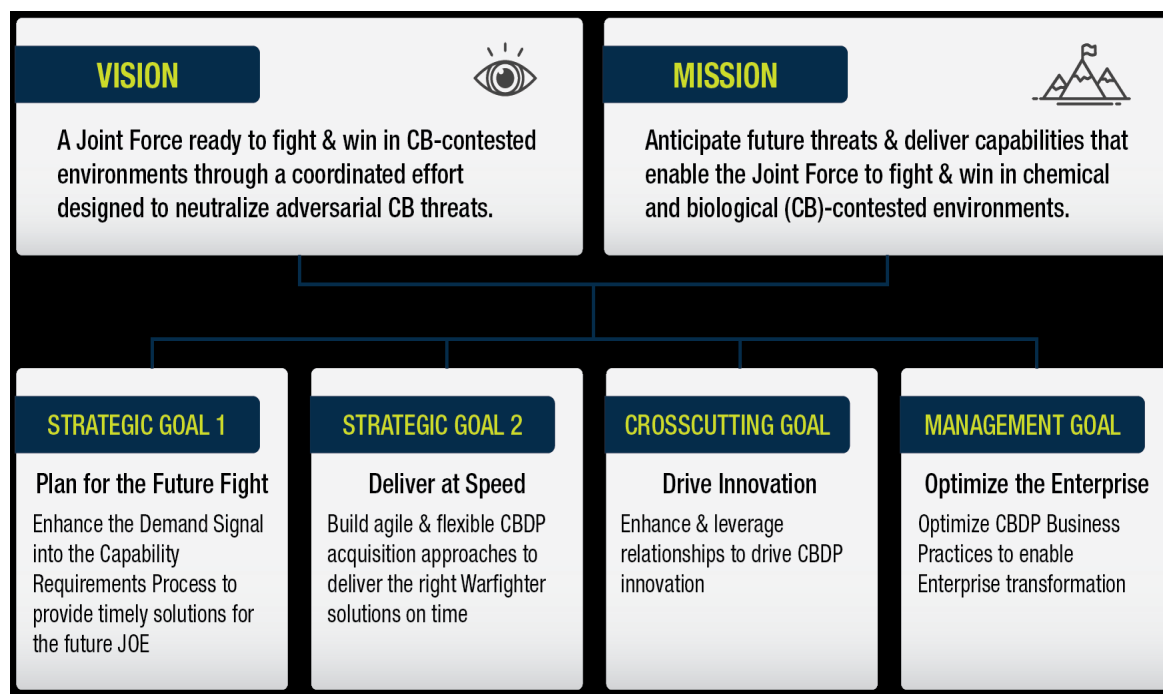
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Chemical and Biological Defense Program

Fiscal Year 2023 Budget Overview

The Chemical and Biological Defense Program (CBDP) is vital to our Nation's ability to counter current and future threats posed by chemical and biological (CB) weapons. CB threats remain significant and are expanding at an accelerated pace due to the convergence of multiple sciences and rapid technological developments. In recognition of this strategic context, the 2020 CBDP Enterprise Strategy established four strategic goals to improve Warfighter readiness and lethality and to align with other Departmental reforms. These are: ***plan for the future fight, deliver at speed, drive innovation, and optimize the enterprise***. The strategy synchronizes CBDP processes and actions to ensure the Enterprise keeps pace with departmental reforms and stays ahead of threats, while delivering timely and effective CB defense capabilities to the Joint Force. The Office of the Deputy Assistant Secretary of Defense for Chemical and Biological Defense (ODASD(CBD)) continues to integrate and coordinate across the Department, strengthen domestic and international partnerships, anticipate emerging CB threats, close today's gaps, and rapidly mitigate vulnerabilities.





Strategic Overview

The *current National Defense Strategy (NDS)*, *2021 Interim National Security Strategic Guidance (INSSG)*, and *2018 National Biodefense Strategy (NBS)* acknowledge an increasingly complex global security environment, characterized by the re-emergence of long-term, strategic competition between nations, and the growing potential for strategic surprise stemming from advances and convergences in science and technology. The INSSG acknowledges that nuclear weapons and other weapons of mass destruction (WMD) all pose profound and, in some cases, existential dangers. The INSSG also places a renewed emphasis on the risks that biological threats, whether natural, accidental, or manmade, pose to our national security. The growing complexity of the threat space in biotechnology, engineering, and computational science create challenges for the Joint Force and may threaten our enduring advantages. The increased willingness of threat actors to use CB weapons to coerce, compel, or gain a tactical advantage is alarming and demonstrates the erosion of longstanding international norms against using these weapons. The proliferation of knowledge and technology, difficulty in detecting illicit activities, rise of advanced and emerging threats and improved delivery capabilities challenge our ability to anticipate how adversaries could employ WMD and heighten the risk of attacks against the U.S. or its allies.

Indeed, science and technology advances increase the threat of an adversary biological weapons attack intended to appear as a naturally occurring disease outbreak. As the Secretary of Defense directed in his November memorandum *Biodefense Vision*, it is imperative that the DoD prepares for and is able to respond across the full spectrum of biological threats, whether naturally occurring, accidental, or deliberate. The Department's ongoing Biodefense Posture Review (BPR), also directed by the Secretary in his *Biodefense Vision* memo, will assess the biological threat landscape and establish the Department's approach to biodefense, to include clarifying biodefense priorities, roles, responsibilities, authorities, capabilities, and posture.

At the same time, as the INSSG notes, the acceleration of science and technology “poses both peril and promise.” These changes create opportunities for the CB defense enterprise to leverage innovation and integrate the collective knowledge to rapidly field adaptive solutions to mitigate threats. Additionally, the technology to develop countermeasures for both naturally occurring and intentional CB incidents continues to merge, providing opportunities to gain efficiencies and reduce potential duplication of effort.

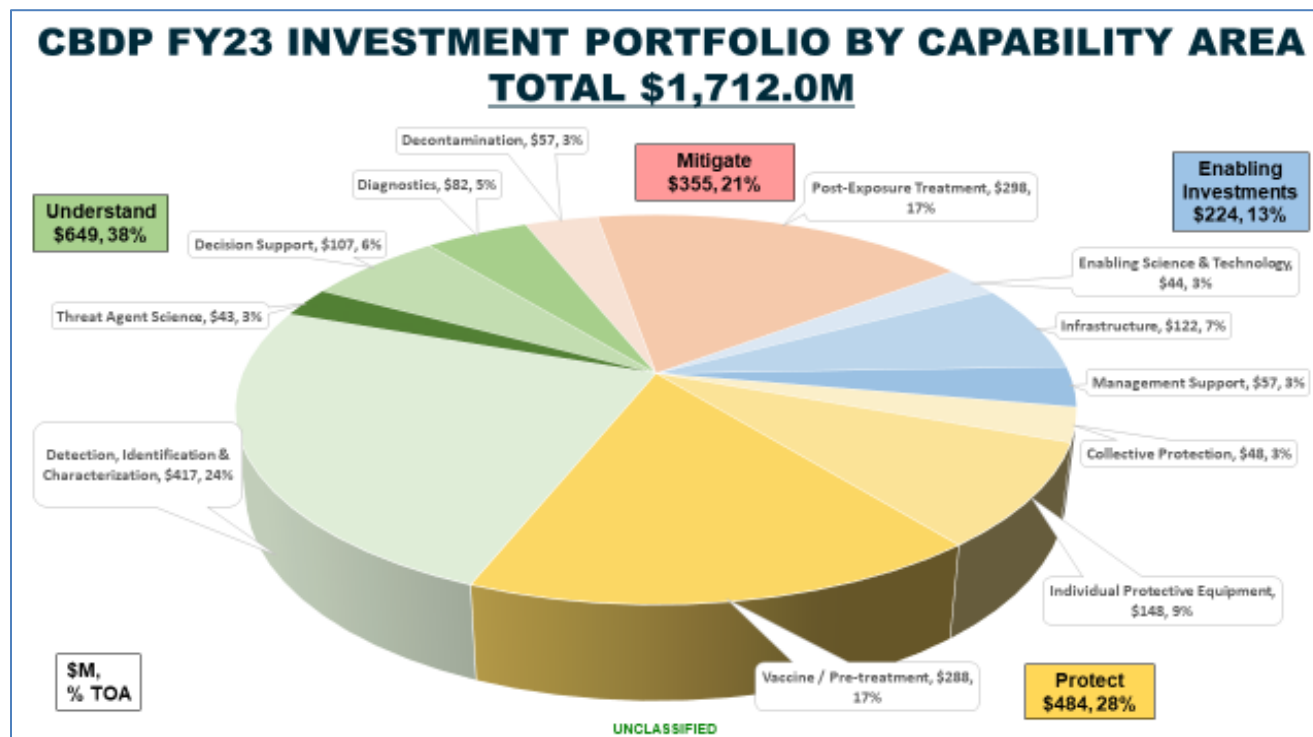
Considering the international security environment and national security objectives, the CBDP's vision is a Joint Force ready to fight and win in CB-contested environments through a coordinated effort designed to neutralize adversarial CB threats. The CBDP will achieve this vision through anticipation of future threats and delivery of capabilities that enable the Joint Force. These capabilities are part of an integrated and



layered defense approach that addresses emerging threat conditions and leverages countering weapons of mass destruction (CWMD) missions that support operations ranging from major combat operations to domestic incident responses.

FY 2023 Portfolio Overview

The FY 2023 budget request of \$1.7 billion supports the INSSG, NDS, NBS, Secretary's *Biodefense Vision*, the DoD Strategy for CWMD, and the 2020 CBDP Enterprise Strategy, and will enable the continued development of capabilities to increase the resiliency of our warfighters. Enhanced levels of resourcing in the CBDP portfolio support the Federal preparedness and response efforts to ensure the Nation and the DOD are able to address emerging biological threats. The CBDP investments are aligned to the following portfolios:



- Understand Portfolio (\$649.1M) - Reduces the risk from emerging threats resulting from advances in technology and the increased proliferation of WMD to prevent surprise to the Department and the nation. Efforts focus on accelerating characterization and early assessment of possible CB hazards by leveraging advances in technology and artificial intelligence. Capabilities development seeks to improve tactical and operational commanders' decisions through improved detection, diagnosis and identification capabilities to support assigned missions. Developmental efforts focus on increasing detection accuracy, range and effectiveness, ensuring that data integrates seamlessly with other non-CB sensor systems and relevant information systems, and integration of sensors onto Service-fielded unmanned platforms.



- Protect Portfolio (\$483.9M)– Enhances mission performance and provides effective protection against current and emerging threats by rapidly developing and fielding modernized protection capabilities. Developmental efforts focus on advances in materials and systems engineering to enhance protective properties against a broader array of hazards, while reducing CWMD operational challenges and logistical burdens. Approaches focus on modular and customizable collective protection solutions that are effective against a broad range of challenges in varied environments. Investments seek to improve delivery of medical countermeasures (MCM) to the Warfighter through a platform-based development approach to enable cost effective and agile delivery of prophylactic capabilities for known and emerging threats. Developmental efforts focus on advanced medical countermeasures that provide safe and effective medical defenses against biological agents (bacteria, toxins, and viruses), emerging infectious diseases, and chemical agents.
- Mitigate Portfolio (\$354.9M) – Preserves combat power by developing and fielding systems that mitigate exposure to CB hazards and restore combat readiness of critical personnel and platforms. Developmental efforts address personnel decontamination and materiel decontamination including sensitive equipment and aircraft. Novel decontamination approaches focus on broad decontaminant applicability to CB hazards, while minimizing harm to individuals, equipment, and platforms. Medical countermeasure efforts focus on discovery and development of therapeutic products treating biological agents (bacteria, toxins, and viruses), emerging infectious diseases, and chemical agents.
- Enabling Investments (\$224.0M) – Provides fundamental knowledge, support to RDT&E infrastructure, technology demonstrations, and overarching Research, Development, Testing, and Evaluation (RDT&E) support functions as portfolio enablers key to responding to emerging threats. Dedicated funding in this portfolio supports National and Departmental incident response and preparedness to CB threats.



Improving Biodefense and Countering Emerging Threats

The CBDP is already leaning forward to address the current and future threat landscape while building an agile and adaptable program to ensure execution of Department priorities. Understanding and anticipating emerging threats is central to the CBDP's contribution to implement the NDS, the NBS, the Secretary's *Biodefense Vision*, and to address the threats posed by our adversaries.

Maintaining the focus on countering emerging CB threats, the FY2023 budget request doubles down on expanding and improving biodefense approaches. At this pivotal time for biodefense, the Department can no longer rely on a static list of historical bio-weapons agents; instead, the Department must aggressively assess, predict, prepare for, respond to, and recover from the full spectrum of emerging and future biological threats whether naturally occurring, accidental, or deliberate. Additional investment in the FY2023 budget request will allow the Department to make vital investments in novel and advanced biodefense capabilities.



Additional CBDP investments in biodefense modernization efforts are aligned to clear operational capability end states. These strategic investments will focus on technologies that enable a more agile and responsive Joint Force, while addressing the dynamic and evolving biological threat landscape. Further, these investments will enable the Department to change its approach to biological defense by modernizing the current operating paradigms to include novel sciences and technologies that drive the United States' incredible private industry. These additional resources will allow the Department to prioritize and support Joint All-Domain Operations and integrate the Department's biodefense capabilities with interagency investments. Ultimately, this approach will posture the Department to quickly detect and identify



emerging biological threats, reduce risks, and prepare for, respond to, and recover from any type of biological threat-based event. The enhanced investment levels are focused on advancing five key overarching goals aligned to the National Biodefense Strategy and 2021 American Pandemic Preparedness Plan:

(1) Enhancing Rapid Response Vaccine Platforms Research and Manufacturing

- *Establish key partnerships and exploit successful vaccine platforms, prototypes, and manufacturing capabilities*
- *Enhance the discovery or development of rapid response vaccine platforms research and manufacturing*

(2) Expediting Surveillance and Pathogen Characterization (including diagnostics and detection)

- *Enhance the flow of surveillance data and samples through a network of laboratories*
- *Expands deployable analytical capabilities, wearable technologies and leverages data analysis and modeling with machine learning/artificial intelligence*

(3) Expanding Protection & Hazard Mitigation Capabilities

- *Accelerates prototyping and delivery of low-burden biothreat respiratory protection, collective protection, isolation systems, and improved disinfection*

(4) Evolving Therapeutics Research and Development

- *Focused on delivering or making available Food and Drug Administration (FDA) approved MCM products or tests to the Warfighter that can either be immediately deployed in far-forward settings or included with the Warfighter prior to deployment*

(5) Enhancing Biodefense Workforce and Biosafety

- *Adds critical technical expertise enhancing the CBDP biodefense and biosecurity activities and supply chain resiliency*



FY 2023 Budget Request Highlights

The CBDP budget is comprised of an integrated portfolio of efforts flowing from research and development to acquisition of capabilities for the Joint Force. In FY 2023, the CBDP RDT&E budget request restructures the project structure to align portfolio efforts from S&T, advanced development through to acquisition. The following table highlights the summary of changes from the FY 2022 structure to the FY 2023 structure.

RDT&E

The FY 2023 RDT&E budget request of \$1,325.4 million supports key efforts including:

- \$304.6 million supporting enhanced biodefense and pandemic preparedness efforts. Efforts are focused on accelerating characterization and situational awareness of emerging biothreats and accelerating delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.
- \$273.4 million to continue support of research and development of MCMs, such as vaccines and therapeutics, addressing high-priority biological hazards.

CBDP RDT&E FY22 Project Structure				CBDP RDT&E FY23 Project Restructure			
Budget Activity	Program Element	Project	Project Name		Budget Activity	Program Element	Project Name
BA1	0601384BP	LF1	Life Sciences (Basic Research)	BA1	BA1	0601384BP	LF1 Life Sciences (Basic Research)
BA1	0601384BP	PS1	Physical Sciences (Basic Research)		BA1	0601384BP	PS1 Physical Sciences (Basic Research)
				BA2	BA2	0602384BP	UN2 Understand (Applied Research)
BA2	0602384BP	CB2	Chemical Biological Defense (Applied Research)		BA2	0602384BP	PT2 Protect (Applied Research)
BA2	0602384BP	TM2	Techbase Medical Defense (Applied Research)		BA2	0602384BP	MT2 Mitigate (Applied Research)
				BA3	BA3	0603384BP	UN3 Understand (ATD)
BA3	0603384BP	CB3	Chemical Biological Defense (ATD)		BA3	0603384BP	PT3 Protect (ATD)
BA3	0603384BP	ET3	Emerging Threats (ATD)		BA3	0603384BP	MT3 Mitigate (ATD)
BA3	0603384BP	NT3	Non-Traditional Agents Defense (ATD)		BA3	0603384BP	EN3 Enabling Investments
BA3	0603384BP	TM3	Techbase Medical Defense (ATD)		BA3	0603384BP	EN3 Enabling Investments
				BA4	BA4	0603884BP	UN4 Understand (ACD&P)
BA4	0603884BP	CA4	Contamination Avoidance (ACD&P)		BA4	0603884BP	PT4 Protect (ACD&P)
BA4	0603884BP	DE4	Decontamination (ACD&P)		BA4	0603884BP	MT4 Mitigate (ACD&P)
BA4	0603884BP	IP4	Individual Protection (ACD&P)		BA4	0603884BP	EN4 Enabling Investments
BA4	0603884BP	MB4	Medical Biological Defense (ACD&P)		BA4	0603884BP	EN4 Enabling Investments
				BA5	BA5	0604384BP	UN5 Understand (SDD)
BA4	0603884BP	TM4	Techbase Medical Defense (ACD&P)		BA5	0604384BP	PT5 Protect (SDD)
BA4	0603884BP	TT4	Technology Transition (ACD&P)		BA5	0604384BP	MT5 Mitigate (SDD)
BA5	0604384BP	CA5	Contamination Avoidance (SDD)		BA5	0604384BP	EN5 Enabling Investments
BA5	0604384BP	CO5	Collective Protection (SDD)		BA5	0604384BP	EN5 Enabling Investments
				BA6	BA6	0605384BP	DW6 Major Range And Test Facility Base (Mgmt Support)
BA5	0604384BP	DE5	Decontamination (SDD)		BA6	0605384BP	LS6 Laboratory Support (Mgmt Support)
BA5	0604384BP	IP5	Individual Protection (SDD)		BA6	0605384BP	MS6 Management Support (Mgmt Support)
BA5	0604384BP	MB5	Medical Biological Defense (SDD)		BA6	0605384BP	MS6 Management Support (Mgmt Support)
BA5	0604384BP	MC5	Medical Chemical Defense (SDD)		BA6	0605384BP	MS6 Management Support (Mgmt Support)
				BA7	BA7	0607384BP	UN7 Understand (SDD)
BA6	0605384BP	DT6	Joint Doctrine And Training Support (Mgmt Support)		BA7	0607384BP	PT7 Protect (SDD)
BA6	0605384BP	DW6	Major Range And Test Facility Base (Mgmt Support)		BA7	0607384BP	MT7 Mitigate (SDD)
BA6	0605384BP	LS6	Laboratory Support (Mgmt Support)		BA7	0607384BP	MT7 Mitigate (SDD)
BA6	0605384BP	MS6	Management Support (Mgmt Support)		BA7	0607384BP	MT7 Mitigate (SDD)
BA6	0605384BP	O49	Joint Concept Development (Mgmt Support)		BA7	0607384BP	MT7 Mitigate (SDD)
BA7	0607384BP	CA7	Contamination Avoidance (Op Sys Dev)		BA7	0607384BP	MT7 Mitigate (SDD)
BA7	0607384BP	CM7	Homeland Defense (Op Sys Dev)				
BA7	0607384BP	C07	Collective Protection (Op Sys Dev)				
BA7	0607384BP	DE7	Decontamination (Op Sys Dev)				
BA7	0607384BP	IP7	Individual Protection (Op Sys Dev)				
BA7	0607384BP	IS7	Information Systems (Op Sys Dev)				
BA7	0607384BP	MB7	Medical Biological Defense (Op Sys Dev)				
BA7	0607384BP	MC7	Medical Chemical Defense (Op Sys Dev)				



- \$214.5 million supporting RDT&E efforts advancing environmental detection and medical diagnostic capabilities providing enhanced situational awareness of traditional and non-traditional chemical hazards, as well as traditional and emerging biological hazards.
- \$88.9 million supporting integrated early warning, warning & reporting, decision support, and modeling and simulation capabilities.
- \$86.4 million supporting RDT&E for personnel protection, respiratory and ocular protection, collective protection, and hazard mitigation capabilities against traditional and non-traditional CB agents.
- \$74.2 million supporting basic research and threat agent sciences, advancing fundamental knowledge and experimental research in the life and physical sciences.
- \$69.5 million to support critical CB defense research, development, and test infrastructure and operations.
- \$63.8 million supporting improved domestic incident preparedness and response to include dedicated efforts improving capabilities to address potential future pandemic and biological incidents. Includes focused investments in MCM platform and manufacturing technologies to streamline and accelerate product delivery and reduce developmental risk. Additionally, these resources provide funding supporting the DoD Medical Countermeasures Advanced Development and Manufacturing capability.
- \$27.7 million supporting concepts development, technology demonstrations, enhanced capability demonstrations, and Special Operations Forces Rapid Capability Development and Deployment to enhance military operational capabilities with technologies and equipment. Resources a dedicated innovation fund to rapidly address emerging threats.

Procurement

The FY 2023 Procurement budget request of \$386.6 million supports key efforts including:

- \$75 million to procure improved air crew and ground forces protective ensembles to increase protection against advanced chemical and biological threats and decrease physiological burden.



- \$67 million to procure the Common Analytical Laboratory System capability to integrate a common suite of commercial- and government-off-the-shelf components to provide a common, modular, and transportable/mobile analytical laboratory system to support DoD field analytic units. Systems provide rapid response capabilities to the Joint Force to analyze current and emerging chemical and biological threats.
- \$47 million to procure CBRN Dismounted Reconnaissance Sets, Kits, and Outfits which allows warfighters to perform CBRN dismounted reconnaissance, surveillance, and site assessment of WMD suspect areas not accessible by traditional CBRN reconnaissance-mounted platforms.
- \$33 million to procure Enhanced Maritime Biological Detectors and Joint Biological Tactical Detection Systems providing improved detection and identification capabilities with decreased operational costs and increased reliability for detection of biological agents.
- \$31 million to procure modernized Joint Expeditionary Collective Protection capabilities providing the Joint Force the ability to operate unencumbered from individual protective equipment for extended periods in austere and contaminated environments
- \$25 million to procure the Multi-phase Chemical Agent Detector and a Solid Liquid Adaptor for the Joint Chemical Agent Detector. Capabilities will provide portable chemical detection capabilities supporting solid, liquid, and vapor sampling and detection.
- \$25 million to procure modernized respiratory and ocular protection for ground and air forces supporting increased protection against advanced chemical and biological threats and a decrease in the physiological burden.
- \$18 million to procure the Advanced Anticonvulsant System providing a midazolam autoinjector for treatment against nerve induced seizures supporting operational readiness.
- \$14 million to procure Joint Biological Aircraft Decontamination Systems providing large U.S. Air Force airframes the capability to decontaminate the interior and exterior of critical aircraft from biological threats.



Summary

The last several years have demonstrated the increased probability and expansion of CB threats and technologies as the greatest challenges facing the United States of America, so the Department must prioritize improving our ability to counter these new and emerging threats. Currently, the erosion of international norms regarding the use of CB weapons, acceleration and advances in science and technology, and the re-emergence of strategic competition all worsen the current CB threat environment. Amid this new technological revolution, the United States must continue modernizing our defensive capabilities and reinvest in the Department's scientific and technological edge.



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Department of Defense
 FY 2023 President's Budget
 Exhibit R-1 FY 2023 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

05 Apr 2022

Appropriation	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****
Research, Development, Test & Eval, DW	1,043,228	1,052,545				
Total Research, Development, Test & Evaluation	1,043,228	1,052,545				

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

*Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

**Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

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05 Apr 2022

Appropriation -----	FY 2022 Total Supplemental Enactment -----	FY 2022 Total Enactment -----	FY 2023 Request -----
Research, Development, Test & Eval, DW		1,052,545	1,325,355
Total Research, Development, Test & Evaluation		1,052,545	1,325,355

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Summary Recap of Budget Activities						

Basic Research	46,644	37,208				
Applied Research	189,042	209,956				
Advanced Technology Development	184,348	197,824				
Advanced Component Development & Prototypes	78,825	133,945				
System Development & Demonstration	353,472	299,848				
Management Support	152,422	115,503				
Operational Systems Development	38,475	58,261				
Total Research, Development, Test & Evaluation	1,043,228	1,052,545				
Summary Recap of FYDP Programs						

Research and Development	1,043,228	1,052,545				
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Basic Research		37,208	34,734
Applied Research		209,956	256,197
Advanced Technology Development		197,824	238,407
Advanced Component Development & Prototypes		133,945	291,364
System Development & Demonstration		299,848	312,148
Management Support		115,503	124,475
Operational Systems Development		58,261	68,030
Total Research, Development, Test & Evaluation		1,052,545	1,325,355
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05 Apr 2022

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

Line	Program Element No - Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****	S e c
8	0601384BP	Chemical and Biological Defense Program	01	46,644	37,208					U
		Basic Research		46,644	37,208					
19	0602384BP	Chemical and Biological Defense Program	02	189,042	209,956					U
		Applied Research		189,042	209,956					
49	0603384BP	Chemical and Biological Defense Program - Advanced Development	03	184,348	197,824					U
		Advanced Technology Development		184,348	197,824					
79	0603884BP	Chemical and Biological Defense Program - Dem/Val	04	78,825	133,945					U
		Advanced Component Development & Prototypes		78,825	133,945					
127	0604384BP	Chemical and Biological Defense Program - EMD	05	353,472	299,848					U
		System Development & Demonstration		353,472	299,848					
157	0605384BP	Chemical and Biological Defense Program	06	125,455	115,503					U
158	0605502BP	Small Business Innovative Research - Chemical Biological Def	06	26,967						U
		Management Support		152,422	115,503					

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

*Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

**Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

***Includes enacted funding pursuant to the Further Additional Extending Government Funding Act (Public Law 117-86).

****Includes enacted funding pursuant to the Ukraine Supplemental Appropriations Act (Public Law 117-103).

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

05 Apr 2022

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

Line	Program Element	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	S e c
--	-----	----	---	-----	-----	-----	-
8	0601384BP	Chemical and Biological Defense Program	01		37,208	34,734	U
	Basic Research			-----	-----	-----	
					37,208	34,734	
19	0602384BP	Chemical and Biological Defense Program	02		209,956	256,197	U
	Applied Research			-----	-----	-----	
					209,956	256,197	
49	0603384BP	Chemical and Biological Defense Program - Advanced Development	03		197,824	238,407	U
	Advanced Technology Development			-----	-----	-----	
					197,824	238,407	
79	0603884BP	Chemical and Biological Defense Program - Dem/Val	04		133,945	291,364	U
	Advanced Component Development & Prototypes			-----	-----	-----	
					133,945	291,364	
127	0604384BP	Chemical and Biological Defense Program - EMD	05		299,848	312,148	U
	System Development & Demonstration			-----	-----	-----	
					299,848	312,148	
157	0605384BP	Chemical and Biological Defense Program	06		115,503	124,475	U
158	0605502BP	Small Business Innovative Research - Chemical Biological Def	06				U
	Management Support			-----	-----	-----	
					115,503	124,475	

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

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Defense-Wide
 FY 2023 President's Budget
 Exhibit R-1 FY 2023 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

05 Apr 2022

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

Program Line Element No Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N S P.L. 117-103 e Enactment**** c
203 0607384BP	Chemical and Biological Defense (Operational Systems Development)	07	38,475	58,261				U
	Operational Systems Development		38,475	58,261				
Total Research, Development, Test & Eval, DW			1,043,228	1,052,545				

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

*Includes enacted funding pursuant to the Extending Government Funding and Delivering Emergency Assistance Act (Public Law 117-43).

**Includes enacted funding pursuant to the Further Extending Government Funding Act (Public Law 117-70).

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****Includes enacted funding pursuant to the Ukraine Supplemental Appropriations Act (Public Law 117-103).

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Defense-Wide
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

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

	Program			FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	S e c
Line No	Element Number	Item	Act				
--	-----	----	---	-----	-----	-----	-
203	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07		58,261	68,030	U
		Operational Systems Development		-----	-----	-----	
					58,261	68,030	
				-----	-----	-----	
Total Research, Development, Test & Eval, DW					1,052,545	1,325,355	

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Chemical and Biological Defense Program
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

05 Apr 2022

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

Line	Program Element No Number	Item	Act	FY 2021 (Base + OCO)	FY 2022 Less Supplementals Enactment	FY 2022 Division B Division C P.L.117-43 Enactment*	FY 2022 Division B P.L.117-70 Enactment**	FY 2022 Division A P.L. 117-86 Enactment***	FY 2022 Division N P.L. 117-103 Enactment****	S e c
8	0601384BP	Chemical and Biological Defense Program	01	46,644	37,208					U
	Basic Research			46,644	37,208					
19	0602384BP	Chemical and Biological Defense Program	02	189,042	209,956					U
	Applied Research			189,042	209,956					
49	0603384BP	Chemical and Biological Defense Program - Advanced Development	03	184,348	197,824					U
	Advanced Technology Development			184,348	197,824					
79	0603884BP	Chemical and Biological Defense Program - Dem/Val	04	78,825	133,945					U
	Advanced Component Development & Prototypes			78,825	133,945					
127	0604384BP	Chemical and Biological Defense Program - EMD	05	353,472	299,848					U
	System Development & Demonstration			353,472	299,848					
157	0605384BP	Chemical and Biological Defense Program	06	125,455	115,503					U
158	0605502BP	Small Business Innovative Research - Chemical Biological Def	06	26,967						U
	Management Support			152,422	115,503					
203	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07	38,475	58,261					U

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Chemical and Biological Defense Program
FY 2023 President's Budget
Exhibit R-1 FY 2023 President's Budget
Total Obligational Authority
(Dollars in Thousands)

05 Apr 2022

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

Line	Program Element No Number	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	S e c
--	-----	----	---	-----	-----	-----	-
8	0601384BP	Chemical and Biological Defense Program	01		37,208	34,734	U
		Basic Research			37,208	34,734	
19	0602384BP	Chemical and Biological Defense Program	02		209,956	256,197	U
		Applied Research			209,956	256,197	
49	0603384BP	Chemical and Biological Defense Program - Advanced Development	03		197,824	238,407	U
		Advanced Technology Development			197,824	238,407	
79	0603884BP	Chemical and Biological Defense Program - Dem/Val	04		133,945	291,364	U
		Advanced Component Development & Prototypes			133,945	291,364	
127	0604384BP	Chemical and Biological Defense Program - EMD	05		299,848	312,148	U
		System Development & Demonstration			299,848	312,148	
157	0605384BP	Chemical and Biological Defense Program	06		115,503	124,475	U
158	0605502BP	Small Business Innovative Research - Chemical Biological Def	06				U
		Management Support			115,503	124,475	
203	0607384BP	Chemical and Biological Defense (Operational Systems Development)	07		58,261	68,030	U

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

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Chemical and Biological Defense Program
 FY 2023 President's Budget
 Exhibit R-1 FY 2023 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

05 Apr 2022

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

Program				FY 2022	FY 2022	FY 2022	FY 2022	FY 2022
Line Element				Less	Division B	Division B	Division A	Division N S
No	Number	Item	Act	FY 2021	Supplementals	P.L.117-43	P.L.117-70	P.L. 117-86
--	-----	----	---	(Base + OCO)	Enactment	Enactment*	Enactment**	Enactment***
				-----	-----	-----	-----	-----
		Operational Systems Development		38,475	58,261			
				-----	-----	-----	-----	-----
		Total Chemical and Biological Defense Program		1,043,228	1,052,545			

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

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****Includes enacted funding pursuant to the Ukraine Supplemental Appropriations Act (Public Law 117-103).

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Chemical and Biological Defense Program
 FY 2023 President's Budget
 Exhibit R-1 FY 2023 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

05 Apr 2022

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

Line	Program Element No Number	Item	Act	FY 2022 Total Supplemental Enactment	FY 2022 Total Enactment	FY 2023 Request	S e c
--	-----	----	---	-----	-----	-----	-
	Operational Systems Development				58,261	68,030	
	Total Chemical and Biological Defense Program			-----	1,052,545	1,325,355	

R-123PBP: FY 2023 President's Budget (Total Base Published Version), as of April 5, 2022 at 08:12:08

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
8	01	0601384BP	CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH).....	Volume 4 - 1

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
19	02	0602384BP	CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH).....	Volume 4 - 11

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
49	03	0603384BP	CHEMICAL/BIOLOGICAL DEFENSE (ATD).....	Volume 4 - 67

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
79	04	0603884BP	CHEMICAL/BIOLOGICAL DEFENSE (ACD&P).....	Volume 4 - 135

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
127	05	0604384BP	CHEMICAL/BIOLOGICAL DEFENSE (EMD).....	Volume 4 - 249

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
157	06	0605384BP	CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT).....	Volume 4 - 431
158	06	0605502BP	SMALL BUSINESS INNOVATIVE RESEARCH (SBIR).....	Volume 4 - 453

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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

Line #	Budget Activity	Program Element Number	Program Element Title	Page
203	07	0607384BP	CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV).....	Volume 4 - 457

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Chemical and Biological Defense Program • Budget Estimates FY 2023 • RDT&E Program

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Program Element Title	Program Element Number	Line #	BA	Page
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CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	0602384BP	19	02.....	Volume 4 - 11
CHEMICAL/BIOLOGICAL DEFENSE (ATD)	0603384BP	49	03.....	Volume 4 - 67
CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)	0601384BP	8	01.....	Volume 4 - 1
CHEMICAL/BIOLOGICAL DEFENSE (EMD)	0604384BP	127	05.....	Volume 4 - 249
CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	0607384BP	203	07.....	Volume 4 - 457
CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	0605384BP	157	06.....	Volume 4 - 431
SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)	0605502BP	158	06.....	Volume 4 - 453

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research					PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	46.644	37.208	34.734	-	34.734	35.341	35.134	39.336	43.853	Continuing	Continuing
LF1: Life Sciences (Basic Research)	-	27.671	19.172	19.199	-	19.199	19.809	19.602	23.804	25.804	Continuing	Continuing
PS1: Physical Sciences (Basic Research)	-	18.973	18.036	15.535	-	15.535	15.532	15.532	15.532	18.049	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program element (PE) resources basic research efforts directed at promoting theoretical and experimental research in Life and Physical Sciences. These efforts are part of an integrated portfolio addressing emerging chemical and biological (CB) threats, and are a key enabler supporting the Mitigate, Protect, and Understand portfolios. Basic research focuses on pursuing fundamental science to advance a greater understanding of threats, improve situational awareness of emerging threats, and support transformative research in emerging research areas that can potentially foster paradigm shifts in the CB defense research arena to a rapid response capability.

Individual projects include:

- Life Sciences (LF1): fundamental efforts to understand living systems' response to biological or chemical agents, to support detection, diagnostics, protection, and medical treatment (e.g. microbiology, biochemistry, pathogenic mechanisms, cell and molecular biology, immunology, nanoscale science, and information science).

- Physical Sciences (PS1): fundamental scientific phenomena to support investigation of physical and chemical properties and interactions for enhanced functionalities important to detection, diagnostics, protection, and decontamination (e.g. chemistry, physics, materials science, nanotechnologies, nanoscale science, and environmental science).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 1: Basic Research</i>	R-1 Program Element (Number/Name) PE 0601384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)</i>
--	--

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	50.300	34.708	0.000	-	0.000
Current President's Budget	46.644	37.208	34.734	-	34.734
Total Adjustments	-3.656	2.500	34.734	-	34.734
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	2.500			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-1.656	-			
• SBIR/STTR Transfer	-2.000	-			
• Other Adjustments	0.000	-	34.734	-	34.734

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: PS1: *Physical Sciences (Basic Research)*

Congressional Add: *Water Jet Technology*

Congressional Add: *Chemically resistant, high-performance military cordage, rope, and webbing.*

Congressional Add Subtotals for Project: PS1

Congressional Add Totals for all Projects

FY 2021	FY 2022
5.000	-
-	2.500
5.000	2.500
5.000	2.500

Change Summary Explanation

Funding: FY 2021 (-\$1.656 Million): Below threshold reprogramming to Advanced Component Development & Prototypes and RDT&E Management Support efforts.

FY 2021 (-\$2.000 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.

FY 2021 (+\$5.000 Million): Congressional Add for Water Jet Technology is reflected in the Current President's Budget.

FY 2022 (+\$2.500 Million): Congressional Add for chemically resistant, high-performance military cordage, rope and webbing.

FY 2023 : Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

Schedule: N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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)	
Technical: N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) LF1 / Life Sciences (Basic Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
LF1: Life Sciences (Basic Research)	-	27.671	19.172	19.199	-	19.199	19.809	19.602	23.804	25.804	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 studying 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. This project is a key enabler supporting the Mitigate, Protect, and Understand portfolios.

Individual efforts in this Project include:

- Research to understand threats focused on illuminating pathogen/host interactions, innate and targeted immune responses, and drug/pathogen interactions that enable development of new medical countermeasures and diagnostic platforms.
- Research in advancing countermeasures to understand underpinnings necessary to advance translational animal models for human disease, to explore artificial intelligence/machine learning (AI/ML) and novel structural biology approaches for enhancing rapid medical defense capabilities, to seek platform technologies with broad flexibility for drug development, and to improve protective factors for increasing therapeutic efficacy.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Life Sciences	27.671	19.172	19.199
Description: Focuses on fundamental efforts to understand living systems' responses to biological agents, providing knowledge and capabilities that support medical countermeasure development for prophylaxis and therapeutic interventions.			
FY 2022 Plans:			
- Animal Models - Transition animal models to applied program for validation.			
- Enabling Technologies - Continue biotechnologies investments into organs-on-a-chip to address mechanisms of actions as well as drug model development as well as high throughput screen purification and screening.			
- Platform Technology - Continue to validate genomic targets for broad anti-alphavirus treatment and establish a screening database of preclinical countermeasures.			
- Artificial Intelligence (AI) for Early Drug Discovery - Continue to explore the application of machine learning, AI, and other computational tools to inform rational drug discovery, design, optimization, decision support, and medical modeling. Develop a machine learning algorithm to aid in identifying optimal candidates for advanced development of monoclonal antibody biologics.			
- Viral Pathogenesis - Continue pathogenesis in mouse models as well as antimicrobial peptide development.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 1	R-1 Program Element (Number/Name) PE 0601384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)</i>	Project (Number/Name) LF1 / <i>Life Sciences (Basic Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>- Biomarkers - Begin assessing gene expression in various tissues after alphavirus exposure. Begin integration of machine learning (ML), to predict cellular binding site targets.</p> <p>- Inflammation Mapping - Initiate comparison of genomic models of expression to inflammatory response data. Assess how RNA regulation changes after exposure to chemical agents. Begin integration of machine learning (ML) to screen small molecule library for potential therapeutics.</p> <p>Program ending in FY22:</p> <p>- STEM - Complete STEM strategic efforts to develop talent across the education continuum to enrich our current and future DoD workforce to meet defense technological challenges.</p> <p>FY 2023 Plans:</p> <p>- Organoid Technology (previously Enabling Technology) - Investigate cellular toxicity and metabolic profiles in organoids and evaluate relevance to animal model data. Determine inflammatory signaling in mouse models that are relevant to human cells.</p> <p>- Pathogenesis (previously Viral Pathogenesis) - Assess peptide protection against multiple subtype viral insult in mouse model. Assess influence of gene expression following viral infection.</p> <p>- Structural Biology (previously Platform Technology) - Investigate efficacy of inhibitor molecules in mouse models. Evaluate anti-alphavirus peptide for efficacy of reduced viral load in animal models. Design synthesis loop for production and testing of small molecules and validate machine-learning predictions.</p> <p>- Artificial Intelligence (AI) for Early Drug Discovery - Develop training datasets for drug combinations and strategy for molecular selection. Evaluate model response to changing conditions and extend forecasting to additional diseases. Use AI model to generate therapeutic Monoclonal antibodies against bacterial targets and screen for efficacy.</p> <p>- Biomarkers - Begin testing machine-learning model to predict cellular binding site targets. Demonstrate screening framework for binders to expanded data set of pathogens.</p> <p>- Inflammation Mapping - Validate gene protection against chemical toxicity and assess neuron regeneration. Continue to integrate machine learning for predicting nerve reactivation and begin selecting molecules for validation.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.</p>			
Accomplishments/Planned Programs Subtotals		27.671	19.172
		19.199	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 1				R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) LF1 / Life Sciences (Basic Research)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CB2: Chemical Biological Defense (Applied Research)	95.517	104.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.879
• MT2: Mitigate (Applied Research)	0.000	0.000	75.411	-	75.411	71.705	68.483	64.502	70.651	Continuing	Continuing
• PT2: Protect (Applied Research)	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing
• TM2: Techbase Medical Defense (Applied Research)	93.525	105.594	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.119
• UN2: Understand (Applied Research)	0.000	0.000	122.028	-	122.028	117.683	105.509	101.577	100.929	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 1					R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) PS1 / Physical Sciences (Basic Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PS1: Physical Sciences (Basic Research)	-	18.973	18.036	15.535	-	15.535	15.532	15.532	15.532	18.049	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 science, and nanotechnology that could potentially lead to transformational CB defensive capabilities enhancing Warfighter performance and safety. This project is a key enabler supporting the Mitigate, Protect, and Understand portfolios.

Individual efforts in this Project include:

- Innovative materials focuses on understanding the physics, physical properties, fabrication pathways, and characterization methods related to material classes that would enable novel, advanced capabilities for decontamination, protection and detection of chemical and biological (CB) threats.
- Novel sensing research to improve the understanding of elementary physics or fundamental materials properties to construct novel platforms and approaches for detection, diagnostics, hazard mitigation and protection.
- Modeling sciences research to explore the potential of AI/ML computational approaches for hazard mitigation, stand-off physio-monitoring, rational and rapid design of medical countermeasures, and novel materials with enhanced efficacy.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Physical Sciences	13.973	15.536	15.535
Description: Focuses on fundamental scientific phenomena including chemistry, physics, materials science, environmental science, and nanotechnology.			
FY 2022 Plans:			
- Multifunctional Materials - Continue to synthesize polymer compositions and modify structures based on mechanical analysis. Begin understanding requirements for scale-up of synthesis and integration into woven fibers.			
- Design Rules for Materials - Continue investigating the effects of topology and pore size of metal organic frameworks, and test against simulant molecules. Revise computational models to predict material reaction rates.			
- Biomimetic - Continue understanding design rules for catalytic hydrolysis of target molecules. Continue characterization of polymers through simulation and comparison to experimental data.			
- Novel Destruction - Continue developing a kinetic rates model for organic compounds and Chemical Warfare Agent (CWA) surrogates. Continue investigating new nano-catalyst synthesis method to reduce material costs and improve catalytic activity.			
- Photocatalysis - Begin to evaluate thermal chemistry of various materials for baseline metrics. Model performance metrics of material characteristics and kinetics with and without chemical simulants.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 1		R-1 Program Element (Number/Name) PE 0601384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)</i>		Project (Number/Name) PS1 / <i>Physical Sciences (Basic Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Programs ending in FY22: - Bio Characterization - Complete determination for drivers of genetic change and behavior of pathogens in a nonculturable state. Complete conditions that determine that resuscitate bacteria and assess virulence after resuscitation. - Photonics - Complete characterization of photonic component sensitivity and integration of multi-agent chemical sensing. Complete assessment of selectivity needs and testing against mixture vapors. - Chemical Reactivators - Complete mechanistic and structural studies of the aged reactivator complexes. FY 2023 Plans: - Multifunctional Materials - Design experiments to predict high-performing materials. Synthesize and characterize materials for stability in preparation for live agent testing. - Design Rules for Materials - Evaluate surface interactions of the metal organic framework against simulant molecules. Expand model to incorporate kinetics and thermodynamic interactions of chemical decomposition based on simulant work. - Biomimetic - Complete: design and validate macroscale biomimetic membrane. Demonstrate application of stabilized enzymes and optimization of kinetic and structural features. - Photocatalysis - Synthesize metal organic framework (MOF) and evaluate surface characteristics to determine strategy for tuning properties. Perform studies using simulants and model energetic effects. - Novel Destruction - Continue developing a kinetic rates model for organic compounds and CWA surrogates. Continue investigating new nano-catalyst synthesis method to reduce material costs and improve catalytic activity. FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.					
Accomplishments/Planned Programs Subtotals			13.973	15.536	15.535
			FY 2021	FY 2022	
Congressional Add: Water Jet Technology			5.000	-	
FY 2021 Accomplishments: - Developed and tested Water Jet Technology for the destruction of chemical agent munitions using a stream of high pressure water.					
Congressional Add: Chemically resistant, high-performance military cordage, rope, and webbing.			-	2.500	
FY 2022 Plans: Chemically resistant, high-performance military cordage, rope, and webbing.					
Congressional Adds Subtotals			5.000	2.500	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 1				R-1 Program Element (Number/Name) PE 0601384BP / CHEMICAL/BIOLOGICAL DEFENSE (BASIC RESEARCH)				Project (Number/Name) PS1 / Physical Sciences (Basic Research)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CB2: Chemical Biological Defense (Applied Research)	95.517	104.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.879
• MT2: Mitigate (Applied Research)	0.000	0.000	75.411	-	75.411	71.705	68.483	64.502	70.651	Continuing	Continuing
• PT2: Protect (Applied Research)	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing
• TM2: Techbase Medical Defense (Applied Research)	93.525	105.594	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.119
• UN2: Understand (Applied Research)	0.000	0.000	122.028	-	122.028	117.683	105.509	101.577	100.929	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	189.042	209.956	256.197	-	256.197	248.726	233.847	227.596	235.192	Continuing	Continuing
MT2: Mitigate (Applied Research)	-	0.000	0.000	75.411	-	75.411	71.705	68.483	64.502	70.651	Continuing	Continuing
PT2: Protect (Applied Research)	-	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing
UN2: Understand (Applied Research)	-	0.000	0.000	122.028	-	122.028	117.683	105.509	101.577	100.929	Continuing	Continuing
CB2: Chemical Biological Defense (Applied Research)	-	95.517	104.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.879
TM2: Techbase Medical Defense (Applied Research)	-	93.525	105.594	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.119

A. Mission Description and Budget Item Justification

This program element (PE) resources Applied Research across the Mitigate, Protect, and Understand portfolios. Chemical and Biological Defense Program (CBDP) investments provide an integrated, layered capability to enable combating weapons of mass destruction (CWMD) missions ranging from combat operations to Department of Defense (DoD) support to domestic incident prevention and response. The Projects in this PE support applied research in the areas of physical technologies, non-traditional agent (NTA) medical and physical defense technologies, and medical technologies. These investments are a key component to sustaining the core physical and intellectual chemical and biological (CB) defense infrastructure of the Department and support delivery of capabilities, assessments of emerging threats, and the ability to surge unique capabilities in response to a CB event. FY23 funding accelerates characterization and situational awareness of emerging biothreats and accelerates delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.

Individual projects include:

- Mitigate (MT2): Improvement of CB defense material, including contamination avoidance, and decontamination. Development of drug treatments, therapeutics, patient decontamination technologies and individual protection advancements.
- Protect (PT2): Development of antidotes, disease surveillance medical technologies, vaccines, and, nerve agent pretreatments. Improvement of protection technologies and biological weapon/agent surveillance.
- Understand (UN2): Development of next generation chemical and biological hazard detectors, point-of-need diagnostic devices, and next generation diagnostics systems.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program				Date: April 2022		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
0400: Research, Development, Test & Evaluation, Defense-Wide I BA 2: Applied Research		PE 0602384BP I CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				
- Chemical Biological Defense (CB2) and Techbase Medical Defense (TM2) are no longer active FY23 Projects due to budget restructure.						
CBDP Science and Technology (S&T) Applied Research Stakeholders: U.S. Army Combat Capabilities Development Command Chemical Biological Center (DEVCOM CBC), 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 FY 2022 funding request was reduced by \$-1.931 million to account for the availability of prior year execution balances.						
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) activities.						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		201.807	206.956	0.000	-	0.000
Current President's Budget		189.042	209.956	256.197	-	256.197
Total Adjustments		-12.765	3.000	256.197	-	256.197
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		0.000	3.000			
• Congressional Directed Transfers		0.000	-			
• Reprogrammings		-8.065	-			
• SBIR/STTR Transfer		-4.700	-			
• Other Adjustments		0.000	-	256.197	-	256.197
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: TM2: Techbase Medical Defense (Applied Research)						
Congressional Add: Biological Warfare Defense Therapeutics						
Congressional Add Subtotals for Project: TM2						
Congressional Add Totals for all Projects						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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)	
Change Summary Explanation Funding: FY 2021 (-\$8.065 Million): Below threshold reprogramming to increase advanced development programs for implementation of common CBRN integrated systems architecture within the CBRN Integrated Early Warning (CBRN IEW) program, Joint Biological Tactical Detection System (JBTDS) program test and evaluation, and Man Portable Diagnostic System (MPDS) product development. FY 2021 (-\$4.700 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts. FY 2022 (+\$3.000 Million): Congressional Add for tularemia medical countermeasure. FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for enhanced biodefense and pandemic preparedness investments (+\$35.500 Million), prophylaxis treatments for biological and emerging threats (+\$6.192 Million), collective protection efforts (+\$3.544 Million), and Departmental inflation rate adjustments (+\$1.456 Million). Schedule: N/A Technical: N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) MT2 / Mitigate (Applied Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT2: Mitigate (Applied Research)	-	0.000	0.000	75.411	-	75.411	71.705	68.483	64.502	70.651	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Mitigate Applied Research Project emphasizes the ability to conduct decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions that are free from the effects of Chemical, Biological, Radiological, and Nuclear (CBRN) hazards, and facilitate the return to pre-incident operational capability as soon as possible.

Thrust Areas included in this Project are:

- (1) Chemically Reactive Ocular Wound and Dermal Therapeutics (CROWD)
- (2) Enabling Science
- (3) Pharmaceutical Based Agents (PBA)
- (4) Reactivators of AChE as Therapeutics (ReACT)
- (5) Enhanced Survivability Coatings
- (6) Equipment Decontamination
- (7) Personnel Decontamination
- (8) Multifunctional Materials for Protection
- (9) Biological Warfare Defense Therapeutics

Chemically Reactive Ocular Wound and Dermal Therapeutics (CROWD): Develops a fielded medical countermeasure for the Warfighter that can treat a chemical agent that has breached the skin. The purpose of this effort is to collect the data that the Food and Drug Administration (FDA) will require for approval.

Enabling Science: Leverages technological advances and innovative approaches that will improve the time to develop and field chemical medical countermeasures (MCM) to the Warfighter. The thrust area aims to modernize the chemical MCM development process to allow for an earlier assessment of both the safety and efficacy of candidate therapeutics before regulatory submission and to cultivate technologies that enable development efforts across other medical portfolios to improve the ability to conduct MCM testing more cost-effectively with fewer animals.

Pharmaceutical Based Agents (PBA): Assesses candidate MCM and transitions them to partner United States Government entities for development into fieldable drug products. Activities focus on assessing current therapeutic drugs for protection against opioid agents and developing MCMs to treat non-opioid sedatives.

Reactivators of AChE as Therapeutics (ReACT): Develops broad-spectrum, centrally-acting acetylcholinesterase (AChE) reactivators, that increase survival, reduce morbidity, and decrease neurological damage. Two advanced lead candidates are in development.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) MT2 / Mitigate (Applied Research)		
<p>Enhanced Survivability Coatings: Addresses military equipment coating ease of decontamination and resistance to chemical agent penetration. Projects will develop temporary coatings that resist chemical agent absorption and are quickly decontaminated in the field and allow the rapid regeneration of combat power.</p> <p>Equipment Decontamination: Addresses the limited capability to decontaminate personal equipment, weapons, vehicles, ships, and facilities; sensitive equipment, and hazardous waste. Efforts within this thrust seek to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards, enable unit-level decontamination with rapid unmasking, reduce logistic needs, enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use, and to develop improved test methods.</p> <p>Personnel Decontamination: Develops decontaminants with lower lifecycle costs and storage constraints and determine of time, efficacy and logistics burdens to Warfighters for mass casualty decontamination.</p> <p>Multifunctional Materials for Protection: Discovers, develops, and integrates novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants that reactively decontaminate chemical warfare agents.</p> <p>Biological Warfare Defense Therapeutics: Discovers broad-spectrum bacterial, toxin and viral therapeutics, and label expansion (repurposing) of medical countermeasures that are FDA approved or in advanced stages of clinical development. These efforts are coordinated with Department of Health and Human Services (HHS), Biomedical Advanced Research and Development Authority (BARDA), and across the interagency and Department, to leverage public and force/defense health related investments made to minimize risk and speed approval of novel antibiotic countermeasures.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Title: 1) Chemical Reactive Ocular Wound and Dermal Therapeutics (CROWD)</p> <p>Description: Focuses on therapeutic strategies to effectively treat Chemical Warfare Agents (CWA) contamination on wounds, eyes, and large areas of intact skin. This effort involves the development of products capable of removing or neutralizing CWA from those routes of exposure, to decrease the toxic load of agent and allow optimal effectiveness of other systemic therapeutics.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none">- Continue advanced preclinical studies to validate safety and efficacy in support of clinical trials.- Continue assessment of candidate products for advanced development.- Refine pathway to regulatory approval and licensure. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$6.679 Million) remains in TM2.</p>		-	-	6.351
Title: 2) Enabling Science		-	-	13.134

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	Project (Number/Name) MT2 / <i>Mitigate (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>Description: Focuses on protection of the Warfighter against CWA to maintain force lethality, leverage innovative approaches and emerging technologies to support modernization of chemical medical countermeasure (cMCM) pipeline, and develop and deploy cMCMs more rapidly to the Warfighter. Efforts include: 1) development of Artificial Intelligence/Machine Learning (AI/ML) tools to more efficiently identify cMCMs and assess their safety and efficacy for regulatory submission; 2) AI/ultra-high throughput screening-based sampling of large chemical spaces with the aim of providing broad spectrum cMCMs with improved efficacy and selectivity, minimal toxicity, and decreased expense and fielding times to the warfighter; 3) development of technologies to deliver MCMs across the blood brain barrier (BBB) into the brain; 4) maturation of cMCMs with innovative mechanisms of actions; and 5) development of well characterized or FDA qualified animal models, as needed, to support cMCM discovery and development under the FDA animal rule.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue to employ AI/ML-based tools for drug design and predictive drug safety. - Continue to maintain screening and safety databases for drug candidates - Continue to perform select animal and safety studies for lead therapeutic candidates, including anticholinergics, for treatment of CWAs. - Continue to investigate technologies for delivering therapeutics (e.g. 2-pyridine aldoxime methyl chloride/2-PAM) to the brain. - Continue to support the therapeutic candidate pipeline. - Develop well characterized or FDA qualified animal models to support the development of MCMs requiring licensure under the FDA animal rule that provide protection for the Warfighter against CWAs. - Continue to test the safety and efficacy of candidate resurrectors of aged/inhibited enzyme in animal models. - Develop naturally derived MCM with innovative mechanism of action against broad spectrum of organophosphorus nerve agent (OPNA) threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$11.148 Million) remains in TM2. Increase due to change in technical parameters.</p>			
<p>Title: 3) Pharmaceutical Based Agents (PBAs)</p> <p>Description: Focuses on therapeutic strategies to effectively minimize injuries resulting from exposure to PBA. This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment of chemical warfare casualties.</p>		-	5.586

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) MT2 / Mitigate (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2023 Plans: - Continue to assess drug products for use against other priority PBA emerging threats (e.g., non-opioids).					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$7.390 Million) remains in TM2. Decrease due to change in technical parameters.					
Title: 4) Reactivators of AChE as Therapeutics (ReACT) Description: The Warfighter requires rapid acting MCM to counter adverse effects from exposure to Nerve Agents (NAs) and maintain force lethality. This effort involves the development of improved therapies for acetylcholinesterase enzyme reactivation. 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 2023 Plans: - Continue to down select generated chemical libraries to the most promising broad spectrum therapeutic candidates for follow on safety and efficacy assessments. - Continue drug formulation efforts for MCMs with a longer shelf-life and with feasibility of an auto-injector containing material and chemical composition. - Continue development screening for novel broad spectrum enzyme reactivators that are effective in the brain. - Transition critical in vivo data to advanced developer for lead reactivators. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.262 Million) remains in TM2. Decrease due to change in technical parameters.			-	-	4.279
Title: 5) Enhanced Survivability Coatings Description: Efforts seek to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military equipment to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return equipment to mission operations level. FY 2023 Plans: - Continue to characterize bio-inspired surface treatments for equipment coatings to repel agents of interest from current military equipment coatings.			-	-	1.071

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) MT2 / <i>Mitigate (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Evaluate and incorporate new or commercially-available appliques (to include chemical transport studies in current military coatings, novel coatings characterization, thin film overcoats, strippable coat, reactive coat, and lock-down coats) in support of CBRN Coatings, Coverings, and Protective Overlays Program of Record. - Advance thin repellent film coating systems from fundamental research to applied research test and evaluation. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CB2.</p>					
<p>Title: 6) Equipment Decontamination</p> <p>Description: The Warfighter has a limited capability to decontaminate personal equipment, weapons, vehicles, ships, and facilities; Sensitive equipment (weapon system optics, electronic equipment, interior spaces, and aircraft); and hazardous waste. Efforts seek to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enable unit-level decontamination with rapid unmasking; reduce logistic needs (need for water); enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use; and develop improved realistic test methods.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Transition methodology for testing for effective decontamination of complex surfaces and real-world systems to the Service Equipment Decontamination System or Tactical Contamination Mitigation System programs of record. - Finish development and demonstration of an autonomous decontamination platform to reduce troop-to-task burden of operational decontamination. - Develop bioagent disclosure spray and bio contamination mapping technologies into prototypes to demonstrate. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.150 Million) remains in CB2.</p>			-	-	5.774
<p>Title: 7) Multifunctional Materials for Protection</p> <p>Description: Efforts will discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants and coatings.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Develop and characterize novel reactive/catalytic materials that decontaminate biological and chemical threats and integrate materials into next generation decontaminants and coatings. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			-	-	1.823

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) MT2 / <i>Mitigate (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding remains in CB2.					
Title: 8) Personnel Decontamination Description: Efforts will develop decontaminants for decontamination of unbroken skin with lower lifecycle costs and storage constraints and determination of time, efficacy and logistics burdens to warfighters for mass casualty decontamination. Decrease Warfighter burden in the event of a CWA exposure by identifying science and technology gaps in the mass personnel decontamination process as well as possible substitutions for current approved personnel decontamination formulations. FY 2023 Plans: - Develop and use laboratory and animal models to assess physical removal technologies for potential replacement of reactive skin decontamination lotion (RSDL). - Continue to integrate new dry decontamination into a mitt form factor and determine science and technology challenges within process and procedure improvements. This includes investigation of FDA requirements for approval of technology as a medical device. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.180 Million) remains in CB2. Decrease due to change in program/project schedule. Decrease due to advancement of program/project research from BA2 to BA3.			-	-	0.692
Title: 9) Biological Warfare Defense Therapeutics Description: This effort funds biomedical research focused on the early discovery and evaluation of therapeutic countermeasures against known and emerging biological warfare (BW) threats for which FDA-approved therapeutics are limited or lacking. BW defense therapeutics mitigate and reverse the effects of known and emerging biological warfare threats in symptomatic warfighters diagnosed with BW disease. They are the last line of defense against BW threats and are critical to returning symptomatic Warfighters to service. Biomedical research is focused on discovery and development of broad-spectrum therapeutic candidates and therapeutic platforms that target viruses, bacteria or toxins directly, enhance the host response (e.g., by modulating the immune system) and/or relieve BW disease symptoms. Broad-spectrum therapeutic candidates that are shown to be both safe and efficacious against BW threats in small animal models will advance for additional pre-clinical evaluation, and can be accelerated for use against emerging infectious diseases during an outbreak. Therapeutic target identification discovery and evaluation of novel small molecules (chemically synthesized), novel biologic molecules (isolated from natural sources), drug and drug/vaccine combinations (aka layered defense), and repurposing of drugs approved by the FDA for other indications, are included in this research. Development of appropriate animal models and assays in which to evaluate therapeutic candidates is also included. Projects leverage interagency and commercial sector investments to accelerate development and reduce costs. FY 2023 Plans:			-	-	31.701

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) MT2 / <i>Mitigate (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Viral Therapeutics:</p> <ul style="list-style-type: none"> - Evaluate conserved targets, including host targets and processes of pathogenesis, for broad-spectrum treatment. - Continue drug discovery and development efforts to prepare for emerging threats by focusing on broad spectrum mechanism of action conserved targets and platform technologies. Upon establishment of proof of concept in small animal models, transition therapeutic candidates to advanced technology development. <p>Bacterial Therapeutics:</p> <ul style="list-style-type: none"> - Evaluate conserved therapeutic targets, with a focus on circumventing or overcoming antimicrobial resistance, for broad-spectrum treatment. - Continue to discover therapeutic candidates that employ novel strategies and mechanisms, such as new pathogen targets, drug delivery methods, or modulating the immune response, to overcome current and emerging mechanisms of antibiotic resistance in bacterial infections. Upon establishment of proof of concept in small animal models, transition to advanced technology development. - Establish proof of concept efficacy of biologics to treat intracellular bacterial biothreat infections to lay the groundwork for future expansion of investments in biologic therapeutic class. <p>Toxin Therapeutics:</p> <ul style="list-style-type: none"> - Continue evaluation of repurposed small molecule drug for efficacy in the treatment of multiple serotypes of botulinum neurotoxin (BoNT) in small animal models; evaluate repurposed drug in combination with botulinum antitoxin in small animal models. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in TM2.</p>					
<p>Title: 10) Discovery of Medical Countermeasures Against New and Emerging (DOMANE)</p> <p>Description: Develop and successfully transition emerging technology platforms to identify MCM, targets, as well as innovative platforms that will support transition to applied programs for clinical trials. These developmental and translational studies will provide a knowledge foundation and broad candidate pipeline that will underpin the availability (via FDA-regulated Expanded Access, Compassionate Use and Emergency Use authorities) of BW MCM to the Joint Force at the speed of relevance to allow freedom of action.</p> <p>FY 2023 Plans:</p>			-	-	5.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 2				R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)			Project (Number/Name) MT2 / Mitigate (Applied Research)				
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2021	FY 2022	FY 2023	
- Pursuing high-throughput 3D structural biology, combined with organs-on-a-chip and AI/ML technologies to transition to applied programs to address mechanisms of action, drug development platforms and medical countermeasure identification FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure.											
Accomplishments/Planned Programs Subtotals								-	-	75.411	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MT3: Mitigate (ATD)	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) PT2 / Protect (Applied Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PT2: Protect (Applied Research)	-	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Protect Applied Research Project provides the Joint Force the ability to prevent the effects from exposure to chemical and biological hazards. PT2 emphasizes increasing protection capability and reducing physiological effects, preventing or reducing individual and collective exposures, applying prophylaxis to prevent or mitigate negative physiological effects, and protecting critical equipment in Chemical, Biological, Radiological, and Nuclear (CBRN) environments.

Thrust Areas included in this Project are:

- (1) Biological Warfare Defense Prophylaxis
- (2) Nerve Agent Prophylaxis/Pretreatments
- (3) Dynamic Multifunctional Materials for Second Skin
- (4) All-Hazards & Respiratory Protection
- (5) Multifunctional Materials for Protection
- (6) Air Purification Enhancements
- (7) Enhanced Survivability Coatings

Biological Warfare Defense Prophylaxis: Provides the Warfighter protection against biothreat agents through the pre-exposure administration of prophylactics against known bacterial, viral and toxin agents of interest and emerging infectious threats. Medical countermeasure (MCM) strategies against broader classes of biological agents will be pursued with emphasis on broad-spectrum protection based on mechanism of action. The manufacturing processes for platform technologies will be adapted to maximize flexibility, increase stability, shelf life, and expand storage conditions. Efforts will also be adapted to maximize delivery flexibility through modifying delivery routes, which will allow for dose and reagent sparing. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

Nerve Agent Prophylaxis/Pretreatments: Obtain the first prophylactic MCMs designed to prevent severe morbidity and mortality upon exposure to nerve agents without the need for additional individual physical protective equipment.

Dynamic Multifunctional Materials for Second Skin: Unencumber the Warfighter by dynamically optimizing protective garment thermal burden and responsive technologies.

All-Hazards & Respiratory Protection: Improve chemical and biological agent protection while maintaining Warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit full spectrum respiratory protection.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) PT2 / Protect (Applied Research)		
Multifunctional Materials for Protection: Discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation coatings, filters, and protective garments that reactively decontaminate chemical warfare agents.					
Air Purification Enhancements: Optimize and extend filter life to save costs while maintaining or improving protection and improve integration of collective protection into developmental Service major combat platforms.					
Enhanced Survivability Coatings: Address materiel surface ease of decontamination and resistance to chemical agent penetration. Projects will develop temporary coatings that resist chemical agent absorption and are quickly decontaminated in the field and allow the rapid regeneration of combat power.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) Enhanced Survivability Coatings			-	-	1.178
Description: Efforts seek to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military materiel to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return materiel to mission operations level.					
FY 2023 Plans:					
- Continue to characterize bio-inspired surface treatments for materiel coatings to repel agents of interest from materiel surfaces.					
- Evaluate and incorporate new or commercially-available appliques (to include chemical transport studies in current military coatings, novel coatings characterization, thin film overcoats, strippable coat, reactive coat, and lock-down coats) in support of CBRN Coatings, Coverings, and Protective Overlays Program of Record.					
- Advance thin repellent film coating systems from fundamental research to applied research test and evaluation.					
FY 2022 to FY 2023 Increase/Decrease Statement:					
Funding transferred from another Project due to budget restructure. FY22 funding remains in CB2.					
Title: 2) Nerve Agent Prophylaxis/Pretreatments			-	-	4.158
Description: Develop pretreatments and prophylactics that counter chemical warfare agents, including organophosphorus nerve agents (OPNA), using targeted and innovative science and technology efforts that will offer broad-spectrum protection, flexible route of administration, lower dose requirements, and reduced operational and logistical burden. The use of these medical countermeasures (MCM) will protect the lives and effectiveness of our Warfighters, thus maintaining force strength and force capability.					
FY 2023 Plans:					
- Continue efforts to develop catalytic enzymes for use against selected, priority non-traditional agents (NTA).					
- Complete expanded pre-clinical studies of lead catalytic scavengers to support future investigative new drug (IND) filing.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) PT2 / <i>Protect (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue efforts to develop capability for rapid development of medical countermeasures. - Continue efforts to explore and further develop novel non-enzyme nerve agent prophylaxis. - Continue new approaches to identify pretreatment and prophylaxis against multiple classes of NTAs and emerging chemical threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.282 Million) remains in TM2. Increase due to change in program/project technical parameters.</p>					
<p>Title: 3) Dynamic Multifunction Materials for Second Skin</p> <p>Description: Efforts will utilize responsive technologies to provide chemical biological protective suits that adapt to the environment by synthesizing scaled samples via roll-to-roll manufacture which exhibit materials properties that reduce thermal burden and integrate with current combat garments. These technologies include interpenetrating polymer networks that will change moisture permeability and molecular selectivity on demand, and membranes with higher moisture vapor transfer rates than existing fabrics.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue development and testing of protective garment materials that respond to the presence of chemical agents to increase Warfighter protection. - Begin integration of responsive systems into protective suit paradigms for whole system testing. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.839 Million) remains in CB2.</p>			-	-	1.793
<p>Title: 4) All-Hazards & Respiratory Protection</p> <p>Description: Efforts will improve chemical and biological agent protection while maintaining warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit full spectrum respiratory protection.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Complete evaluate and assess systems that provide chemical biological respiratory protection technologies in support of tactical all hazard, full spectrum respiratory protection system. - Transition operationally-relevant respirator fit testing system to the Joint Service Mask Leakage Tester (JSMLT). - Transition specification for anti-fog lenses in respirators as a Ground Mask modification work order. 			-	-	1.482

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) PT2 / <i>Protect (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Continue to design and test prototypes for a low-encumbrance, next generation protective mask.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.380 Million) remains in CB2.					
Title: 5) Multifunctional Materials for Protection Description: Efforts will discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants, coatings, filters, and protective garments that reactively decontaminate chemical warfare agents. FY 2023 Plans: - Continue to engineer reactive/catalytic nano-structure materials from basic research efforts for chemical agent destruction, to feed air purification enhancement. - Continue to integrate engineered reactive/catalytic nano-structure materials into filters, decontaminants, and textiles to assess materials in an operationally-relevant environment for personnel decontamination. - Advance next generation materials to design reactive, regenerative protective garments with longer service life and lower thermal burden. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CB2.			-	-	2.743
Title: 6) Air Purification Enhancements Description: Efforts focus on optimizing and extending filter life to reduce lifecycle costs while maintaining or improving protection. FY 2023 Plans: - Continue materials testing for effectiveness against novel threats for Next Generation Filtration systems. - Complete and publish report on computational modeling for filter protection against advanced agents. - Complete and publish report on design of high air flow collective protection systems that increase the performance against advanced agents delivered in all states of matter (vapor, aerosol, and liquid) in operationally relevant environments. - Continue to engineer novel filter bed materials for chemical agent destruction, integrate them into next generation filters, and develop methods to assess filter performance in an operationally-relevant environment.			-	-	4.705

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) PT2 / <i>Protect (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>- Develop low-cost, continuous operation collective protection engineering standards and guidelines for temp, rapid enhancement of unprotected facilities during pandemic/bio warfare attack.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$0.393 Million) remains in CB2. Increase due to change in program/project technical parameters.</p>					
<p>Title: 7) Biological Warfare Defense Prophylaxis</p> <p>Description: The ultimate protection of the Warfighter is achieved by pretreating the Warfighter to withstand any biological threat with no adverse side effects from the pretreatment. Such pretreatment would enable the Warfighter to work in a less restrictive environment, absent of any personal protective equipment, facilitating the Warfighter to operate at peak performance. Efforts support innovative concepts in prophylaxis that support needs specific to the warfighter such as broad spectrum protection, rapid onset to protection, fewer doses required, no cold chain required, and needle-free administration.</p> <p>FY 2023 Plans: Bacterial:</p> <ul style="list-style-type: none"> - Continue development of nanobodies. - Continue plague and melioidosis human surveillance. - Continue non-human primate (NHP) model development for co-infection models. - Continue NHP melioidosis neurological model. - Initiate development of plaque mRNA vaccine. - Continue to evaluate protective efficacy of Anthrax vaccines against novel Bacillus anthracis strains. <p>Viral:</p> <ul style="list-style-type: none"> - Conduct nonclinical studies for vaccines and pretreatments for Crimean Congo Hemorrhagic Fever viruses. - Complete Marburg virus infection studies of bats. - Continue immune correlate identification for Ebola. <p>Toxins:</p> <ul style="list-style-type: none"> - Increase half-life of monoclonal antibodies (mAb) and scale up manufacturing of mAb against marine toxins. - Continue evaluation of naturally occurring anti-toxins to protect against marine toxins. - Continue to develop novel antitoxin technologies including exploring the use of cell membrane coated nanosponges. - Continue evaluation of toxins and antitoxin prophylaxis in animal models. - Continue to develop functional assays to determine biological activity for various toxins. 			-	-	26.699

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 2				R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) PT2 / Protect (Applied Research)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Broad Spectrum: - Continue novel pan virus nanosponge platform development and animal testing to address emerging threats, explore additional applications of nanosponge technology to include emerging toxin and bacterial threats. - Continue development of a prototype broad spectrum neuronal nanosponge platform technology. - Continue exploration of additional strategies and platforms for broad spectrum protection to address protection against emerging threats. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$29.560 Million) remains in TM2. Decrease due to change in program/project technical parameters.											
Title: 8) Biological Warfare Defense Prophylaxis - Enhanced Biodefense (ENBD) Description: This effort will focus on Innate Immune Training and Adjuvant Discovery & Tissue Targeting of Vaccines to Enhance Immune Response. Investments include efforts to strengthen and tune the host immune system through enhancement or stimulation to increase the ability to resist disease progression and spread. Characterization of vaccine platform technologies relative to the way a pathogen or toxin causes disease and how the host immune system responds will be executed to optimize matching of a disease indication with the most appropriate vaccine platform. FY 2023 Plans: - Develop a predictive capability to rapidly identify the optimal vaccine platform with which to counter any particular current, novel or emerging biological threat. - Initiation of projects that identify and evaluate adjuvants/encapsulation formulations/mucosal delivery technologies that can be combined with vaccines to stimulate a customized immunogenicity profile without compromising vaccine safety. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.									-	-	16.000
Accomplishments/Planned Programs Subtotals									-	-	58.758
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PT3: Protect (ATD)	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	Project (Number/Name) PT2 / <i>Protect (Applied Research)</i>
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) UN2 / Understand (Applied Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
UN2: Understand (Applied Research)	-	0.000	0.000	122.028	-	122.028	117.683	105.509	101.577	100.929	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Understand Applied Research Project provides the Joint Force the ability to detection, identification and characterization of chemical and biological (CB) threat agents and decision support. This includes classification and/or identification of the threat and potentially the amount of CBRN hazards in all physical states. Efforts provide the ability to characterize the chemical, biological, radiological, and nuclear (CBRN) hazard to a commander and develop a clear understanding of the current and predicted CBRN situation; collect, query, and assimilate information from sensors, intelligence and medical communities, etc., in near real time to inform decisions; and provide actual and potential impacts of CBRN hazards.

Thrust Areas included in this Project are:

- (1) CBRN Battlespace Surveillance, Alerting & Response
- (2) CBRN Decision Aids
- (3) CBRN Situational Awareness
- (4) Employment Characterization
- (5) Environmental Response
- (6) First Look
- (7) Host Response
- (8) Technical Surprise
- (9) Unattended Perimeter Monitoring
- (10) Unconventional Detection Modalities
- (11) Distributed CB Reconnaissance
- (12) Expeditionary Analytical Toolkit (ExAnT)
- (13) Chemical Diagnostics
- (14) Diagnostic Building Blocks
- (15) Emerging Threats

CBRN Battlespace Surveillance, Alerting & Response: Development of algorithms that generate and disseminate warning to personnel in time to prevent exposure to or limit the impact of CBRN threats. This thrust area conducts data collection trials to support algorithm development; leverage Artificial Intelligence (AI) to identify key indicators, combinations of indicators, and sensing modalities to reduce false alarms and predict the likelihood of exposure; explore remote and contactless monitoring and analysis for application in Warfighter chemical and biological threat exposure alerting.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>
<p>CBRN Decision Aids: Providing tools that assess risk from CBRN hazards and identify courses of action to limit impact. This thrust area permits connectivity, enabling the dynamic discovery, querying, and control of sensors through standard protocols; allow for dynamic discovery and integration between networked devices at the tactical edge to enable sharing of information and capabilities across connected components.</p> <p>CBRN Situational Awareness: Providing operationally relevant context to CB-specific phenomena data to ensure the Joint Force is able to characterize new CB hazards and mitigate their effects on mission success. This thrust area provides the analytic framework to determine optimal defense postures by extrapolating scientific data generated during the course of technology development and hazard assessment data into an assessment to help inform operational utility.</p> <p>Employment Characterization: Studies to help refine threat assessments and potential impacts of indoor or outdoor releases of threat agents on operations, strategy, and capabilities. This area includes both laboratory chamber-based dissemination characterization, as well as full-scale outdoor trials. Results from studies help determine risks posed by an agent employed in a similar fashion by an adversary.</p> <p>Environmental Response: Efforts to evaluate CB threats that have been released into the environment (e.g. persistence, degradation, and decomposition), along with the affects environmental conditions (e.g. ozone, ultraviolet, humidity, etc.) have on those agents. These efforts identify and characterize agent behavior of chemical and biological agents in the environment (including soil, water, and plants), in clothing, on and in structures, and on equipment to support model development and decision-making tools.</p> <p>First Look: Provides the initial characterization of potential CB threats, and provides a fundamental assessment of the potential risk they pose. Investments in this area evaluate agents as well as develop methods and capabilities to quickly and accurately characterize chemical, biological, and toxin agent properties to inform capability development, modeling, CB defense community stakeholders.</p> <p>Host Response: Characterizes effects (acute vs. chronic) from exposure to toxic chemical or infectious biological agents using operationally relevant exposure scenarios, exposure routes and appropriate assessment methods and models. All of these are used to improve the understanding of mechanisms of action, infectivity, morbidity, and mortality of agents, and provide adverse health effects information and other relevant data. Data from host response studies are also used to help develop predictive capabilities for capturing the human response to chemical and biological threat agents. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p> <p>Technical Surprise: Mitigate surprise by providing technology watch and horizon scanning tools to assess advances in technologies and scientific knowledge, with focus on breakthroughs that overcome bottlenecks and enable development of capabilities of concern. Efforts in this area improve threat awareness scanning capabilities to allow for continuous, real-time monitoring for identifying emerging threats, maintain situational awareness of the threat environment, and assess technological convergence.</p> <p>Unattended Perimeter Monitoring: Invests in efforts supporting Integrated Early Warning and Integrated Layered Defense by establishing a layered defense capability through developing and implementing automated and integrated technologies enabling unattended monitoring for biothreats.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>
<p>Unconventional Detection Modalities: Develops disruptive technologies to identify unknown or emerging chemical threats and develops chemical sensors that can operate in complex threat environments with high fidelity. Efforts include utilizing machine learning and other advanced computational tools to increase detection and identification accuracy, reduce false alarms, and enable mapping of hazardous locations to support integrated early warning (IEW) capabilities. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p> <p>Distributed CB Reconnaissance: Enhances early warning and situational awareness of CB threats while reducing potential Warfighter exposure using distributed CB reconnaissance tools to include low-cost point sensors and sensing/collection systems for unmanned platforms. Efforts include developing threat sensing and sampling payloads for manned and unmanned aerial and ground platforms to enhance early warning and situational awareness of CB threats.</p> <p>Expeditionary Analytical Toolkit (ExAnT): Provides general and specialized forces with the ability to modernize detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards.</p> <p>Chemical Diagnostics: Discovers innovative and integrated capabilities that are able to diagnose threats across the chemical spectrum and enhance force protection by investing in diagnostics for exposure to traditional and nontraditional Chemical Warfare Agents (CWA), including pharmaceutical based agents. Efforts include coordinating with Threat Agent Science and the Intelligence Community and to understand the chemical threat space.</p> <p>Diagnostic Building Blocks: Develops foundational capabilities for the entire diagnostics portfolio; invests in innovative, cutting-edge technologies to improve the development pipeline for diagnostics; and exploits areas in artificial intelligence synthetic biology and machine learning to develop novel and rapid diagnostic tests for utilization. Efforts accelerate assay development timelines and optimize test parameters by leveraging novel concepts and tools that readily allow a pivot to assay development for emerging threats. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p> <p>Emerging Threats: Efforts to push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Investments in developing diagnostic systems that leverage novel approaches to characterize the pathogen or the host response enables the delivery of actionable information, such as administering the appropriate antibiotic, antiviral, or vaccine to a medic or primary care provider. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p>		
B. Accomplishments/Planned Programs (\$ in Millions)		
Title: 1) CBRN Battlespace Surveillance, Alerting & Response		
Description: Improve the Department of Defense's capability to detect, identify, alert, and responds to deliberate releases and naturally occurring outbreaks of chemical and biological threat agents. Current predictive algorithms in development are based on large in-hospital datasets from patients with comorbidities. Improving on the applicability and efficacy of these algorithms will focus on large, real-time human data collects of chemical and biological (CB) agent / agent proxy exposures. Additionally, studies will focus on examining the feasibility of specifically isolating indicators of respiratory infection, determining severity of infection, and predicting return to mission readiness after exposure. This capability will enable early implementation of countermeasures		
	FY 2021	FY 2022
	-	-
		FY 2023
		8.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) UN2 / Understand (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
such as isolation, quarantine, and removal from an area, thus potentially reducing transmission, morbidity, and mortality rates. The maturation of algorithms will incorporate Machine Learning (ML) approaches for refining sensitivity and specificity.					
FY 2023 Plans: <ul style="list-style-type: none"> - Continue wearable device-based non-invasive biomarker analysis and algorithm enhancement for pre-symptomatic indication of chemical or biological exposure. - Continue to develop predictive algorithms and analytic tools utilizing artificial intelligence (AI) and ML techniques to allow for rapid response to emerging threats and detection of genetically engineered pathogens. - Continue development of AI-based drug discovery algorithms for Emerging Threats. - Continue the advancement of standoff physiological monitoring capabilities. - Utilize a multi-organ chip system to characterize the effects of biological threat agents on several different cultured human tissues and conduct multi-omics analysis (e.g. proteomics, metabolomics) to identify potential biomarkers associated with physiological responses from exposure to high, mid, and low multiplicity of infection. 					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$9.459 Million) remains in CB2. Decrease due to change in program/project schedule and completion of the major warning algorithm development efforts for predicting altered health severity and duration.					
Title: 2) CBRN Decision Aids Description: In order to unencumber the Warfighter at the tactical edge, efforts continue to develop and field CBRN Decision Aids on End User Devices (EUDs) in both connected and disconnected operations. Capabilities will focus on utilizing automation, reducing the burden experienced by the warfighter, while providing accurate, actionable information. During this time period, a focus will be put on developing a Contamination Avoidance Decision Aid to inform the warfighter on how to avoid, respond to and plan routes around CB hazards. Another area of focus will be the development of Autonomous Asset Guidance. This capability will be used in conjunction with other capabilities developed under the CBRN Decision Aids portfolio to optimize the use of Autonomous Assets and reduce the burden incurred by the warfighter in order to operate them. This capability will also aim to incorporate, fuse and utilize data from Autonomous Assets to improve and refine other CBRN Decision Aids.			-	-	4.667
FY 2023 Plans: <ul style="list-style-type: none"> - Continue development of warning and decision aids for tactical users leveraging the compute resources resident on EUDs. - Continue development of AR-based technologies to incorporate CB threat situational awareness in EUDs. 					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) UN2 / Understand (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
Funding transferred from another Project due to budget restructure. FY22 funding (\$3.100 Million) remains in CB2. Increase due to change in program/project technical parameters.			
Title: 3) CBRN Situational Awareness		-	-
<p>Description: Efforts will expand the types of threats that can be modeled with hazard assessment capabilities to include fixed-wing and rotary-wing drones of interests. These capabilities will allow for single drones and swarms to be modeled. Virtual Reality (VR) and Augmented Reality (AR) technologies will be leveraged to develop CB focused training and mission rehearsal capabilities that will be integrated into systems widely used by the Joint Force. Virtual training environments will be developed to implement, visualize and account for hazard source terms and plumes generated by transport and dispersion (T&D) models. Augmented Reality applications will also be explored for tactical use to maximize warfighter CB situational awareness on the battlefield. Efforts will modernize hazard modeling capabilities by adopting a modular framework and integrating across Service command and control systems to operationalize reachback support. Efforts will further enhance hazard modeling by creating a seamless indoor-to-outdoor T&D modeling capability and improve urban T&D modeling to support operations in urban and mixed environments. New state-of-the-art computational fluid dynamics modeling techniques and their exploitation of the latest computing resources will be leveraged to increase both speed and accuracy. Develop CB health effect modeling software and analytic tools to support force readiness and facilitate medical planning against chemical and biological agents. Epidemiological models will be developed that quantify and visualize mission operational impacts from exposure to, and spread of, infectious biological threat agents to DoD relevant populations. Additionally, efforts will leverage threat agent science (TAS) data to enhance capabilities for modeling health effects and host pathogen interactions from exposures to traditional and non-traditional CB agents. This will provide the warfighter with more accurate casualty estimates accounting for human health effects.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Complete development of models to provide operationally relevant outputs to support medical decision making. - Continue to develop ML algorithms for disease prediction and forecasting for mobile platforms. - Continue to enhance CB situational awareness capabilities for integration into Heads up Display (HUD) technologies. - Initiate efforts to expand focus on emerging threat hazard modeling, leveraging TAS data to ensure the Joint Force is able to characterize new CB hazards and mitigate their effects on mission success. - Explore new areas for targeted investment in synthetic environments to provide a CBRN-specific cognitive, collective, multi-echelon training and mission readiness capability. - Explore in-host modeling capabilities leveraging ML/AI techniques to characterize predictive biomarkers of chemical and biological exposure prior to onset of symptoms. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		11.812	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$10.894 Million) remains in CB2.					
Title: 4) Employment Characterization Description: Employment Characterization studies refine threat assessments and identify potential impacts of indoor and/or outdoor releases of threat agents on CBDP operations, strategy, and capabilities. These studies directly define the Warfighter threat space by determining how CB agents behave when released. This effort reduces risk to the CBDP Enterprise by closing knowledge gaps and informing on the type, extent and magnitude of a potential hazard a warfighter may face in an operational environment. Employment Characterization will: review state of knowledge on agent employment (laboratory and outdoors) to identify gaps and TAS assessment opportunities; continue coordination with international partners to leverage skills and resources; develop closer linkages to hazard prediction modelers to identify knowledge gaps and TAS opportunities; prepare evaluation of potential munitions for applicability to potential future threats based on performance characteristics; and continue chamber tests and operational trials as appropriate for compounds of interest. FY 2023 Plans: - Continue to review state of knowledge on agent employment (laboratory and outdoors) to identify gaps and threat agent science assessment opportunities. - Continue studying scale employment methods and feasibility for emerging threat agents. - Begin Toxin Dissemination Efficiency and Anti-Material Efficacy Characterization studies. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.159 Million) remains in TM2.			-	-	4.657
Title: 5) Environmental Response Description: Environmental Response evaluates CB threats to understand how they will behave in the environment (e.g. persistence, degradation, decomposition), along with the effects of environmental conditions (e.g. ozone, ultraviolet, humidity, etc.) on those agents. Studies include evaluations of CB threat agents on soil, water, and plants, and operational surfaces such as clothing, structures, and equipment. This thrust area reduces risk to the CBDP Enterprise by closing knowledge gaps and informing on the type, extent and magnitude of a potential hazard a warfighter may face in an operational environment. Small-scale laboratory measurements are used to predict the larger-scale behavior and fate of the agents in outdoor and operational settings, while examining agents deposited on operationally relevant substrates refines our understanding of their environmental persistence and hazards. Knowledge obtained from Environmental Response is used to inform operators, predictive model development, and capability development. FY 2023 Plans:			-	-	6.042

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue evaluating stability of toxin and viral threats, including exploring the fundamental characteristics that influence viral stability in the environment. - Continue closing knowledge gaps associated with aerosol biology and its implications with the outdoor release of biological threats. - Continue environmental characterization of chemical threats, increasing evaluation of degradation products and reaction byproducts for detection, diagnostics and other applications. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.548 Million) remains in CB2. Increase due to change in program/project technical parameters.</p>					
<p>Title: 6) First Look (Chemical and Biological)</p> <p>Description: First Look provides the initial evaluation of known and emerging threat agents to determine their potential hazard to the Warfighter. For both chemical and biological agents, this initial fundamental risk assessment includes evaluation of synthesis and toxicity screening for chemicals and toxins and growth and/or virulence for biological agents as well as production and feasibility of weaponization for all agents. Investments in this area are used to evaluate threat agents as well as develop methods and capabilities to quickly and accurately characterize chemical, biological, and toxin threat agent properties. First Look products/data inform warfighter mission planning, requirements generation, capability development, model development, the larger CBDP Enterprise, Intelligence and other government stakeholders about known or emerging agent threats.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue developing innovative laboratory tools and approaches to enable expedient characterization of emerging or novel biological threats (to include highly infectious and novel organisms), including understanding enabling technologies' impact to gene modification/expression and the ability to assess toxin activity. - Continue developing advanced methods for threat agent characterization, including more complex chemical agent mixtures or combinations. - Continue evaluating findings of technological advancement implications to discounted threats study. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$9.850 Million) remains in CB2.</p>			-	-	9.850
<p>Title: 7) Host Response</p> <p>Description: Host Response assesses the human response of exposure to CB threat agents using operationally relevant exposure scenarios (acute versus chronic) and exposure routes (e.g., inhalation, dermal, ingestion, etc.) and appropriate assessment methods and models. Data from host response studies are used to develop quantitative exposure limits and</p>			-	-	14.453

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) UN2 / Understand (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>qualitative information (e.g. mechanism of action) to inform Warfighter mission planning, requirements generation, capability development, model development, the larger CBDP Enterprise, Intelligence and other government stakeholders. Include predictive capabilities for rapidly assessing the human response to chemical and biological threat agents. In addition, host response will be working to close known knowledge gaps associated with traditional threats, including exploring synergistic effects associated with combinatorial agent exposures. Bioavailability of threats that are encapsulated to understand host response differences between exposures to encapsulated versus un-encapsulated threats will be also be assessed.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue to build on and develop predictive methods and technologies for CB agent characterizations. - Continue studies to address host response areas identified by the FY21 gap analysis study for traditional biological agents. - Deliver IOC (initial operating capacity) for CRISTAL (Computational Rapid Identification and Scientific Threat Analysis) incorporating results into future host response. Continue to enhance and modernize CRISTAL methods and tools. - Continue to assess the human (host) response to novel and emerging threats (including combinatorial and mixtures). <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$15.200 Million) remains in CB2. Decrease due to change in program/project technical parameters.</p>					
<p>Title: 8) Host Response - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on Advanced Pathogen and Emerging Threat Characterization with attention on characterizing host responses and pathogen signatures using multi-omic analyses and enabling technologies to develop the ability to characterize known and emerging threats. This effort will include understanding the host response to various pathogen insults to identify patterns of response that allow for the prediction of novel threat agents based on the host responses they generate. Evaluations of pathogenesis and viral transmission to understand differences in disease severity will also be conducted. Within this program, efforts to characterize synthetic and natural viral pathogens to compare varying gene expressions between the two will be executed. This program accelerates the ability to characterize emerging threats and will generate more robust data sets for training threat agnostic tools to provide better characterization capabilities.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Begin the development of a robust characterization pipeline capable of characterizing emerging pathogens. - Begin the development of robust threat agnostic tools to characterize emerging pathogens. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	3.000
<p>Title: 9) Technical Surprise</p>			-	-	4.500

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) UN2 / Understand (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Description: Technical Surprise assesses technological advancements for potential implications to the threat space, including agent use and release. Technical Surprise includes horizon scanning to identify potential areas of concern as well as conducts technical assessments of emerging technological advancements (e.g. biotechnology, artificial intelligence, machine learning, quantum computing). This program develops capabilities to evaluate and assess technical enhancements that may alter the nature or magnitude of a threat agent. The technical surprise program will be evaluating emerging technologies and convergence of technologies that improve the ease of threat use and make threats more likely to survive being released. Identify the limitations and barriers associated with synthetic biology and assess the implications. These efforts will identify and assess former technology hurdles that have been lowered or overcome and assess implications of increasing potential threat.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue identifying and assessing technological advancements that will impact the chemical and biological threat space, including potential threats that are not specifically chemical or biological in nature, but have implications to chemical and biological defense capabilities. - Continue a horizon scanning capability to provide situational awareness in assessing technological growth and convergence that can affect the chemical and biological threat space, while keeping abreast of changes in the nature of future threats. - Continue the assessment of synthetic biological tools and other biotechnology developments that can enhance or alter the threat space. - Enhance evaluation of converging technologies and their implications to the threat space. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.500 Million) remains in CB2.</p>					
<p>Title: 10) Unattended Perimeter Monitoring</p> <p>Description: Develop automated technologies to improve detection of aerosolized hazards while minimizing or removing user intervention to enable a reliable detect-to-warn capability, providing a capability for unattended monitoring of perimeters for temporary defense positioning, including base camps, to enable early indication of threats. This thrust area will evaluate current and novel technologies to provide improved chemical threat detection and automated biological detection capabilities.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue to evaluate the use of computational tools, like machine learning, into detector/identifier technologies to further reduce false reporting due to environmental factors. - Continue to make technological improvements to enhance early warning of aerosolized biological threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			-	-	4.871

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>	Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
Funding transferred from another Project due to budget restructure. FY22 funding (\$4.114 Million) remains in CB2. Decrease due to division of Unattended Perimeter Monitoring between Chemical and Biological efforts.			FY 2023
Title: 11) Unconventional Detection Modalities Description: This effort will focus on Biodetection Screening. Develop disruptive technologies to identify unknown or emerging threats and develop sensors that can operate in complex threat environments with high fidelity. This thrust area supports others as appropriate to the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance). FY 2023 Plans: - Continue refinement of novel optical detector for bioaerosols modernizing current technologies. - Explore innovative detection methods such as synthetic or organ on a chip biosensors to provide agent agnostic techniques that identify an unknown as hazardous to a human. - Continue to integrate advanced computational tools, Artificial Intelligence (AI)/Machine Learning (ML) into sensor development to improve speed of detection, reduce false alarms and enable integration of data from multiple detection sources. - Initiate Assays on-Demand efforts aimed to rapidly deliver novel assay solutions to be used in the field. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.997 Million) remains in CB2.		-	6.681
Title: 12) Unconventional Detection Modalities - Enhanced Biodefense (ENBD) Description: Develop disruptive technologies to identify unknown or emerging threats and develop sensors that can operate in complex threat environments with high fidelity. This thrust area supports others as appropriate to the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance). FY 2023 Plans: - Expand Assays on Demand (AoD) for emerging biological threat detection. AoD will allow for real time assay manufacturing reducing supply chain constraints typically seen in currently fielded systems. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.		-	2.000
Title: 13) Distributed CB Reconnaissance Description: Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of biological and chemical threats. Sensor development will		-	3.614

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/ collection systems that are rugged, rapid and accurate.					
FY 2023 Plans: - Continue to invest in low size, weight, power, and cost technologies for near-real time detection capabilities for deployable or distributed biological and chemical sensing for hazard awareness and assessment of operational environments. - Invest in innovative technologies to increase situational awareness using manned and unmanned platforms and provide operational advantages to the Warfighter. - Explore application of advanced computational tools, Artificial Intelligence (AI) and Machine Learning (ML), to connect multiple sensor technologies to provide improved early warning and integrated threat awareness FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CB2.					
Title: 14) Enhanced/Emerging Biothreat Sensing Description: Establish a capability to rapidly develop advanced, agile, pathogen-agnostic laboratory and field forward detection capabilities to detect emerging and enhanced biological threats across all force echelons (presumptive, field confirmatory, theater validation, and definitive identification). Further, multi-omics and data sciences (MODS) - multiple biological measurements - will be used to modernize laboratory capabilities and leverage synthetic biology methods and tools to deliver enhanced biothreat sensing/detection capabilities to the Joint Force. FY 2023 Plans: - Continue development of detection algorithms and laboratory workflows to identify threats in unknown samples. - Continue automated computational tools to design and expedite assay development for biological detection. - Complete applied research component of far-forward pathogen agnostic sensing toolkit development. - Incorporate advanced biological measurements and data processing techniques into sensor development to enable an agile response to emerging threats with emerging pathogen targeted detection capabilities. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$9.825 Million) remains in CB2. Increase due to accelerated development effort.			-	-	12.853
Title: 15) Expeditionary Analytical Toolkit (ExAnT) Description: Provide general and specialized forces with the ability to modernize detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards.			-	-	3.596

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) UN2 / Understand (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2023 Plans: - Continue to support expeditionary forces in leveraging reach-back capabilities for identification purposes. Invest in novel detection capabilities to address opioids and emerging chemical threats. - Continue to invest in improvements of current detection technologies for chemical hazards in complex and obscurant-heavy environments.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.333 Million) remains in CB2.					
Title: 16) Chemical Diagnostics Description: Provide innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum. Enhance force protection by investing in diagnostics for exposure to traditional and nontraditional Chemical Warfare Agents (CWAs), including pharmaceutical based agents (PBAs). Leverage the development of a chemical diagnostic that monitors blood, indicating whether a Warfighter has been exposed to nerve agents within minutes. FY 2023 Plans: - Continue the development of integrated capabilities that address portable ultra-low detection of opioids to the ChemDx device that will allow for differentiating between classes of CWAs, resulting in more informed treatment decisions. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.554 Million) remains in TM2. Decrease due to change in technical parameter.			-	-	0.693
Title: 17) Diagnostic Building Blocks Description: Develop novel, state of the art capabilities that lay the foundation for modernizing other areas within the diagnostics portfolio. This includes exploiting areas such as synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat. Invest in efforts that lead to accelerated assay development timelines and optimized test parameters through leveraging artificial intelligence (AI) and machine learning (ML) to allow us to quickly pivot and develop assays for emerging threats and speed up development to days instead of weeks. FY 2023 Plans: - Initiate field validation studies for diagnostics prototypes using synthetic binders and evaluate performance against current gold standard diagnostic methods.			-	-	3.466

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>- Continue efforts to collect the baseline data required for future development of a whole breath diagnostic platform the use of breath as a non-invasive sampling mechanism offers Warfighters little-to-no interruption to mission activities and provides the opportunity for earlier diagnosis/indication of infection or chemical exposure.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.446 Million) remains in TM2. Decrease due to change in technical parameter.</p>					
<p>Title: 18) Diagnostic Building Blocks - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on Assay Development and Delivery Pipeline, Expand Biological Artificial Intelligence for Diagnostics (BioAID) Efforts as well as developing novel, state of the art capabilities that lay the foundation for modernizing other areas within the diagnostics portfolio. This includes exploiting areas such as synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat. Invest in efforts that lead to accelerated assay development timelines and optimized test parameters through leveraging artificial intelligence (AI) and machine learning (ML) to allow us to quickly pivot and develop assays for emerging threats and speed up development to days instead of weeks.</p> <p>FY 2023 Plans: - Expand work with collection & analysis of individual's breath, skin emissions or other minimally invasive testing methods which offers Warfighters little-to-no interruption to mission activities and provides the opportunity for earlier diagnosis/indication of infection or chemical exposure.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	6.500
<p>Title: 19) Emerging Threats</p> <p>Description: Push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Development of diagnostic systems that leverage novel approaches to characterize pathogen or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample. Invest in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure (e.g. antibiotic, antiviral, vaccine), by a medic or primary care provider greatly improves turnaround time for soldier wellness and return to duty.</p> <p>FY 2023 Plans: - Complete efforts on several complementary approaches to address challenges in small molecule toxin diagnosis at the POC and initiate validation of these prototypes for potential use as a threat agnostic capability to enable field-forward responses to emerging threats.</p>			-	-	2.773

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) UN2 / <i>Understand (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>- Complete the development of a universal blood sample preparation platform to be compatible with several diagnostic systems, improving the speed of sample preparation tools at low pathogen concentrations (i.e. pre-symptomatic levels) is one of the biggest challenges holding back diagnostics in point-of-care, outbreak, and remote testing scenarios.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.110 Million) remains in TM2. Decrease due to change in technical parameter.</p>					
<p>Title: 20) Emerging Threats - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on Novel Non-Invasive Screening and Characterization. It will push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Development of diagnostic systems that leverage novel approaches to characterize pathogen or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample. Invest in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure (e.g. antibiotic, antiviral, vaccine), by a medic or primary care provider greatly improves turnaround time for soldier wellness and return to duty.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Investing in training and development efforts by the Army Medical Research Institute for Infectious Disease (USAMRIID) to become an authorized developer of assays for the Cepheid Flex Cart technology (ISO MPDS). - Initiate efforts to explore innovative methods to investigate genetically modified threats including pre-symptomatic, host-based biomarkers or synthetic biology approaches. Novel methods will allow for rapid assay fielding potentially cutting development time from months to weeks. - Accelerate next generation diagnostic platform development to meet the evolving needs of the CBDP enterprise, providing diagnostics that would address detection and identification technology needs with a combined affinity based and molecular platform for emerging pathogens. - Initiate effort to predict disease severity to provide agnostic disease screening tool that enhances triage, transport and resource decision making support for the Warfighter in field forward environments. - Expand agnostic biomimetic sensing to explore additional panels of small and large molecular weight toxins with various modes of activity, and tested in both clinical and aerosol sample matrices to include environmental background. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	8.000
Accomplishments/Planned Programs Subtotals			-	-	122.028

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 2	R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)	Project (Number/Name) UN2 / Understand (Applied Research)	

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• UN3: <i>Understand (ATD)</i>	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CB2: Chemical Biological Defense (Applied Research)	-	95.517	104.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.879

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. In FY2023, the CB2 RDT&E Projects have been restructured to align to the CB2 portfolio. CB2 thrust areas in FY2022 progress to the Mitigate (MT2), Protect (PT2), and Understand (UN2) portfolios. This restructuring is intended to provide standardization and alignment across CB2 research, development and acquisition efforts.

Individual efforts in this Project include:

- 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 remote and point detection and identification of chemical and biological agents.
- Decision analysis and management focuses on advanced hazard prediction, medical and epidemiological modeling of biological agents, operational effects and risk assessment, and systems performance modeling.
- Warning and reporting focuses on methods of alerting to chemical or biological threat agent releases and exposures.
- 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 threat agent information across CB2 defensive technologies in support of the Joint Services.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Distributed CB Reconnaissance	3.525	3.328	-
Description: Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of biological and chemical threats. Sensor development will support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/ collection systems that are rugged, rapid and accurate.			
FY 2022 Plans: <ul style="list-style-type: none"> - Evaluate low size, weight, power, and cost technologies for near-real time detection capabilities for deployable or distributed biological and chemical sensing for hazard awareness and assessment of operational environments. 			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) CB2 / <i>Chemical Biological Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Identify innovative solutions to increase situational awareness using manned and unmanned platforms and provide operational advantages to the Warfighter. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.614 Million) transferred to UN2.</p>					
<p>Title: 2) Enhanced/Emerging Biothreat Sensing</p> <p>Description: Establish a capability responsive to detecting emerging and enhanced biological threats across all force echelons (presumptive, field confirmatory, theater validation, and definitive identification) through a pathogen-agnostic laboratory workflow coupled with advanced computational tools that produce a field ready test. field forward detection capabilities to detect emerging and enhanced biological threats across all force echelons. Further, advanced biological measurement approaches and data processing sciences to understand if a biological sample presents threat characteristics that could harm the warfighter. Leveraged modern laboratory capabilities and synthetic biology methods to deliver enhance biothreat sensing capabilities to the Joint Force.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue development of algorithms and laboratory workflows to identify threats in unknown samples. - Continue development of far-forward pathogen agnostic sensing toolkit. - Continue automated in-silico design to expedite assay development. - Accelerate transitions of multi-omic data tools from interagency partners, leveraging increasing understanding of the fundamental biology of emerging and engineered threats to inform development of agile sensors with optimized detection targets and capabilities. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$12.853 Million) transferred to UN2.</p>			6.170	9.825	-
<p>Title: 3) Expeditionary Analytical Toolkit (ExAnT)</p> <p>Description: Provide general and specialized forces with the ability to modernize detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Support expeditionary forces in leveraging reach-back capabilities for identification purposes. - Continue to develop advance detection capabilities to detect chemical warfare agents in complex and obscurant-heavy environments. - Evaluate detectors ability to measure hazards in complex environments and samples. - Advance detection capabilities by developing sensor platforms for integration into a portable device. 			2.502	3.333	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Anticipate future detection capability needs to support the warfighter in CB-contested operational environments. - Evaluate and transition compact vapor detectors for the Warfighter. - Continue to develop novel data processing and data analysis algorithms based on machine learning techniques. 					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.596 Million) transferred to UN2.					
Title: 4) Unattended Perimeter Monitoring Description: Develop automated technologies to improve detection of aerosolized hazards while minimizing or removing user intervention to enable a reliable detect-to-warn capability, providing a capability for unattended monitoring of perimeters for temporary defense positioning, including base camps, to enable early indication of threats. This thrust area will evaluate current and novel technologies to provide improved chemical threat detection and automated biological detection capabilities.			2.130	4.114	-
FY 2022 Plans: <ul style="list-style-type: none"> - Evaluate the use of machine learning into detector/identifier technologies to further reduce false reporting due to environmental factors. - Continue development of fully-automated biosurveillance system capable of air sample collection, sample preparation, and analysis. 					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.871 Million) transferred to UN2.					
Title: 5) Unconventional Detection Modalities Description: Develop disruptive technologies to identify unknown or emerging threats and develop sensors that can operate in complex threat environments with high fidelity. This thrust area supports others as appropriate to the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance.			6.282	4.997	-
FY 2022 Plans: <ul style="list-style-type: none"> - Conduct detection sensing validation for detection by utilizing nanoparticles and voltammetry electrochemistry. - Conduct model testing and validation of machine learning algorithms for chemical detection sensors. - Miniaturize and refine optical light scattering prototype. - Conduct live-agent testing using cell-free platforms. 					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.681 Million) transferred to UN2.					
Title: 6) Enhanced Survivability Coatings			2.874	2.436	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
<p>Description: This effort supports the Materiel Contamination Mitigation. Military equipment coatings are challenging and logistically intensive to decontaminate. Efforts within this thrust seek to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military equipment to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return equipment to mission operations level.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Improve success of decontamination through the evaluation and incorporation of appliques (to include chemical transport studies in current military coatings, novel coatings characterization, thin film overcoats, strippable coat, reactive coat, and lock-down coats) in support of CBRN Coatings, Coverings, and Protective Overlays Program of Record. - Incorporate bio-inspired surface treatments for equipment coatings to repel agents of interest from current military equipment coatings. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT2 (\$1.071)and PT2 (\$1.178).</p>					
<p>Title: 7) Equipment Decontamination</p> <p>Description: This effort supports the Materiel Contamination Mitigation. The Warfighter has a limited capability to decontaminate personal equipment, weapons, vehicles, ships, and facilities; Sensitive equipment (weapon system optics, electronic equipment, interior spaces, and aircraft); and hazardous waste. Efforts within this thrust seek to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enable unit-level decontamination with rapid unmasking; reduce logistic needs (need for water); enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use; and develop improved realistic test methods.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Begin integrating contamination mitigation technologies by advancing the proof of concept for hot-air CWA decontamination by validating the operational performance envelope. Successful efforts will result in improved efficacy, materials compatibility, flexibility, and reduced logistical burden compared to existing and emerging decontamination program requirements. - Transition Sprayable Decontaminant Slurry technology for immediate chemical warfare agent decontamination of equipment to the Service Equipment Decontamination System (SEDS). <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$5.774 Million) transferred to MT2.</p>			1.866	3.150	-
<p>Title: 8) Wide Area Decontamination</p>			0.778	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
Description: This effort supports the Materiel Contamination Mitigation Core Capability Area. Warfighters lack capability to rapidly restore critical DoD infrastructure (e.g., sea port or air base) that will mitigate contamination spread and enable normal, unprotected operations. Efforts within this thrust seek to improve contamination mitigation logistics/cost reduction, effectiveness, compatibility/safety, and environmental compatibility.					
Title: 9) CBRN Battlespace Surveillance, Alerting & Response Description: Improve the Department of Defense's capability to detect, identify, alert, and responds to deliberate releases and naturally occurring outbreaks of chemical and biological threat agents. Current predictive algorithms in development by JSTO are based on large in-hospital datasets from patients with comorbidities. Improving on the applicability and efficacy of these algorithms will focus on large, real-time human data collects of chemical and biological agent / agent proxy exposures. Additionally, studies will focus on examining the feasibility of specifically isolating indicators of respiratory infection, determining severity of infection, and predicting return to mission readiness after exposure. This capability will enable early implementation of countermeasures such as isolation, quarantine, and removal from an area, thus potentially reducing transmission, morbidity, and mortality rates. The maturation of algorithms will incorporate Machine Learning (ML) approaches for refining sensitivity and specificity. FY 2022 Plans: - Continue to expand wearable device-based non-invasive biomarker analysis for pre-symptomatic indication of chemical or biological exposure. - Complete early warning algorithm development for predicting altered health severity and duration to inform warfighter time-to mission-readiness. - Continue to develop ML algorithms to detect signatures of genetically engineered pathogens. - Continue to develop predictive algorithms and analytic tools utilizing Artificial Intelligence (AI) and ML techniques to allow for rapid response to Emerging Threats. - Initiate the development of AI based drug discovery algorithms for Emerging Threats. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$8.000 Million) transferred to UN2.			8.064	9.459	-
Title: 10) CBRN Decision Aids Description: In order to unencumber the warfighter at the tactical edge, JSTO will continue to develop and field CBRN Decision Aids on End User Devices (EUDs) in both connected and disconnected operations. Capabilities will focus on utilizing automation, reducing the burden experienced by the warfighter, while providing accurate, actionable information. During this time period, a			4.603	3.100	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>focus will be put on developing a Contamination Avoidance Decision Aid to inform the warfighter on how to avoid, respond to and plan routes around CB hazards.</p> <p>Another area of focus will be the development of Autonomous Asset Guidance. This capability will be used in conjunction with other capabilities developed under the CBRN Decision Aids portfolio to optimize the use of Autonomous Assets and reduce the burden incurred by the warfighter in order to operate them. This capability will also aim to incorporate, fuse and utilize data from Autonomous Assets to improve and refine other CBRN Decision Aids.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue development of warning and decision aids for tactical users leveraging the compute resources resident on EUDs. - Initiate the use of augmented reality to provide chemical and biological threat situational awareness in head-mounted visual displays. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.667 Million) transferred to UN2.</p>					
<p>Title: 11) CBRN Situational Awareness</p> <p>Description: To enhance CB Situational Awareness, JSTO will expand the types of threats that can be modeled with hazard assessment capabilities to include fixed-wing and rotary-wing drones of interests. These capabilities will allow for single drones and swarms to be modeled.</p> <p>Virtual Reality (VR) and Augmented Reality (AR) technologies will be leveraged to develop CB focused training and mission rehearsal capabilities that will be integrated into systems widely used by the Joint Force. Virtual training environments will be developed to implement, visualize and account for hazard source terms and plumes generated by transport and dispersion (T&D) models Augmented Reality applications will also be explored for tactical use to maximize warfighter CB situational awareness on the battlefield.</p> <p>JSTO will modernize hazard modeling capabilities by adopting a modular framework and integrating across Service command and control systems to operationalize Reachback support. JSTO will further enhance hazard modeling by creating a seamless indoor-to-outdoor T&D modeling capability and improve urban T&D modeling to support operations in urban and mixed environments. New state-of-the-art computational fluid dynamics modeling techniques and their exploitation of the latest computing resources will be leveraged to increase both speed and accuracy.</p> <p>JSTO will develop CB health effect modeling software and analytic tools to support force readiness and facilitate medical planning against chemical and biological agents. Epidemiological models will be developed that quantify and visualize mission operational</p>			12.330	10.894	-

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
impacts from exposure to, and spread of, infectious biological threat agents to DoD relevant populations. Additionally, JSTO will leverage Threat Agent Science (TAS) data to enhance capabilities for modeling health effects and host pathogen interactions from exposures to traditional and non-traditional CB agents. This will provide the warfighter with more accurate casualty estimates accounting for human health effects.					
FY 2022 Plans: <ul style="list-style-type: none"> - Complete development of coupled indoor and outdoor dispersion models for enhanced hazard prediction in urban environments. - Complete field trial to collect validation data for coupled indoor and outdoor dispersion models. - Complete development of next generation littoral and liminal waterborne modeling system. - Continue to enhance CB situational awareness capabilities for integration into Heads up Display (HUD) technologies. 					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$11.812 Million) transferred to UN2.					
Title: 12) Employment Characterization			4.943	4.159	-
Description: Employment Characterization studies refine threat assessments and identify potential impacts of indoor and/or outdoor releases of threat agents on CBDP operations, strategy, and capabilities. These studies directly define the Warfighter threat space by determining how chemical and biological agents behave when released. This thrust area reduces risk to the CBDP Enterprise by closing knowledge gaps and informing on the type, extent and magnitude of a potential hazard a warfighter may face in an operational environment. Employment Characterization will: review state of knowledge on agent employment (laboratory and outdoors) to identify gaps and TAS assessment opportunities; continue coordination with international partners to leverage skills and resources; develop closer linkages to hazard prediction modelers to identify knowledge gaps and TAS opportunities; prepare evaluation of potential munitions for applicability to potential future threats based on performance characteristics; and continue chamber tests and operational trials as appropriate for compounds of interest.					
FY 2022 Plans: <ul style="list-style-type: none"> - Continue to review state of knowledge on agent employment (laboratory and outdoors) to identify gaps and threat agent science assessment opportunities. - Provide munitions evaluation to modelers and stakeholders, and follow with a gap analysis to determine knowledge gaps for future analysis. - Continue studying scale employment methods and feasibility for emerging threat agents. 					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) CB2 / <i>Chemical Biological Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.657 Million) transferred to UN2.					
Title: 13) Environmental Response Description: Environmental Response evaluates CB threats to understand how they will behave in the environment (e.g. persistence, degradation, decomposition), along with the effects of environmental conditions (e.g. ozone, UV, humidity, etc.) on those agents. Studies include evaluations of chemical and biological threat agents on soil, water, and plants, and operational surfaces such as clothing, structures, and equipment. This thrust area reduces risk to the CBDP Enterprise by closing knowledge gaps and informing on the type, extent and magnitude of a potential hazard a warfighter may face in an operational environment. Small-scale laboratory measurements are used to predict the larger-scale behavior and fate of the agents in outdoor and operational settings, while examining agents deposited on operationally relevant substrates refines our understanding of their environmental persistence and hazards. Knowledge obtained from Environmental Response is used to inform operators, predictive model development, and capability development. FY 2022 Plans: <ul style="list-style-type: none"> - Continue delivering data on fate, persistence, viability and response of priority agents in various environments to inform hazard assessment (for chemical and biological threats). - Continue assessing the impact of environmental factors on threat agent activity (persistence, transport, degradation, resuspension, and decontamination). - Continue to identify and close knowledge gaps associated with the aerosol biology and its implications with the outdoor release of biological threats. - Continue assessing anti-material agents, evaluate the efficacy of these agents, and measure their environmental stability and performance against materials of interest. - Continue environmental stability efforts for toxin and viral threats, including the fundamental characteristics that influence viral stability. FY 2022 to FY 2023 Increase/Decrease Statement: <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.042 Million) transferred to UN2.</p>			5.491	5.548	-
Title: 14) First Look (Chemical and Biological) Description: First Look provides the initial evaluation of known and emerging threat agents to determine their potential hazard to the Warfighter. For both chemical and biological agents, this initial fundamental risk assessment includes evaluation of synthesis and toxicity screening for chemicals and toxins and growth and/or virulence for biological agents as well as production and feasibility of weaponization for all agents. Investments in this area are used to evaluate threat agents as well as develop methods and capabilities to quickly and accurately characterize chemical, biological, and toxin threat agent properties. First Look products/data inform warfighter mission planning,			9.300	9.850	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
requirements generation, capability development, model development, the larger CBDP Enterprise, Intelligence and other government stakeholders about known or emerging agent threats.					
FY 2022 Plans: - Continue developing innovative laboratory tools and approaches to enable expedient characterization of emerging or novel biological threats (to include highly infectious and novel organisms), including understanding enabling technologies' impact to gene modification/expression and the ability to assess toxin activity. - Continue developing advanced methods for threat agent characterization, including more complex agent mixtures or combinations. - Begin evaluating findings of technological advancement implications to discounted threats study.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$9.850 Million) transferred to UN2.					
Title: 15) Host Response			10.040	15.200	-
Description: Host Response assesses the human response of exposure to biological and chemical threat agents using operationally relevant exposure scenarios (acute versus chronic) and exposure routes (e.g., .inhalation, dermal, ingestion, etc.) and appropriate assessment methods and models. Data from host response studies are used to develop quantitative exposure limits (e.g. LD50 or ID50) and qualitative information (e.g. mechanism of action) to inform warfighter mission planning, requirements generation, capability development, model development, the larger CBDP Enterprise, Intelligence and other government stakeholders. The program, known as CRISTAL (Computational Rapid Identification and Scientific Threat Analysis) is modernizing to include predictive capabilities for rapidly assessing the human response to chemical and biological threat agents. In addition, host response will be working to close known knowledge gaps associated with traditional threats, including exploring synergistic effects associated with combinatorial agent exposures. Bioavailability of threats that are encapsulated to understand host response differences between exposures to encapsulated versus un-encapsulated threats will be also be assessed.					
FY 2022 Plans: - Build on predictive methods and technologies for both chemical and biological agent characterizations. - Deliver initial operational capacity for predictive toxicological analytical tools linking in silico analysis, in vitro assessments (activity, metabolism, etc), and refining quick turn estimates for emerging chemical threats, and informing follow on toxicological evaluations. - Initiate studies to address host response areas identified by the FY21 gap analysis study for traditional biological agents.					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$14.453 Million) transferred to UN2.					
Title: 16) Technical Surprise Description: Technical Surprise assesses technological advancements for potential implications to the threat space, including agent use and release. Technical Surprise includes horizon scanning to identify potential areas of concern as well as conducts technical assessments of emerging technological advancements (e.g. biotechnology, artificial intelligence, machine learning, quantum computing). This program develops capabilities to evaluate and assess technical enhancements that may alter the nature or magnitude of a threat agent. The technical surprise program will be evaluating emerging technologies and convergence of technologies that improve the ease of threat use and make threats more likely to survive being released. Identify the limitations and barriers associated with synthetic biology and assess the implications. These efforts will identify and assess former technology hurdles that have been lowered or overcome and assess implications of increasing potential threat. FY 2022 Plans: - Continue identifying and assessing technological advancements that will impact the chemical and biological threat space, including potential threats that are not specifically chemical or biological in nature, but have implications to chemical and biological defense capabilities. - Continue a horizon scanning capability to provide situational awareness in assessing technological growth and convergence that can affect the chemical and biological threat space, while keeping abreast to changes in the nature of future threats. - Continue the assessment of synthetic biological tools and other biotechnology developments that can enhance or alter the threat space. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.500 Million) transferred to UN2.			4.000	4.500	-
Title: 17) Dynamic Multifunction Materials for Second Skin Description: This effort supports the Percutaneous Protection. Efforts will utilize responsive technologies to provide chemical biological protective suits that adapt to the environment by synthesizing scaled samples via roll-to-roll manufacture which exhibit materials properties that reduce thermal burden and integrate with current combat garments. These technologies include interpenetrating polymer networks that will change moisture permeability and molecular selectivity on demand, and membranes with higher moisture vapor transfer rates than existing fabrics. FY 2022 Plans: - Increase molecular selectivity of responsive interpenetrating polymers towards nerve and blister agents.			1.972	1.839	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) CB2 / <i>Chemical Biological Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Demonstrate and scale carbon nanotube membrane responsive textiles into garments that increase protection levels in response to chemical weapons agents while preserving moisture vapor transport rate; advance to BA3.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.793 Million) transferred to PT2.					
Title: 18) Lightweight Protective Garments Description: This effort supports the Percutaneous Protection. Efforts will advance garment material and ensemble technologies with new capabilities using integrated garment designs and fabrication for thermal burden reduction, state-of-the-art threat protection technologies, and supporting test methodologies and methods that provide operationally relevant, comparable data on test garments.			0.498	-	-
Title: 19) All-Hazards & Respiratory Protection Description: This effort supports the Respiratory and Ocular Protection. Efforts will improve chemical and biological agent protection while maintaining warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit full spectrum respiratory protection. FY 2022 Plans: - Transition lightweight protective garment for all hazards environments to Uniform Integrated Protection Ensemble Family of Systems Program of Record. - Complete development of systems that provide chemical biological respiratory protection technologies in support of tactical all hazard, full spectrum respiratory protection system. - Develop next generation respiratory protection technology in the form of a low-burden, non-contact powered respirator with novel filter designs that integrates with Warfighter technologies and reduces encumbrance. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.482 Million) transferred to PT2.			2.984	1.380	-
Title: 20) Multifunctional Materials for Protection Description: This effort supports the Respiratory and Ocular Protection, Percutaneous Protection, Expeditionary Collective Protection, Materiel Contamination Mitigation, and Personnel Contamination Mitigation. Efforts will discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants, coatings, filters, and protective garments that reactively decontaminate chemical warfare agents.			3.107	5.677	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
FY 2022 Plans: - Continue to engineer reactive/catalytic nano-structure materials from basic research efforts for chemical agent destruction, to facilitate air purification enhancement. - Continue to integrate engineered reactive/catalytic nano-structure materials into filters, decontaminants, and textiles to assess materials in an operationally-relevant environment for personnel decontamination. - Develop self-decontaminating, reusable protective garments of composite textiles with a reactive barrier, improved protection, and reduced thermal burden/life-cycle costs for advancement to the BA3 level.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.478 Million) transferred to PT2 and MT2.					
Title: 21) Personnel Decontamination Description: This effort supports the Personnel Contamination Mitigation. Efforts will develop decontaminants for decontamination of unbroken skin with lower lifecycle costs and storage constraints and determination of time, efficacy and logistics burdens to warfighters for mass casualty decontamination. Decrease Warfighter burden in the event of a CWA exposure by identifying science and technology gaps in the mass personnel decontamination process as well as possible substitutions for current approved personnel decontamination formulations.			1.177	1.180	-
FY 2022 Plans: - Continue to develop and assess physical removal technologies for potential replacement of Reactive Skin Decontamination Lotion in support of the Next Generation Personnel Decontamination Program of Record. - Continue to integrate new dry decontamination into a mitt form-factor and determine science and technology challenges within process and procedure improvements. - Develop methodologies and procedures to for military working dog decontamination.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.692 Million) transferred to MT2.					
Title: 22) Air Purification Enhancements Description: This effort supports the Expeditionary Collective Protection (CP). Existing CP systems have high life cycle costs driven by maintenance and limited service life. JSTO efforts will focus on optimizing and extending filter life to reduce lifecycle costs while maintaining or improving protection.			0.881	0.393	-
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
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 2021	FY 2022	FY 2023
- Continue integration of the full range of nontraditional agents, including other emerging threats into the air purification enhancement portfolio and testing under relevant environmentally-relevant conditions. - Continue efforts for novel filtration against nontraditional agents and other emerging threats in ColPro and other large-scale filter systems in support of the Collective Protection Modernization Program of Record. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.662 Million) transferred to PT2.											
Accomplishments/Planned Programs Subtotals									95.517	104.362	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CB3: Chemical Biological Defense (ATD)	26.844	26.950	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	53.794
• MT3: Mitigate (ATD)	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
• PT3: Protect (ATD)	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
• UN3: Understand (ATD)	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 2					R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) TM2 / Techbase Medical Defense (Applied Research)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TM2: Techbase Medical Defense (Applied Research)	-	93.525	105.594	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.119

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. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. TM2 thrust areas in FY2022 progress to the Mitigate (MT2), Protect (PT2), and Understand (UN2) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Individual efforts in this Project include:

- Core science efforts in Medical Chemical, Medical Biological, Diagnostics, and Medical Countermeasures.
- 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 2021	FY 2022	FY 2023
Title: 1) Chemical Diagnostics Description: Provide innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum. Enhance force protection by investing in diagnostics for exposure to traditional and nontraditional Chemical Warfare Agents (CWAs), including pharmaceutical based agents (PBAs). Leverage the development of a chemical diagnostic that monitors blood, indicating whether a Warfighter has been exposed to nerve agents within minutes. FY 2022 Plans: <ul style="list-style-type: none"> - Initiate the development to adapt the CHEMDX platform to simultaneously measure organophosphate nerve agent and fentanyl exposure to rapidly inform whether an individual has been exposed to a high probability incapacitant. - Complete the development of new and optimized lab-based assays, field forward sampling, and IVD technologies to verify human exposures to OP and HD. 	1.665	1.554	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)		Project (Number/Name) TM2 / Techbase Medical Defense (Applied Research)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Continue the development of strategies to address portable ultra-low detection of opioids.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.693 Million) transferred to UN2.					
Title: 2) Diagnostic Building Blocks Description: Develop novel, state of the art capabilities that lay the foundation for modernizing other areas within the diagnostics portfolio. This includes exploiting areas such as synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat. Invest in efforts that lead to accelerated assay development timelines and optimized test parameters through leveraging artificial intelligence (AI) and machine learning (ML) to allow us to quickly pivot and develop assays for emerging threats and speed up development to days instead of weeks. FY 2022 Plans: - Complete the development of protocols for generating SYMBAs that are sensitive and specific and can be applied to various diagnostic platforms, supporting open-architecture capabilities FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.466 Million) transferred to UN2.			5.644	4.446	-
Title: 3) Emerging Threats Description: Push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Development of diagnostic systems that leverage novel approaches to characterize pathogen or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample. Invest in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure (e.g. antibiotic, antiviral, vaccine), by a medic or primary care provider greatly improves turnaround time for soldier wellness and return to duty. FY 2022 Plans: - Complete research characterizing AMR and AST mechanisms in Burkholderia pseudomallei. - Complete and validate an improved diagnostic development pipeline for hard to detect pathogens and transition to JPEO. - Complete the development of a comprehensive reference guide that will enable evidence based decision processes that drive the development of current and future diagnostic technologies and transition to JPEO. - Complete evaluation efforts for adapting an FDA approved biomarker platform for diagnosis of human TBI to a platform for diagnosis of brain injury resulting from the encephalitic alphaviruses. - Continue efforts on several complementary approaches to address challenges in toxin diagnosis at the POC.			7.439	4.110	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Continue the development of a universal blood sample preparation platform to be compatible with several diagnostic systems.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.773 Million) transferred to UN2.					
Title: 4) Bacterial/Viral/Toxins/Broad Spectrum Prophylaxis Description: The ultimate protection of the Warfighter is achieved by pretreating the Warfighter to withstand any biological threat with no adverse side effects from the pretreatment. Such pretreatment would enable the Warfighter to work in a less restrictive environment, absent of any personal protective equipment, facilitating the Warfighter to operate at peak performance. Investments in this Program Element support innovative concepts in prophylaxis that support needs specific to the warfighter such as broad spectrum protection, rapid onset to protection, fewer doses required, no cold chain required, and needle-free administration. FY 2022 Plans: Bacterial: - Complete the non-clinical animal studies for two back-up Burkholderia vaccine candidates. Candidates will proceed in development under BA3 funding if results indicated candidates are efficacious, otherwise, efforts will be terminated. - Continue development of Burkholderia monoclonal antibodies. - Continue non-clinical animal immunogenicity and efficacy studies for a Tularemia subunit. - Continue efforts in enabling science and NHP efficacy model development for Q fever. - Continue Q Fever vaccine prototype testing and candidate down selection. - Continue to evaluate protective efficacy of Anthrax vaccines against novel Bacillus anthracis strains. Viral: - Initiate non-clinical animal studies for the Inactivated Western, Eastern, and Venezuelan Equine Encephalitis (WEVEE) vaccine candidate. - Initiate non-clinical animal studies for the Trivalent Western Equine Encephalitis and Venezuelan Equine Encephalitis (WEEVEE) DNA vaccine. - Complete initial development of alphavirus mAbs against VEEV, EEEV, and WEEV, epitope identification and mAb generation. Project will continue utilizing BA3 funding. - Conduct nonclinical safety and efficacy studies for the Marburg Virus (MARV) DNA vaccine. - Down-select between alternative delivery devices for DNA vaccine delivery. Toxins: - Conduct epitope identification and mAbs generation against several marine toxins.			24.622	29.778	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue to develop novel antitoxin technologies including exploring the use of cell membrane coated nanosponges. - Continue evaluation of toxins and antitoxin prophylaxis in animal models. - Continue to develop functional assays to determine biological activity for various toxins. <p>Broad Spectrum:</p> <ul style="list-style-type: none"> - Continue novel pan virus nanosponge platform development to address emerging threats, explore additional applications of nanosponge technology to include emerging toxins and bacterial threats. - Explore additional strategies and platforms for broad spectrum protection to address protection against emerging threats. - Evaluation of next generation adjuvants for use in biodefense vaccines. - Initiate nonclinical evaluation of multivalent vaccine against arenaviruses. - Continue to qualify/validate MIMIC for use in evaluation of pulmonary responses to biodefense vaccines. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$26.699 Million) transferred to PT2.</p>					
<p>Title: 5) Chemical Reactive Ocular Wound and Dermal Therapeutics (CROWD)</p> <p>Description: Focuses on therapeutic strategies to effectively treat CWA contamination on wounds, eyes, and large areas of intact skin. This effort involves the development of products capable of removing or neutralizing CWAs from those routes of exposure, to decrease the toxic load of agent and allow optimal effectiveness of other systemic therapeutics.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Determination of dosing strategies for use of candidate products in traumatic wounds. - Perform advanced preclinical studies to validate safety and efficacy in support of clinical trials. - Assessment of candidate product readiness for advanced development. - Continue refinement of manufacturing and stability. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.351 Million) transferred to MT2.</p>			3.126	6.679	-
<p>Title: 6) Enabling Science</p> <p>Description: Protection of the Warfighter against Chemical Warfare Agents (CWAs) to maintain force lethality is the ultimate goal of the Enabling Sciences portfolio. The portfolio leverages innovative approaches and emerging technologies to support modernization of chemical medical countermeasure (cMCM) pipeline. The portfolio is designed to develop and deploy cMCMs more rapidly to the warfighter.</p>			8.137	10.930	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Portfolio elements include: 1) development of Artificial Intelligence/Machine Learning (AI/ML) tools to more efficiently identify cMCMs and assess their safety and efficacy for regulatory submission; 2) AI/ultra-high throughput screening-based sampling of large chemical spaces with the aim of providing broad spectrum cMCMs with improved efficacy and selectivity, minimal toxicity, and decreased expense and fielding times to the warfighter; 3) development of technologies to deliver MCMs across the blood brain barrier (BBB) into the brain; 4) maturation of cMCMs with innovative mechanisms of actions; and 5) development of well characterized or FDA qualified animal models, as needed, to support cMCM discovery and development under the FDA animal rule.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Employ AI-based computational toxicology and drug design system incorporating machine learning algorithms to streamline drug design. - Continue to maintain databases of both high throughput screening and ADME/T data for drug candidates. - Continue to perform select animal and safety studies for lead therapeutic candidates, including anticholinergics, for treatment of CWAs. - Continue to develop encapsulation and shuttle technologies that will deliver the 2-PAM payload across the BBB. - Continue to support the therapeutic candidate pipeline. - Perform follow on in vitro and in vivo safety and efficacy studies to support the down selection of high throughput screening hits to leads. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$13.134 Million) transferred to MT2.</p>					
<p>Title: 7) Pharmaceutical Based Agents (PBAs)</p> <p>Description: Focuses on therapeutic strategies to effectively minimize injuries resulting from exposure to Pharmaceutical Based Agents (PBAs). This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for Food and Drug Administration (FDA) licensure or to identify previously licensed products for new uses in the treatment of chemical warfare casualties.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue development of novel opioid therapeutics which will allow current pain management doctrine. - Continue operational assessment of FDA approved drug products to inform MCM timing and sequence in the event of a known or unknown chemical exposure. 			6.564	7.390	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Continue to assess drug products for use against other priority PBA emerging threats (e.g., non-opioids)					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$5.586 Million) transferred to MT2.					
Title: 8) Reactivators of AChE as Therapeutics (ReACT) Description: The Warfighter requires rapid acting medical countermeasures (MCMs) to counter adverse effects from exposure to Nerve Agents (NAs) and maintain force lethality. This effort involves the development of improved therapies for acetylcholinesterase enzyme reactivation. Efforts in this area are designed to develop potential candidates that will ultimately be submitted for Food and Drug Administration (FDA) licensure or to identify previously licensed products for new uses in the treatment of chemical warfare casualties. FY 2022 Plans: - Test the safety and efficacy of candidate resurrectors of inhibited acetylcholinesterase in vivo in animal models. - Down select generated chemical libraries to the most promising broad spectrum therapeutic candidates for follow on safety and efficacy assessments. - Continue drug formulation efforts for MCMs with a longer shelf-life and with feasibility of an auto-injector containing material and chemical composition. - Continue development of current and screening for novel broad spectrum cholinesterase reactivators that are effective in the brain. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.279 Million) transferred to MT2.			7.501	5.262	-
Title: 9) Bacterial Therapeutics Description: Discover and develop therapeutic countermeasures to mitigate the effects of known and emerging bacterial threats to the warfighter. FY 2022 Plans: - Continue efforts to discover and develop traditional (small molecule inhibitors) and non-traditional (phage therapies, antimicrobial peptides, immunomodulators, and host-directed therapies) therapeutic candidates to existing and emerging bacterial threats. - Complete the development of formulations for existing antibiotic therapies that increase efficacy against bacterial pathogens and initiate proof of concept animal studies. - Continue small animal proof of concept testing to identify novel/nontraditional therapies against all pathogens. FY 2022 to FY 2023 Increase/Decrease Statement:			10.915	14.456	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 2		R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>		Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT2. Beginning FY23, Viral/Bacterial/Toxin Therapeutics bullets will be consolidated into Biological Warfare Defense Therapeutics.					
Title: 10) Viral Therapeutics Description: Discover and develop therapeutic countermeasures to mitigate the effects of known and emerging viral threats to the warfighter. FY 2022 Plans: - Continuation of testing and development of biologics and small molecules targeting viral threats. - Continuation of the discovery and down-selection of additional broad-spectrum, direct-acting and host-directed antivirals - Initiate new investments in the discovery and down-selection of additional broad-spectrum, direct-acting and host-directed antiviral candidates for existing and emerging threats. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT2. Beginning in FY23, the Viral/Bacterial/Toxin Therapeutics bullets will be consolidated into Biological Warfare Defense Therapeutics.			13.599	14.457	-
Title: 11) Toxin Therapeutics Description: Discover and develop therapeutic countermeasures to protect the warfighter against biotoxin threats. FY 2022 Plans: - Continue evaluation of broad-spectrum, small molecule compounds and biologics for efficacy in the treatment and recovery from intoxication by BoNT. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT2. Beginning FY23, Viral/Bacterial/Toxin Therapeutics bullets will be consolidated into Biological Warfare Defense Therapeutics.			0.250	0.250	-
Title: 12) Nerve Agent Prophylaxis/Pretreatments Description: Develop pretreatments and prophylactics that counter chemical warfare agents, including organophosphorus nerve agents (OPNA), using targeted and innovative S&T efforts that will offer broad-spectrum protection, flexible route of administration, lower dose requirements, and reduced operational and logistical burden. The use of these MCMs will protect the lives and effectiveness of our Warfighters, thus maintaining force strength and force capability. FY 2022 Plans: - Continue efforts to develop catalytic enzymes for use against selected, priority NTAs.			4.063	3.282	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 2				R-1 Program Element (Number/Name) PE 0602384BP / CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)				Project (Number/Name) TM2 / Techbase Medical Defense (Applied Research)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
- Continue expanded pre-clinical studies of lead catalytic scavengers to support future investigative new drug (IND) filing. - Continue efforts to develop capability for rapid development of medical countermeasures. - Continue efforts to explore and further develop novel non-enzyme nerve agent prophylaxis. - Continue new approaches to identify pretreatment and prophylaxis against multiple classes of NTAs and emerging chemical threats.											
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.158 Million) transferred to PT2.											
Accomplishments/Planned Programs Subtotals									93.525	102.594	-
							FY 2021	FY 2022			
Congressional Add: Biological Warfare Defense Therapeutics							-	3.000			
FY 2022 Plans: For PUL 042 (Burkholderia, Tularemia), proof of concept small animal efficacy studies will be completed with options for non human primate pharmacokinetics studies, and GMP manufacturing. The candidate will then be ready to transition to advanced development.											
This is a host directed therapeutic and fits with our broad spectrum strategy for MCMs.											
- Continue non-clinical animal immunogenicity and efficacy studies for a Tularemia subunit.											
Congressional Adds Subtotals							-	3.000			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MT2: Mitigate (Applied Research)	0.000	0.000	75.411	-	75.411	71.705	68.483	64.502	70.651	Continuing	Continuing
• PT2: Protect (Applied Research)	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing
• UN2: Understand (Applied Research)	0.000	0.000	122.028	-	122.028	117.683	105.509	101.577	100.929	Continuing	Continuing
• EN3: Enabling Investments (ATD)	0.000	0.000	42.590	-	42.590	43.197	43.198	44.449	44.449	Continuing	Continuing
• MT3: Mitigate (ATD)	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
• PT3: Protect (ATD)	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
• TM3: Techbase Medical Defense (ATD)	134.162	137.691	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	271.853

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 2				R-1 Program Element (Number/Name) PE 0602384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (APPLIED RESEARCH)</i>				Project (Number/Name) TM2 / <i>Techbase Medical Defense (Applied Research)</i>				
C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• UN3: <i>Understand (ATD)</i>	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing
Remarks												
D. Acquisition Strategy												
N/A												

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	184.348	197.824	238.407	-	238.407	248.071	256.357	256.706	245.793	Continuing	Continuing
EN3: <i>Enabling Investments (ATD)</i>	-	0.000	0.000	42.590	-	42.590	43.197	43.198	44.449	44.449	Continuing	Continuing
MT3: <i>Mitigate (ATD)</i>	-	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
PT3: <i>Protect (ATD)</i>	-	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
UN3: <i>Understand (ATD)</i>	-	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing
ET3: <i>Emerging Threats (ATD)</i>	-	0.000	6.000	0.000	-	0.000	10.000	10.000	10.000	10.000	Continuing	Continuing
CB3: <i>Chemical Biological Defense (ATD)</i>	-	26.844	26.950	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	53.794
NT3: <i>Non-Traditional Agents Defense (ATD)</i>	-	13.001	18.396	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.397
TM3: <i>Techbase Medical Defense (ATD)</i>	-	134.162	137.691	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	271.853
TT3: <i>Technology Transition (ATD)</i>	-	10.341	8.787	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.128

A. Mission Description and Budget Item Justification

This program element (PE) resources Advanced Technology Development across the Enabling Investments, Mitigate, Protect, and Understand portfolios. Chemical and Biological Defense Program (CBDP) investments provide an integrated, layered capability to enable combating weapons of mass destruction (CWMD) missions ranging from combat operations to Department of Defense (DoD) support to domestic incident prevention and response. The Projects in this PE demonstrate technologies supporting transition to advanced component development for physical capabilities which cover chemical and biological (CB) detection, situational awareness and effects modeling, and protection and hazard mitigation. FY23 funding accelerates characterization and situational awareness of emerging biothreats and accelerates delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.

Individual Projects include:

- Enabling Investments (EN3): Demonstrations of CB defense technologies, including biological detection, chemical detection, and decontamination, including non-traditional agents. Continued efforts to enhance military operational capability, concepts of operation, and WMD elimination.
- Mitigate (MT3): Production of therapeutic candidates for bacterial, viral, and toxin threats.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>
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- Protect (PT3): Production of pretreatment candidates for bacterial, viral, and toxin threats.
- Understand (UN3): Demonstration of enhanced chemical detection capabilities for aerosols and non-traditional agents, expanded capabilities for biosurveillance in pathogen detection and diagnosis, produce biological diagnostic arrays and reagents and, diagnostic device platforms.
- Emerging Threats (ET3): identify and develop scientific solutions, or to modernize capabilities, that allow for a more rapid response to emerging threats.
- Chemical Biological Defense (CB3), Non-Traditional Agents (NTA) Defense (NT3), Techbase Medical Defense (TM3) and Technology Transition (TT3) are no longer active FY23 Projects due to budget restructure.

The CBDP Science and Technology (S&T) Advanced Technology Development stakeholders: The U.S. Army Combat Capabilities Development Command Chemical Biological Center (DEVCOM CBC), 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.

Work conducted under this PE will transition to and will provide risk reduction for Advanced Component Development and Prototypes (PE 0603884BP) and System Development and Demonstration (PE 0604384BP) activities.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	191.001	197.824	0.000	-	0.000
Current President's Budget	184.348	197.824	238.407	-	238.407
Total Adjustments	-6.653	0.000	238.407	-	238.407
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	-			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-3.110	-			
• SBIR/STTR Transfer	-3.543	-			
• Other Adjustments	0.000	-	238.407	-	238.407
Congressional Add Details (\$ in Millions, and Includes General Reductions)					
Project: CB3: <i>Chemical Biological Defense (ATD)</i>					
					FY 2021
					FY 2022

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 3: Advanced Technology Development (ATD)</i>		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	
Congressional Add Details (\$ in Millions, and Includes General Reductions)		FY 2021	FY 2022
Congressional Add: <i>High Air Flow ChemBio Filtration System Enhancement</i>		3.000	-
Congressional Add Subtotals for Project: CB3		3.000	-
Congressional Add Totals for all Projects		3.000	-
Change Summary Explanation			
Funding: FY 2021 (-\$3.110 Million): Below threshold reprogramming to increase advanced development programs for implementation of common CBRN integrated systems architecture within the CBRN Integrated Early Warning (CBRN IEW) program, Joint Nuclear Biological Chemical Radiological System (JNBCRS) 1 CBRN sensor development and integration, Man Portable Diagnostic System (MPDS) product development, and RDT&E Management Support efforts.			
FY 2021 (-\$3.543 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.			
FY 2021 (+\$3.000 Million): Congressional Add for High Air Flow Chemical Biological (CB) Filtration System Enhancement is reflected in the Current President's Budget amount.			
FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for enhanced biodefense and pandemic preparedness investments (+\$49.581 Million).			
Schedule: N/A			
Technical: N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) EN3 / Enabling Investments (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EN3: Enabling Investments (ATD)	-	0.000	0.000	42.590	-	42.590	43.197	43.198	44.449	44.449	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enabling Investments Advanced Technology Development (ATD) Project focuses on early and continued involvement of the Warfighter in the technology development process and has implemented a user community engagement process to align science and technology (S&T) activities with operational needs and ensure functional design. This process begins with the identification of an innovative technology concept, continues through the assessment of the prototype, and ends at the operational and utility demonstrations to enhance transition to an advanced developer. Enabling efforts in this area support dedicated infrastructure capabilities, demonstrations, and overarching development support functions as portfolio enablers responding to emerging threats.

Thrust Areas included in this Project are:

- (1) Advanced Technology Demonstration
- (2) Technology Concept
- (3) User Assessments
- (4) Battlefield Readiness
- (5) Emerging Threats
- (6) Diagnostic Building Blocks
- (7) Medical Countermeasures Initiative

Advanced Technology Demonstration: Facilitates Warfighters and other operational stakeholders participation in field demonstrations that evaluate integrated prototype systems in high fidelity and realistic operating environments. ATDs provide feedback to developers and help shape S&T innovative solutions for employment across the spectrum of Joint Force actions in the chemical, biological, radiological, and nuclear (CBRN) defense arena. Advanced Technology Demonstration outcomes mitigate transition risk by demonstrating operational utility and enhancing transition to an identified Chemical and Biological Defense Program (CBDP) program of record.

Technology Concept: Validates technology requirements and scopes future S&T programs with the User community early in technology development process. Results from these experiments shape operating concepts, doctrine, and materiel systems requirements for the future Joint Force and informs the utility of emerging technologies for subsequent portfolio investment decisions. Technology Concept outcomes explore new concepts of employment for emerging capabilities to shift the current operational paradigm.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) EN3 / Enabling Investments (ATD)		
User Assessments: Provides opportunities for early Warfighter input into the form, fit and function of maturing S&T prototypes and technologies. Early user assessments can validate employment concepts, and serve as baselines for future Advanced Technology Demonstration efforts. User Assessment outcomes explore how to push the state of future technology through system mockup and early prototyping.					
Battlefield Readiness: Provides innovative capabilities to the Warfighter that increase the speed of relevancy, enhances troop preparedness, aids with triage support, and provides diagnosis at lower roles of care. Develops field forward medical diagnostics to provide multiplexed detection of biological and toxin threats and leverages immunodiagnostics to identify specific targets using current or novel approaches to enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure.					
Emerging Threats: Invests in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure, to greatly advance efficacy rates and turnaround time for Warfighter wellness. Efforts focus on better preparing for surprise by developing diagnostic systems that leverage novel approaches to characterize pathogens or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample.					
Diagnostic Building Blocks: Develops foundational capabilities for the entire diagnostics portfolio; invests in innovative, cutting-edge technologies to improve the development pipeline for diagnostics; and exploits areas in artificial intelligence synthetic biology and machine learning to develop novel and rapid diagnostic tests for utilization. Efforts accelerate assay development timelines and optimize test parameters by leveraging novel concepts and tools that readily allow a pivot to assay development for emerging threats.					
Medical Countermeasures Initiative: Advances medical capabilities to support CB Incident Preparedness Response (CBIPR). Efforts focus on Advanced Development and Manufacturing capability development through the Bacterial Expression, CRM Conjugate, Marburg vesicular stomatitis vaccine (VSV MARV), deoxyribonucleic acid (DNA) Vaccine and Advanced Development and Manufacturing of Antibody Technology (ADAMANT) Insertions projects; laboratory sustainment for the Animal Model/ Response Capability; genomics; and chemical warfare agent (CWA) Diagnostics; and other medical countermeasure development through the In-vitro Affinity Diagnostic System and antimicrobial susceptibility projects.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) Advanced Technology Demonstration			-	-	6.195
Description: Advanced Technology Demonstrations (ATDs) facilitate Warfighters and other operational stakeholders' participation in field demonstrations that evaluate integrated technologies or prototype systems with demonstrated technical performance in high fidelity and realistic operating environments. Building on the Technology Concepts and User Assessments thrust areas conducted earlier in the technology maturation process, feedback from the Warfighters during ATDs ensures that these technologies are operationally relevant, value added, and can be matured and potentially transitioned in a timely and effective manner to transition partners for advanced development and employment across the spectrum of Joint Force actions in a chemical, biological, radiological, and nuclear (CBRN) defense Environment. ATD outcomes area designed to enhance transition of cutting edge CBRN technologies and mitigate transition risk by demonstrating operational utility and initial Tactics, Techniques, and Procedures (TTPs).					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022	
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
FY 2023 Plans: - Continue planning and executing ATD. ATD will demonstrate integrated, innovative combating weapons of mass destruction (CWMD) technologies with the Warfighter for feedback to optimize and accelerate the maturation and delivery of needed capability to the end user; help focus Chemical and Biological Defense Program (CBDP) community engagement (e.g. CBRN Support to Command and Control (CSC2) Capability Development Packages (CDP)), building transition criteria for advanced development and fielding; inform the Warfighter on the future operating environment, driving development of concept of operation (CONOPS) and TTPs, and building out the entire Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTmLPF-P) capability requirements spectrum.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.640 Million) remains in TT3. Increase due to change in program/project technical parameters.				
Title: 2) Technology Concept Description: Initiatives to validate technology requirements and scope future S&T programs with Warfighter stakeholders, including Combat Developers and Service representatives. Results from these experiments shape Operating Concepts, doctrine, and materiel systems requirements for the future Joint Force and inform technology developers about potential Warfighter utility of emerging technologies and technology concepts for subsequent portfolio investment. Activities in this area focus on Surveys, User Groups, Table Top Exercises (TTXs), and practical demonstration or User feedback workshops to develop Use Cases, desired operational capabilities, key attributes and explore Concepts of Employment to assess feasibility/utility of emerging technologies.		-	-	1.296
FY 2023 Plans: - Conduct 4-6 technology concept studies, workshops or Focus Groups including the continuation of distributed sensing and mitigation techniques. Additional technology concepts will be identified within this timeframe based upon technology discovery, maturity, and application to Warfighter needs.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.296 Million) remains in TT3.				
Title: 3) User Assessment Description: User Assessments examine maturing technologies and provide opportunities for early Warfighter input into the form, fit, and function of maturing S&T prototypes and technologies; and as appropriate, assess them within a simulated operational environment. The assessments serve as baselines for future ATD programs, and drive S&T gap analysis for key customers and partners. User assessments are characterized by TTXs, Early User Assessments, Technical demonstrations and field		-	-	1.851

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) EN3 / <i>Enabling Investments (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
experiments that provide candid feedback focused on applicability, utility and recommended improvements while exploring system limitations, vulnerabilities and technology tradeoff analyses of innovative technologies in a non-attributional environment.					
FY 2023 Plans: - Continue the annual CB Operational Analysis (CBOA) event.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.851 Million) remains in TT3.					
Title: 4) Battlefield Readiness Description: Provide innovative capabilities to the Warfighter that increase the speed of relevancy, enhance troop preparedness, aid with triage support, and provide diagnosis at lower roles of care. Develop field forward medical diagnostics that allow for multiplexed detection of biological and toxin threats. Leverage immunodiagnostics to identify specific targets using current or novel approaches to enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure.			-	-	5.094
FY 2023 Plans: - Continue the development of additional panels for infectious disease diagnostic tests on the immunological diagnostic platform.					
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred from another funding line. FY22 funding (\$4.400 Million) remains in TM3. Increase due to change in program/project technical parameters.					
Title: 5) Emerging Threats Description: Advance the diagnosis of emerging and/or low prevalence but high threat biological agents leveraging novel technologies. Develop threat agnostic tests based on host biomarkers that identify known or emerging bacterial or viral infections. Characterize markers for antibiotic resistance or susceptibility to identify challenging threats and inform treatment decisions. Improve capabilities to identify diverse biological agents that are not well characterized using molecular or immunodiagnostic approaches.			-	-	2.264
FY 2023 Plans: - Initiate efforts that establish multiple capabilities for Warfighters to combat new and emerging threats to include identifying novel platforms that are capable of identifying broad classes of threat agents in complex matrices.					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) EN3 / <i>Enabling Investments (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Program/project funding transferred from another funding line. FY22 funding (\$3.851 Million) remains in TM3. Decrease due to change in technical parameter.					
Title: 6) Diagnostic Building Blocks			-	-	3.962
Description: The Diagnostic Building Blocks thrust area lays a foundation for the entire diagnostics portfolio by exploiting areas such as machine learning (ML), synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat.					
FY 2023 Plans: - Continue novel efforts in Artificial Intelligence (AI) and ML for designing assays with high specificity against a broader range of CB agents to enable an agile response to emerging threats.					
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred from another funding line. FY22 funding (\$2.751 Million) remains in TM3. Increase due to change in program/project technical parameters.					
Title: 7) Medical Countermeasures Initiative			-	-	21.928
Description: The Chem Bio Incident Preparedness and Response-Medical Countermeasures Initiative (CBIPR-MCMI) will integrate advances in regulatory science and flexible manufacturing technologies and processes; and develop animal models and drug discovery and evaluation platforms as enablers of the advanced development of CBDP medical countermeasure products. These initiatives will lead to the establishment of multi-use platforms and animal models that can be leveraged during a CBRN response to accelerate medical product development and/or regulatory approval as well as reduce overall development costs.					
FY 2023 Plans: - Complete preclinical studies for Marburg vesicular stomatitis vaccine (VSV) for initiation into a Phase 1 clinical trial. - Continue Burkholderia outer membrane vesicle (OMV) vaccine manufacturing to support Phase 1 clinical trial. - Conduct good laboratory practice (GLP) toxicology on Burkholderia OMV vaccine prior to entry into Phase 1 clinical trial. - Initiate good manufacturing practice (GMP) manufacturing of Francisella tularensis (FnIglD) vaccine to support Phase 1 clinical trial. - Prepare for surprise by establishing drug discovery and evaluation platform capability that can be leveraged during a CBRN response. - Continue to develop and advance animal models to accelerate medical countermeasure (MCM) delivery and the capacity to respond to emerging biological threats.					
FY 2022 to FY 2023 Increase/Decrease Statement:					

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

	FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$21.602M) remains in TM3.			
Accomplishments/Planned Programs Subtotals	-	-	42.590

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• EN4: <i>Enabling Investments (ACD&P)</i>	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) MT3 / Mitigate (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT3: Mitigate (ATD)	-	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mitigate Advanced Technology Development (ATD) Project provides the Joint Force the ability to preserve combat power by mitigating exposure to chemical and biological (CB) hazards and restoring combat readiness of critical personnel and platforms.

Thrust Areas included in this Project are:

- (1) Enhanced Survivability Coatings
- (2) Equipment Decontamination
- (3) Multifunctional Materials for Protection
- (4) Personnel Decontamination
- (5) Biological Warfare Defense Therapeutics
- (6) Discovery of Medical Countermeasures Against New and Emerging (DOMANE)
- (7) Nerve Agent Prophylaxis/Pretreatments
- (8) Pharmaceutical Based Agents (PBAs)
- (9) Reactivators of Acetylcholinesterase as Therapeutics (ReACT)

Enhanced Survivability Coatings: Addresses military equipment coating ease of decontamination and resistance to chemical agent penetration. Projects will develop temporary coatings that resist chemical agent absorption and are quickly decontaminated in the field and allow the rapid regeneration of combat power.

Equipment Decontamination: Develops decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enables unit-level decontamination with rapid unmasking; reduces logistic needs, enables rapid sorting of clean from dirty to return high-value equipment to normal use, and develops improved realistic test methods. Efforts address the capability to decontaminate personal equipment. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

Multifunctional Materials for Protection: Discovers, develops and integrates novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants that reactively decontaminate chemical warfare agents.

Personnel Decontamination: Develops decontaminants with lower lifecycle costs and storage constraints and determine of time, efficacy and logistics burdens to Warfighters for mass casualty decontamination, including possible substitutions for current approved personnel decontamination formulations.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) MT3 / Mitigate (ATD)

Biological Warfare Defense Therapeutics: Develops broad-spectrum bacterial, toxin and viral therapeutics, and label expansion (repurposing) of medical countermeasures that are Food and Drug Administration (FDA) approved or in advanced stages of clinical development. These efforts are coordinated with Department of Health and Human Services (HHS), Biomedical Advanced Research and Development Authority (BARDA), and across the interagency and Department, to leverage public and force/defense health related investments made to minimize risk and speed approval of novel antibiotic countermeasures. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

Discovery of Medical Countermeasures Against New and Emerging (DOMANE): Provides innovative and rapid medical countermeasures (MCMs) development capabilities that reduce developmental risks, cost and schedule associated with MCM fielding, and afford protection against and allow the Joint Force to rapidly respond to traditional, new and emerging biological warfare threat exposures to allow freedom of action. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

Nerve Agent Prophylaxis/Pretreatments: Develops and transitions novel products and information to address current and emerging chemical threats to protect the lives and effectiveness of Warfighters, thus maintaining force strength and force capability. FY23 focuses on obtaining the first prophylactic MCMs designed to prevent severe morbidity and mortality upon exposure to nerve agents without the need for additional individual physical protective equipment.

Pharmaceutical Based Agents (PBA): Assesses candidate MCMs and transitioning them to partner US Government entities for development into fieldable drug products. Activities advancing therapeutic drugs for protection against opioid agents and developing MCMs to treat non-opioid sedatives in preparation for Phase 1 or other relevant clinical trials.

Reactivators of Acetylcholinesterase as Therapeutics (ReACT): Develops broad-spectrum, centrally-acting acetylcholinesterase reactivators that increase survival, reduce morbidity, and decrease neurological damage.

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

<p>Title: 1) Multifunctional Materials for Protection</p> <p>Description: This effort will discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants and coatings.</p> <p>FY 2023 Plans:</p> <p>- Develop and characterize novel reactive/catalytic materials that decontaminate chemical and biological (CB) threats and integrate materials into next generation decontaminants and coatings.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>	-	-	0.189
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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding remains in CB3.					
Title: 2) Enhanced Survivability Coatings Description: This effort seeks to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military equipment to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return equipment to mission operations level. FY 2023 Plans: - Continue to characterize bio-inspired surface treatments for equipment coatings to repel agents of interest from current military equipment coatings. - Evaluate and incorporate new or commercially-available appliques (to include chemical transport studies in current military coatings, novel coatings characterization, thin film overcoats, strippable coat, reactive coat, and lock-down coats) in support of CBRN Coatings, Coverings, and Protective Overlays. - Advance thin repellent film coating systems from fundamental research to applied research test and evaluation. FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.			-	-	0.051
Title: 3) Equipment Decontamination Description: This effort seeks to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enable unit-level decontamination with rapid unmasking; reduce logistic needs (need for water); enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use; and develop improved realistic test methods. Successful efforts will result in improved efficacy, materials compatibility, flexibility, and reduced logistical burden compared to existing and emerging decontamination program requirements. FY 2023 Plans: - Transition methodology for testing for effective decontamination of complex surfaces and real-world systems to the Service Equipment Decontamination Systems (SEDS) or Tactical Contamination Mitigation Systems (TCMS) programs of record. - Finish development and demonstration of an autonomous decontamination platform to reduce troop-to-task burden of operational decontamination. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in TM3. Decrease due to change in program/project technical parameters.			-	-	0.951
Title: 4) Equipment Decontamination - Enhanced Biodefense (ENBD)			-	-	6.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Description: This effort will focus on Improved Decontamination and Disinfectant Options. The Warfighter has a limited capability to decontaminate personal equipment, weapons, vehicles, ships, and facilities; Sensitive equipment (weapon system optics, electronic equipment, interior spaces, and aircraft); and hazardous waste. Efforts seek to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enable unit-level decontamination with rapid unmasking; reduce logistic needs (need for water); enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use; and develop improved realistic test methods. Successful efforts will result in improved efficacy, materials compatibility, flexibility, and reduced logistical burden compared to existing and emerging decontamination program requirements.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Develop and demonstrate biological disinfection guidelines, procedures, and Concepts of Operations (CONOPs) for Department of Defense (DoD) facility and large-platform interiors, including development of directed energy disinfection methods including plasma and ultraviolet germicidal irradiation. - Complete comparative laboratory study of Biosafety Level (BSL)-1 surrogate and BSL-2 human coronavirus ultraviolet (UV) disinfection to support field demonstrations. - Develop biological agent disclosure sprays for sensitive, specific biological contamination mapping on surfaces to guide and reduce logistics of decontamination. Explore solution concepts through research, development, and demonstration of one or more functional prototype technologies in a phased approach for a biological agent disclosure spray. - Demonstrate a proof of concept demonstrating specific recognition and binding of the targeted biological warfare agent of interest. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>					
<p>Title: 5) Personnel Decontamination</p> <p>Description: This effort develops decontaminants for decontamination of unbroken skin with lower lifecycle costs and storage constraints and determination of time, efficacy and logistics burdens to Warfighters for mass casualty decontamination. Decrease Warfighter burden in the event of a chemical warfare agent (CWA) exposure by identifying S&T gaps in the mass personnel decontamination process as well as possible substitutions for current approved personnel decontamination formulations.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Develop and use laboratory and animal models to assess physical removal technologies for potential replacement of Reactive Skin Decontamination Lotion (RSDL). 			-	-	0.869

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>- Continue to integrate new dry decontamination into a mitt form factor and determine S&T challenges within process and procedure improvements. This includes investigation of Food and Drug Administration (FDA) requirements for approval of technology as a medical device.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.024 Million) remains in CB3. Decrease due to change in program/project technical parameters.</p>			
<p>Title: 6) Biological Warfare Defense Therapeutics</p> <p>Description: This effort focuses on Micro physiological Systems and Small Molecule Library and S&T Host Response Study. Funds biomedical research to include the preclinical development of therapeutic countermeasures against known and emerging biological warfare (BW) threats for which FDA-approved therapeutics are limited or lacking. BW defense therapeutics mitigate and reverse the effects of known and emerging biological warfare threats in symptomatic warfighters diagnosed with BW disease. They are the last line of defense against BW threats and are critical to returning symptomatic warfighters to service. Biomedical research is focused on preclinical evaluation (e.g., in large animal models) of broad-spectrum therapeutic candidates that target viruses, bacteria or toxins directly, enhance the host response (e.g., by modulating the immune system) and/or relieve BW disease symptoms. Broad-spectrum therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for additional non-clinical and clinical evaluation under Advanced Component Development and Prototypes (PE 0603884BP), and can be accelerated for use against emerging infectious diseases during an outbreak. Preclinical evaluation of novel small molecules (chemically synthesized), novel biologic molecules (isolated from natural sources), drug and drug/ vaccine combinations (aka layered defense), and repurposing of drugs approved by the FDA or in clinical development for other indications, are included in this research. Refinement of appropriate animal models in which to evaluate therapeutic candidates is also included. Projects leverage interagency and commercial sector investments to accelerate development and reduce costs.</p> <p>FY 2023 Plans: Bacterial: - Continue efforts to identify and advance bacterial therapeutic candidates, with a focus on non-traditional candidates. Therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for additional nonclinical and clinical evaluation under Advanced Component Development and Prototypes (PE 0603884BP) or transition to an advanced developer. - Continue to partner with interagency, international and industry partners to fund nonclinical BW therapeutic efficacy studies for therapeutic candidates already in advanced development for public and force health indications. - Continue to execute proof of concept efficacy studies for antibiotic therapy in combination with prophylaxis or complimentary treatments (layered medical defense). Advance layered combinations toward proof of concept in non-human primate (NHP) models.</p>		-	29.439

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) MT3 / Mitigate (ATD)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Viral:</p> <p>- Continue efforts to identify and advance viral therapeutic candidates against new and existing BW viral threats, including direct acting, broad-spectrum anti-virals and monoclonal antibodies. Therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for additional nonclinical and clinical evaluation under Advanced Component Development and Prototypes (PE 0603884BP) or transition to an advanced developer.</p> <p>- Continue proof of concept viral therapeutic efficacy studies for combinations of therapeutics including, small molecule, monoclonal antibody and host-directed therapeutics.</p> <p>Toxins:</p> <p>- Continue to evaluate efficacy of repurposed drug for treatment of botulinum neurotoxin (BoNT) A intoxication in NHP animal model.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding remains in TM3. Starting in FY23, all Bacterial/Viral/Toxin Therapeutics bullets will be consolidated to new single bullet title Biological Warfare Defense Therapeutics.</p>					
<p>Title: 7) Biological Warfare Defense Therapeutics - Enhanced Biodefense (ENBD)</p> <p>Description: This effort focuses on Micro physiological Systems & Small Molecule Library & S&T Host Response Study. Activities include expediting a response to emerging threats by assessing broad-spectrum efficacy of approved drugs against biological threats (i.e., drug repurposing), advancing repurposed drugs against biological threats for FDA approval; developing tools (e.g., small molecule libraries) to expedite discovery and development of therapeutic candidates in response to an emerging threat; and, identifying and developing technologies that target host response to disease caused by biological threats.</p> <p>FY 2023 Plans:</p> <p>- Initiate and accelerate projects to repurpose broad-spectrum drugs against viral, bacterial and toxin threats.</p> <p>- Initiate and continue projects to create and sustain curated, searchable databases of molecules with toxicity, drug development and efficacy data for use in a response to emerging biological threats.</p> <p>- Initiate development of host-targeted technologies that can be used to stop progression of disease caused by viral threats.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	23.000
Title: 8) Discovery of Medical Countermeasures Against New and Emerging (DOMANE)			-	-	4.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Description: A capability to rapidly identify both pathogen and host based targets for novel threats and find drugs for those targets coupled to a streamlined process for rapid MCM development.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continued development of prototype capability that forecasts pathogenicity or toxicity of biological threats. - Continued development of prototype capability for high-throughput screening to produce high resolution target and MCM identification. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in TM3.</p>					
<p>Title: 9) Discovery of Medical Countermeasures Against New and Emerging (DOMANE) - Enhanced Biodefense (ENBD)</p> <p>Description: This effort focuses on Repurposing Existing Therapeutics. It supports DOMANE thrusts like Pathogenesis and Toxicity forecasting using Multi-Organoid Systems PATMOS (PATMOS) prototype develops an advanced-artificial intelligence (AI) assisted multi-organoid system capable of forecasting pathogenesis of viral threats and toxicity of biotoxin threats as well as DOMANE thrusts like Medical Countermeasure Finder (MEDFIND) to a prototype that provides flexible advanced AI-assisted system capable of harnessing repurposed drugs and generate effective therapeutic intervention strategies against viral and biotoxin threats.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Prototype development PATMOS platform for high resolution forecasting of pathogenesis that occurs during interaction of a biological threat. - Prototype initiation for MEDFIND platform to identify repurposed drugs using AI and Machine Learning (ML). <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	12.000
<p>Title: 10) Nerve Agent Prophylaxis/Pretreatments</p> <p>Description: Develop pretreatments and prophylactics that counter non-traditional agents (NTAs) and emerging chemical threats to protect the lives and effectiveness of our Warfighters, thus maintaining force strength and force capability. Successful prophylactics will rapidly detoxify a broad spectrum of compounds of interest (COIs).</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Submit investigational new drug (IND) submission to the FDA for organophosphorus nerve agents (OPNA) catalytic scavenger enzymes. 			-	-	1.174

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Complete Good Laboratory Practice (GLP) pharmacokinetics, immunogenicity and efficacy of catalytic scavenger enzyme lead candidates in small animals. - Complete enzyme current Good Manufacturing Practice (cGMP) manufacturing scale-up. - Complete formulation efforts. - Complete enzyme non-cGMP manufacturing scale-up. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in TM3.</p>					
<p>Title: 11) Pharmaceutical Based Agents (PBAs)</p> <p>Description: Focuses on therapeutic and proactive strategies to effectively minimize injuries and/or death resulting from exposure to PBAs. This will allow the Warfighter to maintain operational capacity in a chemically contested battlefield scenario. This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment and pretreatment against chemical warfare injury.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue development of Rapid Opioid Countermeasure System (ROCS) higher concentration Naloxone formulation for use in a multiuse vial format through New Drug Application (NDA) by FDA. - Continue operational assessment of FDA approved drug products to inform MCM timing and sequence in the event of a known or unknown chemical exposure. - Assess operational feasibility of employing FDA approved opioid antagonist MCM to provide extended duration of protection. - Continue development of novel therapeutic products to mitigate Opioid-Induced Respiratory Depression (OIRD) to reduce lethality in CWA exposed Warfighters - Continue studies to assess safety, efficacy, and tolerance of COTS products and dosages for opioid based PBA exposure. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.065 Million) remains in TM3. Decrease due to change in program/project technical parameters.</p>			-	-	3.185
<p>Title: 12) Reactivators of AChE as Therapeutics (ReACT)</p> <p>Description: The Warfighter requires rapid acting MCMs to counter adverse effects from exposure to Nerve Agents (NAs) and maintain force lethality. This effort involves the development of improved therapies for acetylcholinesterase enzyme reactivation.</p>			-	-	3.618

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) MT3 / <i>Mitigate (ATD)</i>			

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Efforts in this area are focused on formulation development and pre-clinical studies for potential candidates that will ultimately be submitted for FDA licensure or previously licensed products for new uses in the treatment of chemical warfare casualties.</p> <p><i>FY 2023 Plans:</i></p> <ul style="list-style-type: none"> - Continue to advance pre-clinical development of lead therapeutic candidates. - Continue formulation efforts and scale up manufacturing for lead therapeutic candidates. - Initiate GLP toxicology and long-term stability studies for lead therapeutic candidates. <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$6.649 Million) remains in TM3. Decrease due to change in program/project technical parameters.</p>			
Accomplishments/Planned Programs Subtotals	-	-	84.476

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u>	<u>Total Cost</u>
• MT4: <i>Mitigate (ACD&P)</i>	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) PT3 / Protect (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PT3: Protect (ATD)	-	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Protect Advanced Technology Development (ATD) Project enhances mission performance while providing effective protection against current and emerging chemical and biological (CB) threats, enables Joint Force lethality by protecting Warfighters against adverse effects of CB hazards, and fields protection capabilities against engineered biological agents, opioids and other Pharmaceutical Based Agents (PBAs), and Fourth Generation Agents (FGAs).

Thrust Areas included in this Project are:

- (1) Air Purification Enhancements
- (2) All-Hazards & Respiratory Protection
- (3) Multifunctional Materials for Protection
- (4) Enhanced Survivability Coatings
- (5) Dynamic Multifunctional Materials for Second Skin
- (6) Bacterial Prophylaxis
- (7) Broad Spectrum
- (8) Toxin Prophylaxis
- (9) Viral Prophylaxis

Air Purification Enhancements: Focuses on optimizing and extending filter life to reduce lifecycle costs while maintaining or improving protection. Efforts optimize and extend filter life to save costs while maintaining or improving protection and improving integration of collective protection into developmental Service major combat platforms. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

All-Hazards & Respiratory Protection: Develops next generation general purpose mask that unencumbers the Warfighter and integrates with existing system technology, completes work on the Tactical All Hazards Ensemble to support special purpose units, and supports modernization efforts to insert new technologies into current respirator efforts that protect against the full spectrum of threats in support the range of military operations, to include scalable protection. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.

Multifunctional Materials for Protection: Efforts utilize a combination of basic and applied research to discover and develop a pipeline for the next generation materials, technologies, self-regenerating protective garments, decontaminants, and filter materials that react with chemical agents to actively decontaminate on demand and regenerate protective capacity for unencumbering the warfighter.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) PT3 / Protect (ATD)
Enhanced Survivability Coatings: Efforts address materiel surface ease of decontamination and resistance to chemical agent penetration. Projects will develop temporary coatings that resist chemical agent absorption and are quickly decontaminated in the field and allow the rapid regeneration of combat power.		
Dynamic Multifunctional Materials for Second Skin: Utilizes responsive technologies to provide chemical biological protective suits that adapt to the threat and environment by synthesizing scaled samples for manufacturing which exhibit materials properties that reduce thermal burden and integrate with current combat garments.		
Bacterial Prophylaxis: Provides the Warfighter protection against biothreat agents through the pre-exposure administration of prophylactics against known bacterial threats of interest and emerging infectious threats. Near-term efforts include prophylaxis against agents on the tradition BW threat list followed by efforts to discover and develop advanced protectants against novel targets for the traditional threats and emerging biological warfare (BW) threats.		
Broad Spectrum: Discovers and develops broadly protective strategies and nontraditional approaches against new and emerging threats followed by efforts to discover and develop broad-based strategies that address multiple serotypes/toxin classes/mechanisms of intoxication.		
Toxin Prophylaxis: Provides the Warfighter protection through the pre-exposure administration of prophylactics against known toxin threats of interest and emerging infectious threats.		
Viral Prophylaxis: Provides the Warfighter protection through the pre-exposure administration of prophylactics against known viral threats of interest and emerging infectious threats. The manufacturing processes for platform technologies will be adapted to maximize flexibility, increase stability, shelf life, and expand storage conditions. Efforts will also be adapted to maximize delivery flexibility through modifying delivery routes, which will allow for dose and reagent sparing.		
B. Accomplishments/Planned Programs (\$ in Millions)		
		FY 2021
		FY 2022
		FY 2023
Title: 1) Air Purification Enhancements - Enhanced Biodefense (ENBD)		-
Description: This effort will focus on Improved Personal Protection. Existing Collective Protection (CP) systems have high life cycle costs driven by maintenance and limited service life. Science and Technology (S&T) efforts will focus on optimizing and extending filter life to reduce lifecycle costs while maintaining or improving protection.		-
FY 2023 Plans:		2.000
- Develop low cost, continuous-operation collective protection engineering standards and guidelines for temporary, rapid enhancement of unprotected Department of Defense (DoD) facilities during pandemic or biological warfare agent release.		
- Demonstrate and validate concepts for layered protection to mitigate the biological contamination risk with passive systems for applique and facility design features.		
FY 2022 to FY 2023 Increase/Decrease Statement:		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) PT3 / <i>Protect (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Additional investment in enhanced biodefense and pandemic preparedness.					
Title: 2) All-Hazards & Respiratory Protection			-	-	1.345
Description: This effort improves CB agent protection while maintaining Warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit Self-Contained Breathing Apparatus.					
FY 2023 Plans: - Continue to evaluate and assess systems that provide CB respiratory protection technologies in support of tactical all hazard, full spectrum respiratory protection system. - Transition operationally-relevant respirator fit testing system to Modernization Individual Protection program of record. - Transition specification for anti-fog lenses in respirators as a Ground Mask modification work order. - Continue to design and test prototypes for a low-encumbrance, next generation protective mask.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$0.814 Million) remains in CB3. Increase due to change in program/project technical parameters.					
Title: 3) All-Hazards & Respiratory Protection - Enhanced Biodefense (ENBD)			-	-	1.000
Description: This effort will focus on Expedient Isolation/Collective Protection. Efforts will improve chemical and biological agent protection while maintaining warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit Self-Contained Breathing Apparatus.					
FY 2023 Plans: - Develop low cost, low burden, antimicrobial respiratory and ocular for operations specifically in a biologically contaminated environment.					
FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.					
Title: 4) Multifunctional Materials for Protection			-	-	0.756
Description: This effort discovers, develops, and integrates novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) PT3 / <i>Protect (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
spectroscopies, for eventual integration into next generation decontaminants, coatings, filters, and protective garments that reactively decontaminate chemical warfare agents.					
FY 2023 Plans: - Continue to engineer reactive/catalytic nano-structure materials from basic research efforts for chemical agent destruction, to feed air purification enhancement. - Continue to integrate engineered reactive/catalytic nano-structure materials (derived from Applied Research efforts) into filters, decontaminants, and textiles to assess materials in an operationally-relevant environment for personnel decontamination. - Advance next generation materials to design reactive, regenerative protective garments with longer service life and lower thermal burden.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. F22 funding remains in CB3.					
Title: 5) Lightweight Protective Garments - Enhanced Biodefense (ENBD) Description: This effort will focus on Expedient Isolation/Collective Protection. Efforts will advance garment material and ensemble technologies with new capabilities using integrated garment designs and fabrication for thermal burden reduction, state-of-the-art threat protection technologies, and supporting test methodologies and methods that provide operationally relevant, comparable data on test garments.			-	-	1.000
FY 2023 Plans: - Develop low cost, low burden, antimicrobial respiratory and ocular for operations specifically in a biologically contaminated environment.					
FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.					
Title: 6) Dynamic Multifunction Materials for Second Skin Description: This effort utilizes responsive technologies to provide CB protective suits that adapt to the environment by synthesizing scaled samples via roll-to-roll manufacture which exhibit materials properties that reduce thermal burden and integrate with current combat garments.			-	-	1.170
FY 2023 Plans: - Continue development and testing of protective garment materials that respond to the presence of chemical agents to increase Warfighter protection.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) PT3 / <i>Protect (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Begin integration of responsive systems into protective suit paradigms for whole system testing.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.379 Million) remains in CB3. Decrease due to advancement of program/project research from Applied Research.					
Title: 7) Enhanced Survivability Coatings Description: This effort seeks to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military materiel to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return materiel to mission operations level. FY 2023 Plans: - Continue to characterize bio-inspired surface treatments for materiel coatings to repel agents of interest from materiel surfaces. - Evaluate and incorporate new or commercially-available appliques (to include chemical transport studies in current military coatings, novel coatings characterization, thin film overcoats, strippable coat, reactive coat, and lock-down coats) in support of CBRN Coatings, Coverings, and Protective Overlays. - Advance thin repellent film coating systems from fundamental research to applied research test and evaluation. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$0.345 Million) remains in CB3.			-	-	0.416
Title: 8) Biological Warfare Defense Prophylaxis Description: The ultimate protection of the Warfighter is by pretreating the Warfighter to withstand any biological threat with no adverse side effects from the pretreatment. Such pretreatment would enable the Warfighter to work in a less restrictive environment, absent of any personal protective equipment allowing operation at peak performance. Investments support de-risking of candidates for transition into advanced development and includes: manufacturing process development, pre-clinical studies for lead candidates to allow initiation of clinical work, regulatory science to support clinical initiation, animal model development for Food and Drug Administration (FDA) animal rule licensure, and Phase 1 clinical trials. Candidates transition into advanced development once the Phase 1 clinical trial is complete. FY 2023 Plans: Bacterial: - Complete Good Manufacturing Practices (GMP) manufacturing for Tularemia prophylaxis with the ClpB vaccine and Burkholderia CPS conjugate vaccine for advancement to clinical Phase 1. - Complete manufacturing and nonclinical development of adjuvanted plague vaccine for advancement to clinical Phase 1. - Initiate toxicology studies of adjuvanted plague vaccine in support of clinical Phase 1.			-	-	27.632

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) PT3 / <i>Protect (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue non-clinical safety and efficacy studies of monoclonal antibody cocktail against plague and Burkholderia. - Continue layered defense studies for bacterial threats to test vaccines, antibody therapies and antibiotics in combination. - Continue non-clinical safety and efficacy studies on a live attenuated plague vaccine candidate for advancement to clinical Phase 1. - Initiate manufacturing of anthrax CPS conjugate vaccine candidate for advancement to clinical Phase 1. - Complete melioidosis human seroprevalence study in support of vaccine licensure. - Complete assay development in support of clinical Phase 1 for complex vaccines. <p>Viral:</p> <ul style="list-style-type: none"> - Complete cGMP manufacture of deoxyribonucleic acid (DNA) Vaccine for the upcoming phase 1 clinical trial as well as pivotal nonclinical studies. - Continue cGMP manufacture of rVSV Marburg virus vaccine to support pivotal animal studies and upcoming phase 1 clinical trial. - Complete investigation into correlates of protection for Marburg virus survivors to support pivotal animal studies. - Continue correlates of protection studies for alphavirus vaccine animal models. - Continue evaluation and mitigation studies of Filovirus aerosol pathology. - Continue development of rVSV Marburg vaccine in animal models to support investigational new drug (IND) submission. - Complete IND package for DNA vaccine for Venezuelan Equine Encephalitis Virus for upcoming phase 1 clinical trial. - Continued development of alphavirus animal models to support animal rule licensure of alphavirus vaccines - Continue assay qualification and validation for Marburg virus, and alphavirus vaccines. <p>Broad Spectrum:</p> <ul style="list-style-type: none"> - Continue development of the multivalent Nanolipoprotein vaccine against multiple bacterial agents. - Continue non-clinical safety and efficacy studies with the broad spectrum NLP vaccine for advancement to clinical Phase 1. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$34.160 Million) remains in TM3. Decrease due to change in program/project technical parameters. Starting in FY23, all Bacterial/Viral/Toxin Therapeutics bullets will be consolidated to new single bullet title Biological Warfare Defense Therapeutics.</p>					
Accomplishments/Planned Programs Subtotals			-	-	35.319

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) PT3 / <i>Protect (ATD)</i>				
C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
Remarks												
D. Acquisition Strategy												
N/A												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) UN3 / <i>Understand (ATD)</i>			
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
UN3: <i>Understand (ATD)</i>	-	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Understand Advanced Technology Development (ATD) Project supports freedom of maneuver and informs commanders' decisions by predicting, locating, identifying, analyzing, and warning of chemical and biological (CB) hazards.

Thrust Areas included in this Project are

- (1) Material Contamination Mitigation
- (2) Chemical Diagnostics
- (3) Distributed CB Reconnaissance
- (4) Chemical, Biological, Radiological, and Nuclear (CBRN) Battlespace Surveillance, Alerting & Response
- (5) Diagnostic Building Blocks
- (6) Emerging Threats
- (7) Battlefield Readiness
- (8) CBRN Decision Aids
- (9) CBRN Situational Awareness
- (10) Enhanced and Emerging Biothreat Sensing
- (11) Technical Surprise
- (12) Clinical Evaluation

Material Contamination Mitigation: Provides the capability to rapidly return to the level of lethality and operational tempo prior to CBRN exposure by mitigating contamination on equipment, vehicles, ships, and facilities; sensitive equipment, and hazardous waste to significantly ease burdens of decontamination and increase efficiency of decontamination process. Efforts within this thrust seek to improve contamination mitigation logistics/cost reduction, effectiveness, compatibility/safety, and environmental compatibility.

Chemical Diagnostics: Provides innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum and enhance force protection by investing in diagnostics for exposure to traditional and nontraditional chemical warfare agents (CWAs), including pharmaceutical based agents. Efforts include coordinating with Threat Agent Science and the Intelligence Community and to understand the chemical threat space.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) UN3 / <i>Understand (ATD)</i>
<p>Distributed CB Reconnaissance: Enhances early warning and situational awareness of biological threats while reducing potential Warfighter exposure using distributed biological reconnaissance tools to include low cost point sensors and sensing/collection systems for unmanned platforms. Efforts include developing threat sensing and sampling payloads for manned and unmanned aerial and ground platforms to enhance early warning and situational awareness of biological threats.</p> <p>CBRN Battlespace Surveillance, Alerting and Response: Develops algorithms that generate and disseminate warning to personnel in time to prevent exposure to or limit the impact of CBRN threats. This thrust area conducts data collection trials to support algorithm development; leverages Artificial Intelligence to identify key indicators, combinations of indicators, and sensing modalities to reduce false alarms and predict the likelihood of exposure; explores remote and contactless monitoring and analysis for application in Warfighter chemical and biological threat exposure alerting. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p> <p>Diagnostic Building Blocks: Develops foundational capabilities for the entire diagnostics portfolio; invests in innovative, cutting-edge technologies to improve the development pipeline for diagnostics; and exploits areas in artificial intelligence synthetic biology and machine learning to develop novel and rapid diagnostic tests for utilization. Efforts accelerate assay development timelines and optimize test parameters by leveraging novel concepts and tools that readily allow a pivot to assay development for emerging threats.</p> <p>Emerging Threats: Invests in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure, to greatly advance efficacy rates and turnaround time for Warfighter wellness. Efforts focus on better preparing for surprise by developing diagnostic systems that leverage novel approaches to characterize pathogens or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample.</p> <p>Battlefield Readiness: Provides innovative capabilities to the Warfighter that increase the speed of relevancy, enhance troop preparedness, aid with triage support, and provides diagnosis at lower roles of care. Develops field forward medical diagnostics to provide multiplexed detection of biological and toxin threats and leverages immunodiagnostics to identify specific targets using current or novel approaches to enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure.</p> <p>CBRN Decision Aids: Provides tools that assess risk from CBRN hazards and identifies courses of action to limit impact. This thrust area permits connectivity, enabling the dynamic discovery, querying, and control of sensors through standard protocols; and allows for dynamic discovery and integration between networked devices at the tactical edge to enable sharing of information and capabilities across connected components.</p> <p>CBRN Situational Awareness: Provides operationally relevant context to CB-specific phenomena data to ensure the Joint Force is able to characterize new CB hazards and mitigate their effects on mission success. This thrust area provides the analytic framework to determine optimal defense postures by extrapolating scientific data generated during the course of technology development and hazard assessment data into an assessment to inform operational utility. The FY23 efforts include additional investments in enhanced biodefense and pandemic preparedness.</p> <p>Enhanced and Emerging Biothreat Sensing: Establishes a capability to rapidly develop advanced, agile, pathogen-agnostic laboratory and field forward detection capabilities to detect emerging and enhanced biological threats across all force echelons (presumptive, field confirmatory, theater validation, and definitive identification).</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) UN3 / Understand (ATD)		
Further, multiple biological measurements will be used to modernize laboratory capabilities and leverage synthetic biology methods and tools to deliver enhanced biothreat sensing/detection capabilities to the Joint Force.					
Technical Surprise: Encompasses horizon scanning to identify potential areas of concern and conducts technical assessments of emerging technological advancements. Efforts assess technological advancements for potential implications to the threat space, including agent use and release and develops capabilities to evaluate and assess technical enhancements that may alter the nature or magnitude of a threat agent.					
Clinical Evaluation: Provides independent verification and validation of diagnostic tests in real world patients to decrease development costs, collecting initial clinical data sets to support pre-submission discussions with the Food and Drug Administration (FDA). De-risks diagnostic platform development through third party, real world, and austere environment testing and evaluation prior to transition and establishes clinical and performance parameters therefore de-risking diagnostic platforms through real world populations.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) Material Contamination Mitigation			-	-	1.914
Description: Provide innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum. Enhance force protection by investing in diagnostics for exposure to traditional and nontraditional CWAs, including pharmaceutical based agents. Coordinate with the Intelligence Community (IC) to understand the chemical threat space, adapting capabilities to meet the need.					
FY 2023 Plans:					
- Continue efforts that expand the capability of wearable devices from an alert to an FDA-approved diagnostic platform that can detect a chemical threat and allow a physician to diagnose and determine a treatment strategy for exposure to traditional/ nontraditional chemical agents.					
FY 2022 to FY 2023 Increase/Decrease Statement:					
Funding transferred from another Project due to budget restructure. FY22 funding (\$3.710 Million) remains in TM3.					
Title: 2) Expeditionary Analytical Toolkit (ExAnT)			-	-	17.664
Description: Provide general and specialized forces with the ability to modernize detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards.					
FY 2023 Plans:					
- Transition stand-off detector prototypes that identify and alert to chemical hazards to Proximate Chemical Agent Detector (PCAD) Program of Record.					
- Continue development toward detection prototypes to address pharmaceutical based agent (PBA) and other emerging threats.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Continue the development of sensor technologies against non-traditional threats of concern to develop class-based detection and reduce reliance on known threat libraries.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CB3 and NT3.					
Title: 3) Unattended Perimeter Monitoring Description: Establish a layered defense capability by developing and implementing automated and integrated technologies enabling unattended monitoring for chemical and biological threats. These technologies will provide early warning of vapor, aerosol, solid, and liquid hazards and unencumber the Warfighter by reducing logistics and operator burden. Providing a reliable detect-to-warn capability at fixed or expeditionary sites will enhance the overall protective posture of ground and maneuver forces as robust technologies can be miniaturized for portability and operational sustainment. FY 2023 Plans: - Transition automated biological collection, detection and identification system. Fully autonomous system will reduce errors by eliminating the need for laboratory personal to perform analysis. - Initiate efforts to modernize capabilities to reduce false alarms and increase sensitivity and specificity. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.094 Million) remains in CB3.			-	-	1.177
Title: 4) Diagnostic Building Blocks Description: Develop novel, state of the art capabilities that lay the foundation for modernizing other areas within the diagnostics portfolio. This includes exploiting areas such as synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat. Invest in efforts that lead to accelerated assay development timelines and optimized test parameters through leveraging artificial intelligence (AI) and machine learning (ML) to allow us to quickly pivot and develop assays for emerging threats in days instead of weeks. FY 2023 Plans: - Initiate field validation studies for diagnostics prototypes using synthetic binders and evaluate performance against current gold standard diagnostic methods. - Continue efforts to collect the baseline data required for future development of a whole breath diagnostic platform use of breath as a non-invasive sampling mechanism offers Warfighters little-to-no interruption to mission activities and provides the opportunity for earlier diagnosis/indication of infection or chemical exposure. - Continue executing data transitions for the development of diagnostic assays to support vaccine and countermeasure development efforts.			-	-	4.786

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>- Complete a joint effort with CBDP Components to establish an assay development and manufacturing process that would allow DoD laboratories to be authorized assay developers, enabling the DoD to develop assays against emerging threats and diseases to quickly be functionalized for the fielded Next Generation Diagnostics System (NGDS) 2 Man Portable Diagnostic System (MPDS) platform.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.950 Million) remains in TM3.</p>					
<p>Title: 5) Emerging Threats</p> <p>Description: Push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Development of diagnostic systems that leverage novel approaches to characterize pathogen or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample. Invest in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure (e.g. antibiotic, antiviral, vaccine), by a medic or primary care provider greatly improves turnaround time for soldier wellness and return to duty.</p> <p>FY 2023 Plans:</p> <p>- Complete efforts to address challenges in small molecule toxin diagnosis at the point of contamination (POC) and initiate validation of these prototypes for potential use as a threat agnostic capability to enable field-forward responses to emerging threats.</p> <p>- Complete the development of a universal blood sample preparation platform to be compatible with several diagnostic systems, improving the speed of sample preparation tools at low pathogen concentrations (i.e. pre-symptomatic levels) is one of the biggest challenges holding back diagnostics in point-of-care, outbreak, and remote testing scenarios.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.473 Million) remains in TM3. Increase due to change in program/project technical parameters.</p>			-	-	3.828
<p>Title: 6) Battlefield Readiness</p> <p>Description: Develop platforms to prepare the Warfighter with rapid and easy to use diagnostics tests to make sure they are healthy and ready for movement. Platforms developed with affinity-based identification of either pathogen or host response to the pathogen may leverage immunodiagnostics to identify specific targets using antibodies, or explore other innovative approaches. This will enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure. Investments in this area will provide capabilities to the Warfighter that increase the speed of relevancy, enhance troop preparedness, aid with triage support, and provide diagnosis at lower roles of care.</p> <p>FY 2023 Plans:</p>			-	-	6.700

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Complete the development and evaluation of a customizable, lightweight, comfortable, in ear wearable device (EWD) and algorithms to detect disease onset by monitoring a Warfighter's health state. - Complete the development of vertical flow assay technologies that are rapid, capable of multiplexing, portable, and may result in a faster sample to answer and more sensitive detection level than traditional lateral flow diagnostics. - Complete the program to identify biological indicators that predict disease severity, which will lead to the development of a diagnostic that alerts medical personnel that a patient's condition may worsen or require immediate intensive care. - Continue a wearable effort for developing and testing a microneedle-based patch intended to screen for the presence of a viral or bacterial infection, this focus on minimally invasive testing techniques along with easy to use wearables will further support DoD mission readiness. - Continue the development of a POC diagnostic platform that can provide the Warfighter pre-symptomatic diagnosis of infection, irrespective of whether the underlying pathogens are viral, bacterial, or parasitic. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$7.774 Million) remains in TM3. Decrease due to change in technical parameter.</p>					
<p>Title: 7) CBRN Decision Aids</p> <p>Description: In order to unencumber the warfighter at the tactical edge, continue to develop and field CBRN Decision Aids on End User Devices (EUDs) in both connected and disconnected operations. Capabilities will focus on utilizing automation, reducing the burden experienced by the warfighter, while providing accurate, actionable information. During this time period, a focus will be put on developing a Contamination Avoidance Decision Aid to inform the warfighter on how to avoid, respond to and plan routes around CB hazards. Another area of focus will be the development of Autonomous Asset Guidance. This capability will be used in conjunction with other capabilities developed under the CBRN Decision Aids portfolio to optimize the use of Autonomous Assets and reduce the burden incurred by the warfighter in order to operate them. This capability will also aim to incorporate, fuse and utilize data from Autonomous Assets to improve and refine other CBRN Decision Aids.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue developing new decision support plug-ins for integration with Tactical Assault Kit (TAK), including the Android, web, Windows OS, and virtual and augmented reality versions, to further enhance the TAK infrastructure and cross-community tools and develop a rapid and iterative software capability. - Complete development of GPU-based faster-than-real-time, high resolution hazard prediction modeling capabilities and continue user testing. - Finalize the development of approaches to translate raw sensor data and publish to a common standard. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			-	-	3.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$1.400 Million) remains in CB3. Increase due to change in program/project technical parameters.					
Title: 8) Emerging and Enhanced Biothreat Sensing Description: Establish robust capability to assess emerging and enhanced biological threats to rapidly develop biosensors for detecting emerging or enhanced biological threats. Quickly develop adaptable, analyte-agnostic laboratory and field-forward detection capabilities to provide a spectrum of improved detection assets for novel threats. This thrust area leverages multi-omics data science or the combining multiple measurements to inform rational and rapid design and development of biodetection solutions. Synthetic biological concepts will be thoroughly evaluated and exploited for the development of biosensing solutions and refinement of laboratory methods. FY 2023 Plans: - Continue development of detection and identification capabilities that discern if pathogens are genetically manipulated and/or identify pathogens of unknown origin. - Continue development of algorithms and laboratory workflows to identify threats in unknown samples. - Transition far-forward pathogen agnostic sensing toolkit to provide on-site threat identification while reducing the burden on the Warfighter by using technologies that rely on little to no supply chain disposables. - Continue development of on-demand biological threat detection assays that provide the Warfighter with the ability to rapidly respond to emerging biological threats and provide only the assay needed for threat identification and therefore reducing cost and reagents needed by most current assay kits. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.848 Million) remains in CB3. Increase due to change in program/project technical parameters.			-	-	3.169
Title: 9) Battlefield Readiness - Biodefense Improvement Program Description: Provide non-invasive disease screening capabilities to rapidly respond to emerging biological threats and greatly enhance the Warfighters ability to seek medical treatment at the earliest indication of exposure. These funds support the Biological Defense Improvement Program (BDIP). FY 2023 Plans: - Expand the development of existing wearable monitors that are capable of detecting chemical threats and adapt the devices to include detection of biological pathogen exposure. FY 2022 to FY 2023 Increase/Decrease Statement:			-	-	2.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Increase due to accelerated development effort.					
Title: 10) CBRN Battlespace Surveillance, Alerting & Response			-	-	5.171
<p>Description: Improve the Department of Defense's capability to detect, identify, alert, and responds to deliberate releases and naturally occurring outbreaks of chemical and biological threat agents. Efforts will expand on developing predictive CB exposure algorithms based on non-invasively collected human biomarkers. Current predictive algorithms in development are based on large in-hospital datasets from patients with comorbidities. Improving on the applicability and efficacy of these algorithms will focus on large, real-time human data collects of chemical and biological agent / agent proxy exposures. Additionally, studies will focus on examining the feasibility of specifically isolating indicators of respiratory infection, determining severity of infection, and predicting return to mission readiness after exposure. This capability will enable early implementation of countermeasures such as isolation, quarantine, and removal from an area, thus potentially reducing transmission, morbidity, and mortality rates. The maturation of algorithms will incorporate Machine Learning (ML) approaches for refining sensitivity and specificity.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue the improvement of algorithms that leverage non-invasive based physiological data to provide early warning of chemical and biological threats and/or exposure. - Continue the advancement of standoff physiological monitoring capabilities. - Leverage a data and AI platform that supports access to harmonized physiological status monitoring data and support development and validation of models to continue to develop predictive algorithms aimed at the rapid response to Emerging Threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$4.848 Million) remains in CB3. Increase due to change in program/project technical parameters.</p>					
Title: 11) CBRN Battlespace Surveillance, Alerting & Response - Enhanced Biodefense (ENBD)			-	-	3.000
<p>Description: This effort will focus on CBRN Decision Aids CBRN Battlespace Surveillance Alerting, & Response - Biothreat Characterization, Data Analysis & Modeling. A passive, wearable, contactless screening capability would greatly enhance the Warfighters ability to seek medical treatment at the earliest indication of exposure. This area includes data collection and analysis of exposure data; competitive prototyping to further develop algorithms that are able to non-invasively identify afflicted personnel and inform courses of action, prior to the onset of symptoms; expansion of efforts to develop analytic resources for early warning/ decision support; examining physiological effects on human tissue in multi-organ-chips after exposure to CB threat agents; and S&T for an advanced, integrated cloud based data environment to store a dynamic knowledge base of biothreat characteristics.</p> <p>FY 2023 Plans:</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Examine feasibility of isolating indicators of respiratory infection, determining severity of infection, and predicting return to mission readiness after exposure. - Leverage competitive prototyping to explore and evaluate alternative concepts for providing remote sensing and/or minimally- and non-invasive techniques to enhance our ability to quickly identify afflicted personnel and inform courses of action, ideally prior to the onset of symptoms. - Development of an advanced, integrated cloud based data environment to store a dynamic knowledge base of biothreat characteristics; capability would support automated data ingestion, collection, curation, search, and advanced analytics of data. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>					
<p>Title: 12) CBRN Situational Awareness</p> <p>Description: To enhance CB Situational Awareness, JSTO will expand the types of threats that can be modeled with hazard assessment capabilities to include fixed-wing and rotary-wing drones of interests. These capabilities will allow for single drones and swarms to be modeled. Virtual Reality (VR) and Augmented Reality (AR) technologies will be leveraged to develop CB focused training and mission rehearsal capabilities that will be integrated into systems widely used by the Joint Force. Virtual training environments will be developed to implement, visualize and account for hazard source terms and plumes generated by transport and dispersion (T&D) models. Augmented Reality applications will also be explored for tactical use to maximize warfighter CB situational awareness on the battlefield. JSTO will modernize hazard modeling capabilities by adopting a modular framework and integrating across Service command and control systems. JSTO will further enhance hazard modeling by creating a seamless indoor- to-outdoor T&D modeling capability and improve urban T&D modeling to support operations in urban and mixed environments. New state-of-the-art computational fluid dynamics modeling techniques and their exploitation of the latest computing resources will be leveraged to increase both speed and accuracy. JSTO will develop CB health effect modeling software and analytic tools to support force readiness and facilitate medical planning against chemical and biological agents. Epidemiological models will be developed that quantify and visualize mission operational impacts from exposure to, and spread of, infectious biological threat agents to DoD relevant populations. Additionally, JSTO will leverage Threat Agent Science (TAS) data to enhance capabilities for modeling health effects and host pathogen interactions from exposures to traditional and non-traditional CB agents. This will provide the warfighter with more accurate casualty estimates accounting for human health effects.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue configuration management of science and technology prototype for transition of upgraded capabilities. - Continue improvement of performance enhancements for T&D models, particularly for urban environments. - Continue the development of comprehensive infectious disease epidemiological modeling applications for disease prediction, forecasting, medical planning and treatment. 			-	-	3.888

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue to enhance CB situational awareness capabilities for integration into Head up Display (HUD) technologies for tactical use. - Build out pipelines for ingestion and storage of disparate chemical and biological threat datasets and advanced analytic development to support the CBDP medical enterprise. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.016 Million) remains in CB3. Decrease due to change in program/project technical parameters.</p>					
<p>Title: 13) CBRN Situational Awareness - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on CBRN Decision Aids CBRN Battlespace Surveillance Alerting, & Response - Biothreat Characterization, Data Analysis & Modeling. Explore solutions for comprehensive biothreat characterization in support of CBDP biodefense modernization goals, including the development of data analytics using ML/AI and efforts to provide a suite of analytic tools for biological threat agent modeling, forecasting, and prediction to determine optimal defense postures. Utilize scientific data generated during the course of technology development and hazard assessment data) to help inform operational utility. Epidemiological models will be developed that quantify risk and visualize mission operational impacts accounting for medically relevant inputs from exposure to and spread of CB threat agents of relevance to DoD.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Expand development of analytic tools for biological threat agent surveillance, modeling, forecasting, and prediction. - Accelerate and expand efforts to develop data analytics using ML/AI to predict individual warfighter susceptibility to acute CB agent exposure based on advanced omics, epigenetics, host immune responses, and wearables data sources. - Explore feasibility of mathematical models for innate immune recognition based on clinical data and prediction of signature patterns associated with bacterial vs. viral pathogens <p>FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	3.000
<p>Title: 14) Clinical Evaluation</p> <p>Description: Optimize the diagnostic development pathway by incorporating independent testing and evaluation for more informed prototype transition prior to advanced development. Investments in this area allow e evaluation of diagnostic platforms through real world, austere environment testing. This area maintains access to research sites that offer native populations exposed to diseases of interest that would affect the Warfighter in battlefield settings, and provides the ability to acquire novel technologies and provide analytical testing, evaluation, and reach back support for technologies already fielded.</p> <p>FY 2023 Plans:</p>			-	-	1.914

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue to maintain the capability to access clinical samples for infectious diseases of interest, and collaborate with sites around the world where diseases of concern are circulating. - Initiate independent third-party testing - to establish clinical and performance parameters to evaluate diagnostic platforms through real world, austere environment testing and evaluation prior to transition. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.210 Million) remains in TM3. Decrease due to change in technical parameter.</p>					
<p>Title: 15) Diagnostic Building Blocks - Biodefense Improvement Program</p> <p>Description: Provide agile assay development capabilities aided by Artificial Intelligence (AI) to advance the speed and accuracy of diagnostic assay design, addressing a key functional capability needed for emerging biological threat response. These funds support the Biological Defense Improvement Program (BDIP).</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Expand the development of agile biological assays to reduce the design assay and increase assay quality to better respond to emerging biological threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to accelerated development effort.</p>			-	-	1.500
<p>Title: 16) Distributed Biological Reconnaissance</p> <p>Description: Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of biological and chemical threats. Sensor development will support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/ collection systems that are rugged, rapid and accurate. Early indications from capabilities under CB Reconnaissance will allow for enhanced warning of threats.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue to develop innovative sensor solutions to increase situational threat awareness and provide operational advantage. - Continue to develop low-cost, low Size, Weight and Power (SWaP), and low-burden, with little to no dependence on supply chain, detection technologies to support of tactical and dismounted site assessment missions. - Continue to enhance sensing capabilities for unmanned vehicles and its integration into mobile platforms. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>			-	-	1.598

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$2.079 Million) remains in CB3. Decrease due to change in program/project technical parameters.					
Title: 17) Distributed Chemical Reconnaissance Description: Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of chemical threats. Sensor development will support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/collection systems that are rugged, rapid and accurate. FY 2023 Plans: - Complete aerosol microsensor development. - Development toward a deployable microsensor development pipeline and enhance sensor integration efforts. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.407 Million) remains in NT3.			-	-	3.157
Title: 18) Emerging and Enhanced Biothreat Sensing - Biodefense Improvement Program Description: Provide end users with a rapid assay capability (< 6 weeks from discovery of emerging/enhanced threat to delivery of the initial assay) that will be disruptive to current detection and diagnostic timelines. Eliminate the need to rely on single-source reagents to rapidly respond to emerging biological threat. These funds support the Biological Defense Improvement Program (BDIP). FY 2023 Plans: - Accelerate assay development to provide rapid, agile, and scalable biodetection technology to quickly address emerging biological threats and allow the Warfighter to use a highly-specific assay that is built to minimize logistics burden and is user-friendly. FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to accelerated development effort.			-	-	2.200
Title: 19) Emerging Threats - Biodefense Improvement Program Description: Expand on agnostic disease screening and sensing capabilities for emerging biological threats. These funds support the Biological Defense Improvement Program (BDIP). FY 2023 Plans:			-	-	1.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>- Expand investments in agnostic sensing/screening capabilities for multiple sample types and environments that are end user-friendly and can be deployed in the field.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to accelerated development effort.</p>					
<p>Title: 20) Technical Surprise - Biodefense Improvement Program</p> <p>Description: Technical Surprise assesses technological advancements for potential implications to the threat space, including agent use and release. Technical Surprise includes horizon scanning to identify potential areas of concern as well as conducts technical assessments of emerging technological advancements (e.g. biotechnology, artificial intelligence, machine learning, quantum computing). This program develops capabilities to evaluate and assess technical enhancements that may alter the nature or magnitude of a threat agent. The technical surprise program will be evaluating technologies and convergence of technologies that improve the ease of threat use and make threats more likely to survive being released. The program will identify the limitations and barriers associated with synthetic biology and assess the implications. And finally, these efforts will identify and assess former technology hurdles that have been lowered or overcome and assess implications of increasing potential threat. These funds support the Biological Defense Improvement Program (BDIP).</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Identify and assess technological advancements that will impact the biological threat space, including potential threats that have implications to biological defense capabilities. - Use horizon scanning capability to provide situational awareness in assessing technological growth and convergence that can affect the threat space, while keeping abreast of changes in the nature of future threats. - Assessment of synthetic biological tools and other biotechnology developments that can enhance or alter the threat space. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to accelerated development effort.</p>			-	-	3.000
<p>Title: 21) Unconventional Biological Detection Modalities</p> <p>Description: Develop disruptive technologies to identify unknown or emerging biological threats and develop biological sensors that can operate in complex threat environments with high fidelity. This effort supports the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance).</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Complete development and refinement of integrated photonics. - Complete development and refinement of miniaturized Raman spectrometers. - Complete development and refinement of machine learning algorithms for integrating disparate sensor feeds. 			-	-	0.871

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) UN3 / Understand (ATD)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
<div>- Initiate library-less detection efforts to move towards threat agnostic detection and provide rapid-fielded capabilities to address emerging biological threats.</div> <div>- Continue development of state of the art size and speed of detection technologies that include advances in computational tools, Artificial Intelligence (AI)/Machine Learning (ML) to address the most difficult changes in biological detection.</div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure.</div>											
<div>Title: 22) Unconventional Chemical Detection Modalities</div> <div>Description: Develop disruptive technologies to identify unknown or emerging chemical threats and develop chemical sensors that can operate in complex threat environments with high fidelity. This thrust area supports other thrust areas and as needed the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance).</div> <div>FY 2023 Plans:<div>- Complete development and refinement of integrated photonics.</div><div>- Complete development and refinement of miniaturized Raman spectrometers.</div><div>- Complete development and refinement of machine learning algorithms for integrating disparate sensor feeds.</div><div>- Initiate library-less detection efforts to move towards threat agnostic detection and provide rapid-fielded capabilities to address emerging chemical threats.</div><div>- Continue development of state of the art size and speed of detection technologies that include advances in computational tools, Artificial Intelligence (AI)/Machine Learning (ML) to address the most difficult changes in chemical detection.</div></div> <div>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CB3 and NT3.</div>									-	-	1.485
Accomplishments/Planned Programs Subtotals									-	-	76.022
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• UN4: Understand (ACD&P)	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) ET3 / Emerging Threats (ATD)
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
ET3: <i>Emerging Threats (ATD)</i>	-	0.000	6.000	0.000	-	0.000	10.000	10.000	10.000	10.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project ET3 aims to identify and develop scientific solutions, or to modernize capabilities, that allow for a more rapid response to emerging threats. This project supports the development of defense capabilities, collaborating across the DoD and specific interagency partners for doctrine, equipment, and training for the Warfighter and civilian population for defense against emerging threats. Additionally, this project supports advanced development of defensive science and technology capabilities aimed at proactive characterization of threats and potentially disruptive technologies.

Individual efforts in this Project include:

- Developing new science and technology capabilities that allow for the rapid characterization of emerging threats to support operational decision making and requirements setting. Support an integrated approach to developing new or enhanced countermeasures against emerging threats through innovative science and technology 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 emerging threats.

Chemical and Biological Emerging Threat Innovation Fund challenge DoD Labs and innovation cells to deliver transformational technologies against emerging threats that enables the force to compete, deter, and win in strategic environments described in the National Defense Strategy.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Emerging Threat Innovation Description: The Chemical and Biological Defense Emerging Threat Innovation Fund challenges DoD Labs and innovation cells to deliver transformational technologies against emerging threats that enables the force to compete, deter, and win in strategic environments described in the National Defense Strategy. FY 2022 Plans: Initiate enhanced capability to more rapidly characterize, and the development of medical countermeasures against, emerging chemical and biological threats through investment in high throughput technologies. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease due to change in program/project technical parameters.	-	6.000	-
Accomplishments/Planned Programs Subtotals	-	6.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) ET3 / <i>Emerging Threats (ATD)</i>			

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA4: <i>Contamination Avoidance (ACD&P)</i>	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• DE4: <i>Decontamination (ACD&P)</i>	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
• IP4: <i>Individual Protection (ACD&P)</i>	3.448	3.968	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.416
• MT4: <i>Mitigate (ACD&P)</i>	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
• TE4: <i>Test & Evaluation (ACD&P)</i>	4.107	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.107
• UN4: <i>Understand (ACD&P)</i>	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CB3: Chemical Biological Defense (ATD)	-	26.844	26.950	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	53.794
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project CB3 develops technology advancements for joint service application in the areas of digital battlespace management technologies, protection/ hazard mitigation and detection. These activities will speed maturing of advanced technologies to reduce risk in system-oriented integration/demonstration efforts. In FY23, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. CB3 thrust areas in FY22 progress to the Mitigate (MT3), Protect (PT3), and Understand (UN3) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Individual efforts in this project include:

- Digital battlespace management focuses on situational awareness and threat agent applications, analytic applications platform for operational situational awareness, non-traditional detection sciences, tactical decision aids, and advanced computational methods.
- 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.
- Non-Traditional Agent (NTA) Defense includes chemical diagnostics, medical pretreatments, therapeutics, detection, and protection and hazard mitigation.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Air Purification Enhancements	0.270	0.287	-
Description: This effort supports the Expeditionary Collective Protection (CP). Existing CP systems have high life cycle costs driven by maintenance and limited service life. Science & Technology efforts will focus on optimizing and extending filter life to reduce lifecycle costs while maintaining or improving protection.			
FY 2022 Plans: <ul style="list-style-type: none"> - Continue materials testing for effectiveness against novel threats for Next Generation Filtration systems. - Incorporate novel materials into Collective Protection (ColPro) systems that increase the performance against agents delivered in all states of matter (vapor, aerosol, and liquid) in operationally relevant environments. - Engineer novel filter bed materials for chemical agent destruction, integrate them into next generation filters, and develop methods to assess filter performance in an operationally-relevant environment. 			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.287 Million) transferred to PT3.					
Title: 2) All-Hazards & Respiratory Protection Description: This effort supports the Respiratory and Ocular Protection. Efforts will improve chemical and biological agent protection while maintaining warfighter capability through integrated research on respirator, seams, closures, and new materials; perform early surveys for end-user jury input; frequent user operational evaluation; focus on closed circuit Self-Contained Breathing Apparatus. FY 2022 Plans: - Transition lightweight protective garment for all hazards environments to Uniform Integrated Protection Ensemble Family of Systems Program of Record - Complete development of systems that provide chemical biological respiratory protection technologies in support of tactical all hazard, full spectrum respiratory protection system. - Develop next generation respiratory protection technology in the form of a low-burden, non-contact powered respirator with novel filter designs that integrates with Warfighter technologies and reduces encumbrance. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.345 Million) transferred to PT3.			1.962	0.814	-
Title: 3) Multifunctional Materials for Protection Description: This effort supports the Respiratory and Ocular Protection, Percutaneous Protection, Expeditionary Collective Protection, Materiel Contamination Mitigation, and Personnel Contamination Mitigation. Efforts will discover, develop and integrate novel, reactive/catalytic materials and scale material manufacturing with maximum sorption and reactivity, and characterize materials using state-of-the-art in operando and ambient pressure spectroscopies, for eventual integration into next generation decontaminants, coatings, filters, and protective garments that reactively decontaminate chemical warfare agents. FY 2022 Plans: - Continue to engineer reactive/catalytic nano-structure materials from basic research efforts for chemical agent destruction, to feed air purification enhancement. - Continue to integrate engineered reactive/catalytic nano-structure materials (derived from BA2 efforts) into filters, decontaminants, and textiles to assess materials in an operationally-relevant environment for personnel decontamination. - Test and transition self-decontaminating, reusable protective garments (derived from BA2 efforts) of composite textiles with a reactive barrier, improved protection, and reduced thermal burden/life-cycle costs for insertion into the Uniform Integrated Protection Ensemble Family of Systems Program of Record. FY 2022 to FY 2023 Increase/Decrease Statement:			1.439	1.040	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding transferred to CB3 and MT3.					
Title: 4) CBRN Battlespace Surveillance, Alerting & Response Description: Improve the Department of Defense's capability to detect, identify, alert, and responds to deliberate releases and naturally occurring outbreaks of chemical and biological threat agents. JSTO will expand on developing predictive CB exposure algorithms based on non-invasively collected human biomarkers. Current predictive algorithms in development by JSTO are based on large in-hospital datasets from patients with comorbidities. Improving on the applicability and efficacy of these algorithms will focus on large, real-time human data collects of chemical and biological agent / agent proxy exposures. Additionally, studies will focus on examining the feasibility of specifically isolating indicators of respiratory infection, determining severity of infection, and predicting return to mission readiness after exposure. This capability will enable early implementation of countermeasures such as isolation, quarantine, and removal from an area, thus potentially reducing transmission, morbidity, and mortality rates. The maturation of algorithms will incorporate Machine Learning (ML) approaches for refining sensitivity and specificity. FY 2022 Plans: - Continue the improvement of algorithms that leverage non-invasive physiological monitoring devices to provide earlier warning of chemical and biological threats and/or exposure. - Continue the advancement of standoff physiological monitoring capabilities. - Continue to develop predictive algorithms and analytic tools utilizing Artificial Intelligence (AI) and ML techniques to allow for rapid response to Emerging Threats. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$5.171 Million) transferred to UN3.			1.840	4.848	-
Title: 5) CBRN Decision Aids Description: In order to unencumber the warfighter at the tactical edge, continue to develop and field CBRN Decision Aids on End User Devices (EUDs) in both connected and disconnected operations. Capabilities will focus on utilizing automation, reducing the burden experienced by the warfighter, while providing accurate, actionable information. During this time period, a focus will be put on developing a Contamination Avoidance Decision Aid to inform the warfighter on how to avoid, respond to and plan routes around CB hazards. Another area of focus will be the development of Autonomous Asset Guidance. This capability will be used in conjunction with other capabilities developed under the CBRN Decision Aids portfolio to optimize the use of Autonomous Assets and reduce the			1.035	1.400	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
burden incurred by the warfighter in order to operate them. This capability will also aim to incorporate, fuse and utilize data from Autonomous Assets to improve and refine other CBRN Decision Aids.			
FY 2022 Plans: - Continue the improvement of decision support plug-ins for integration with TAK, including the Android, web, Windows OS, and virtual and augmented reality versions to further leverage the TAK infrastructure and cross-community tools. - Further develop the use of GPUs for faster than real-time high resolution hazard prediction modeling capabilities and initiate user testing. - Finalize the development of approaches to translate raw sensor data and publish to a common standard.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.000 Million) transferred to UN3.			
Title: 6) CBRN Situational Awareness Description: To enhance CB Situational Awareness, JSTO will expand the types of threats that can be modeled with hazard assessment capabilities to include fixed-wing and rotary-wing drones of interests. These capabilities will allow for single drones and swarms to be modeled. Virtual Reality (VR) and Augmented Reality (AR) technologies will be leveraged to develop CB focused training and mission rehearsal capabilities that will be integrated into systems widely used by the Joint Force. Virtual training environments will be developed to implement, visualize and account for hazard source terms and plumes generated by transport and dispersion (T&D) models. Augmented Reality applications will also be explored for tactical use to maximize warfighter CB situational awareness on the battlefield. JSTO will modernize hazard modeling capabilities by adopting a modular framework and integrating across Service command and control systems. JSTO will further enhance hazard modeling by creating a seamless indoor- to-outdoor T&D modeling capability and improve urban T&D modeling to support operations in urban and mixed environments. New state-of-the-art computational fluid dynamics modeling techniques and their exploitation of the latest computing resources will be leveraged to increase both speed and accuracy. JSTO will develop CB health effect modeling software and analytic tools to support force readiness and facilitate medical planning against chemical and biological agents. Epidemiological models will be developed that quantify and visualize mission operational impacts from exposure to, and spread of, infectious biological threat agents to DoD relevant populations. Additionally, JSTO will leverage Threat Agent Science (TAS) data to enhance capabilities for modeling health effects and host pathogen interactions from		4.428	5.016
			-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>exposures to traditional and non-traditional CB agents. This will provide the warfighter with more accurate casualty estimates accounting for human health effects.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue configuration management of science and technology prototype for transition of upgraded capabilities. - Continue improvement of performance enhancements for T&D models, particularly for urban environments. - Continue the development of comprehensive infectious disease epidemiological modeling applications for disease prediction, forecasting, medical planning and treatment. - Continue to enhance CB situational awareness capabilities for integration into Head up Display (HUD) technologies for tactical use. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.888 Million) transferred to UN3.</p>					
<p>Title: 7) Distributed CB Reconnaissance</p> <p>Description: Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of biological and chemical threats. Sensor development will support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/ collection systems that are rugged, rapid and accurate. Early indications from capabilities under CB Reconnaissance will allow for enhanced warning of threats.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Incorporate sensors into maneuver autonomy to enhance biological threat reduction. - Develop innovative sensor solutions to increase situational awareness and provide operational advantage. - Sensor development will include integration of technologies such as photonics and Waveguide-Enhanced Raman Spectroscopy (WERS) into detectors as sensor arrays. - Develop low-cost, low-burden detection technologies to support tactical and dismounted site assessment missions. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.598 Million) transferred to UN3.</p>			3.055	2.079	-
<p>Title: 8) Enhanced/Emerging Biothreat Sensing</p> <p>Description: Establish robust capability to assess emerging and enhanced biological threats to rapidly develop biosensors for detecting emerging or enhanced biological threats. Quickly develop adaptable, analyte-agnostic laboratory and field-forward detection capabilities to provide a spectrum of improved detection assets for novel threats. This thrust area leverages multi-omics data science or the combining multiple measurements to inform rational and rapid design and development of biodetection</p>			1.680	2.848	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
solutions. Synthetic biological concepts will be thoroughly evaluated and exploited for the development of biosensing solutions and refinement of laboratory methods.					
FY 2022 Plans: - Continue development of detection capabilities focused on addressing emerging biological threats. - Continue development of algorithms and laboratory workflows to identify threats in unknown samples. - Continue development of far-forward pathogen agnostic sensing toolkit. - Continue development of in-silico design to expedite assay development.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.169 Million) transferred to UN3.					
Title: 9) Expeditionary Analytical Toolkit (ExAnT) Description: Develop a suite of expeditionary chemical sensors to provide the warfighter with modernized detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards.			2.929	3.333	-
FY 2022 Plans: - Continue development of chemical vapor sensor utilizing dielectric excitation with focus prototype delivery and validation. - Continue development of sensors based on semiconductor thin films coated with plasmonic metal and metal oxide nanoparticles; focus on validation and testing systems.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.318 Million) transferred to UN3.					
Title: 10) Unattended Perimeter Monitoring Description: Establish a layered defense capability by developing and implementing automated and integrated technologies enabling unattended monitoring for chemical and biological threats. These technologies will provide early warning of vapor, aerosol, solid, and liquid hazards and unencumber the Warfighter by reducing logistics and operator burden. Providing a reliable detect-to-warn capability at fixed or expeditionary sites will enhance the overall protective posture of ground and maneuver forces as robust technologies can be miniaturized for portability and operational sustainment.			0.884	1.094	-
FY 2022 Plans: - Evaluate technology for next generation UAV-borne and wearable approaches - Integrate automated technologies to improve stand-off detection of vapor, aerosol, solid and liquid hazards for chemical detection.					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Integrate refined trigger, collector, and detector/identifier technologies for bioaerosol detection.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.177 Million) transferred to UN3.					
Title: 11) Unconventional Detection Modalities Description: Utilize a targeted set of programs pushing the boundaries of sensor development by pulling technologies developed from academia and basic research to be integrated into early detection prototypes. These technologies focus on keeping the warfighter ahead of the chemical and biological threats with portable, low SWaP detectors that will protect the general forces and enhance operations on the battlefield by providing warning and field analytics. FY 2022 Plans: - Continue model development for machine learning algorithms. - Continue development of detection of emerging biothreats using cell-free platforms onto an integrated prototype. - Conduct detection sensing validation for detection by utilizing nanoparticles and voltammetry electrochemistry. - Conduct model testing and validation of machine learning algorithms for chemical detection sensors. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.871 Million) transferred to UN3.			1.085	0.781	-
Title: 12) Lightweight Protective Garments Description: This effort supports the Percutaneous Protection. Efforts will advance garment material and ensemble technologies with new capabilities using integrated garment designs and fabrication for thermal burden reduction, state-of-the-art threat protection technologies, and supporting test methodologies and methods that provide operationally relevant, comparable data on test garments. FY 2022 Plans: - Transition improved protective garment test methodologies (derived from BA2 efforts) that provide greater validation of CB protection, are repeatable and support testing under relevant conditions to the Uniform Integrated Protection Ensemble Family of Systems Program of Record. - Continue assessment for antimicrobial fabrics (derived from BA2 efforts) to be used as inner layer/liner in protective uniforms to prevent excessive growth of microbes associated with hygiene/extended wear and reduce the need for laundering. FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments. This effort was funded under Percutaneous Protection.			-	0.144	-
Title: 13) Dynamic Multifunction Materials for Second Skin			-	1.313	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Description: This effort supports the Percutaneous Protection. Efforts will utilize responsive technologies to provide CB protective suits that adapt to the environment by synthesizing scaled samples via roll-to-roll manufacture which exhibit materials properties that reduce thermal burden and integrate with current combat garments.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Increase molecular selectivity of responsive interpenetrating polymers (derived from BA2 efforts) towards nerve and blister agents. - Demonstrate and scale carbon nanotube membrane responsive textiles (derived from BA2 efforts) efforts into garments that increase protection levels in response to chemical weapons agents while preserving moisture vapor transport rate. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.149 Million) transferred to PT3.</p>					
<p>Title: 14) Enhanced Survivability Coatings</p> <p>Description: This effort supports the Materiel Contamination Mitigation. Military equipment coatings are challenging and logistically intensive to decontaminate. Efforts within this thrust seek to produce enhanced coatings that increase chemical warfare agent survivability and decontaminability of military equipment to levels comparable to that of stainless steel. Improved coatings will resist chemical agent absorption and be quickly decontaminated in field, to rapidly return equipment to mission operations level.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Increase chemical agent resistance of current military coatings through development and testing of novel temporary coatings to reduce the spread of contamination and enable more facile decontamination of military assets. Improve success of decontamination through the evaluation and incorporation of appliques. - Characterize chemical transport in current military coatings, thin film overcoats, and strippable, reactive, and lock-down coats in support of CBRN Coatings, Coverings, and Protective Overlays Program of Record. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY23 funding (\$0.416 Million) transferred to MT/PT3.</p>			0.198	0.345	-
<p>Title: 15) Equipment Decontamination</p> <p>Description: This effort supports the Materiel Contamination Mitigation. The Warfighter has a limited capability to decontaminate personal equipment, weapons, vehicles, ships, and facilities; Sensitive equipment (weapon system optics, electronic equipment, interior spaces, and aircraft); and hazardous waste. Efforts within this thrust seek to develop decontaminant formulations and procedures that reduce or eliminate residual contamination hazards; enable unit-level decontamination with rapid unmasking;</p>			1.983	0.649	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
reduce logistic needs (need for water); enable rapid sorting of clean from dirty to rapidly return high-value equipment to normal use; and develop improved realistic test methods. Successful efforts will result in improved efficacy, materials compatibility, flexibility, and reduced logistical burden compared to existing and emerging decontamination program requirements.					
FY 2022 Plans: - Begin integrating contamination mitigation technologies by advancing the proof of concept for hot-air CWA decontamination by validating the operational performance envelope. Successful efforts will result in improved efficacy, materials compatibility, flexibility, and reduced logistical burden compared to existing and emerging decontamination program requirements. - Transition Sprayable Decontaminant Slurry technology for immediate chemical warfare agent decontamination of equipment to the Service Equipment Decontamination System (SEDS) Program of Record.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.951 Million) transferred to MT3.					
Title: 16) Personnel Decontamination			1.056	0.959	-
Description: This effort supports the Personnel Contamination Mitigation. Efforts will develop decontaminants for decontamination of unbroken skin with lower lifecycle costs and storage constraints and determination of time, efficacy and logistics burdens to warfighters for mass casualty decontamination. Decrease Warfighter burden in the event of a CWA exposure by identifying science and technology gaps in the mass personnel decontamination process as well as possible substitutions for current approved personnel decontamination formulations.					
FY 2022 Plans: - Continue investigations to optimize form factors for dry skin decontamination. - Develop and assess physical removal technologies for potential replacement of RSDL. - Continue to integrate new dry decontamination into a mitt form factor and determine S&T challenges within process and procedure improvements. This includes development of methodologies and procedures for military working dog (MWG) decontamination.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.854 Million) transferred to MT3.					
Accomplishments/Planned Programs Subtotals			23.844	26.950	-
			FY 2021	FY 2022	
Congressional Add: High Air Flow ChemBio Filtration System Enhancement			3.000	-	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) CB3 / <i>Chemical Biological Defense (ATD)</i>	

	FY 2021	FY 2022
<i>FY 2021 Accomplishments:</i> Develop High Air Flow ChemBio Filtration System Enhancement for expeditionary and mobile collective protection systems through combination of filter elements, incorporation of new filter bed materials, and reduction of element size.		
Congressional Adds Subtotals	3.000	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA4: <i>Contamination Avoidance (ACD&P)</i>	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• DE4: <i>Decontamination (ACD&P)</i>	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
• MT4: <i>Mitigate (ACD&P)</i>	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• TT4: <i>Technology Transition (ACD&P)</i>	0.577	0.866	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.443
• UN4: <i>Understand (ACD&P)</i>	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) NT3 / Non-Traditional Agents Defense (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
NT3: Non-Traditional Agents Defense (ATD)	-	13.001	18.396	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	31.397
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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. 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 transitioning to advance development. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. NT3 thrust areas in FY2022 progress to the Understand (UN3) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Individual efforts in this Project include:

- 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.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Distributed CB Reconnaissance	1.500	2.407	-
Description: : Develop threat sensing and sampling payloads for manned and unmanned aerial system (UAS) and ground (UGS) platforms to enhance early warning and situational awareness of chemical threats. Sensor development will support dismounted reconnaissance and surveillance missions by providing low size, weight, power and cost sensors or sensing/collection systems that are rugged, rapid and accurate.			
FY 2022 Plans: <ul style="list-style-type: none"> - Validate testing of miniature aerosol sensors that selectively detect presence of airborne particles. - Model the response of passive biomimetic sensor capability to detect chemical threat simulants and interferents for identification. 			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.157 Million) transferred to UN3.			
Title: 2) Expeditionary Analytical Toolkit (ExAnT)	10.103	14.166	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)	Project (Number/Name) NT3 / Non-Traditional Agents Defense (ATD)	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Description: Provide general and specialized forces with the ability to modernize detection technologies for traditional threats while enhancing detection capabilities for non-traditional, emerging, and mixed chemical hazards. FY 2022 Plans: - Continue the development of sensor technologies against non-traditional threats of concern to develop class-based detection and reduce reliance on known threat libraries. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$14.346 Million) transferred to UN3.			
Title: 3) Unconventional Detection Modalities Description: Develop disruptive technologies to identify unknown or emerging chemical threats and develop chemical sensors that can operate in complex threat environments with high fidelity. This thrust area supports other thrust areas and as needed the Joint Force mission needs (e.g., expeditionary, perimeter defense, or unmanned reconnaissance). FY 2022 Plans: - Continue development and refinement of integrated photonics. - Continue development and refinement of miniaturized Raman spectrometers. - Continue development and refinement of machine learning algorithms for integrating disparate sensor feeds. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.485 Million) transferred to UN3.	1.398	1.823	-
Accomplishments/Planned Programs Subtotals	13.001	18.396	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• DE4: Decontamination (ACD&P)	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
• IP4: Individual Protection (ACD&P)	3.448	3.968	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.416
• MT4: Mitigate (ACD&P)	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• PT4: Protect (ACD&P)	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
• UN4: Understand (ACD&P)	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program							Date: April 2022		
Appropriation/Budget Activity 0400 / 3			R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) NT3 / Non-Traditional Agents Defense (ATD)		

C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Complete</u>	<u>Total Cost</u>

Remarks

D. Acquisition Strategy

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) TM3 / Techbase Medical Defense (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TM3: Techbase Medical Defense (ATD)	-	134.162	137.691	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	271.853
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. TM3 thrust areas in FY2022 progress to the Enabling Investments (EN3), Mitigate (MT3), Protect (PT3), and Understand (UN3) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Individual efforts in this project include:

- 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.
- Rapid development of medical countermeasure solutions is a crucial modernization strategy to avoid technological surprise against an expanding and sophisticated biological WMD threat. Techbase Medical Defense (ACD&P), therefore, supports the Discovery of Medical Countermeasures Against New and Emerging (DOMANE) threat thrust, which is designed to develop technologies that support understanding, mitigating, and protecting against new and emerging biological threats to include viral, bacterial, and biotoxins.
- Supports the advanced development of medical countermeasures to include prophylaxes, pretreatments, antidotes and therapeutic drugs against new and emerging biological threats. Demonstration of safety and toxicity data through adaptive trials for repurposed FDA-approved drugs, novel broad-spectrum drugs and drug combinations supporting submitting Investigational New Drug (IND) processes or Emergency Use Authorizations (EUA). Additionally, this effort supports development of technologies that protect, mitigate and understand new and emerging threats by forecasting pathogenesis and toxicity, structural determinations utilizing high throughput systems to identify both host and pathogen targets using advanced AI and a curated repository of high-resolution 3D macromolecular structures to generate drug candidates.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Internal COVID - VSV SARS CoV-2 vaccine	-	5.100	-
Description: Provide the Warfighter with protection against COVID-19 through the development of a SARS CoV-2 VSV vaccine.			
FY 2022 Plans: Complete pre-clinical development of the Vesicular Stomatitis Virus - delta G (VSV-deltaG) SARS CoV-2 vaccine.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Decrease due to accelerated development effort. Supports COVID-19/pandemic response efforts.					
Title: 2) Battlefield Readiness Description: Develop platforms to prepare the Warfighter with rapid and easy to use diagnostics tests to make sure they are healthy and ready for movement. Platforms developed with affinity-based identification of either pathogen or host response to the pathogen may leverage immunodiagnostics to identify specific targets using antibodies, or explore other innovative approaches. This will enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure. Investments in this area will provide capabilities to the Warfighter that increase the speed of relevancy, enhance troop preparedness, aid with triage support, and provide diagnosis at lower roles of care. FY 2022 Plans: <ul style="list-style-type: none"> - Complete the development a portable, ultrasensitive immunological diagnostic platform that enables rapid identification and diagnosis of a broader range of threats across the continuum of care, post symptom onset. - Complete the development and evaluation of a customizable, lightweight, comfortable, in EWD and algorithms to detect disease onset by monitoring a Warfighter's health state. - Continue the development of vertical flow assay technologies that are rapid, capable of multiplexing, portable, and may result in a faster sample to answer and more sensitive detection level than traditional lateral flow diagnostics. - Continue program to identify biological indicators that predict disease severity, which will lead to the development of a diagnostic that alerts medical personnel that a patient's condition may worsen or require immediate intensive care. - Continue the development of a POC diagnostic platform that can provide the Warfighter pre-symptomatic diagnosis of infection, irrespective of whether the underlying pathogens are viral, bacterial, or parasitic - Initiate the development of a non-invasive prototype platform capable of diagnosing infectious diseases through collection and analysis of an individual's breath. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.700 Million) transferred to UN3.			11.182	8.437	-
Title: 3) Battlefield Readiness Description: Provide innovative capabilities to the Warfighter that increase the speed of relevancy, enhance troop preparedness, aid with triage support, and provide diagnosis at lower roles of care. Develop field forward medical diagnostics that allow for multiplexed detection of biological and toxin threats. Leverage immunodiagnostics to identify specific targets using current or novel approaches to enable broader and more accurate diagnosis for a range of targets and across a wider window following exposure. FY 2022 Plans:			3.784	4.400	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Complete the development a portable, ultrasensitive immunological diagnostic platform that enables rapid identification and diagnosis of a broader range of threats across the continuum of care, post symptom onset. - Initiate the development of additional panels for infectious disease diagnostic tests on the immunological diagnostic platform. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$5.094 Million) transferred to EN3. Increase due to change in technical parameter.</p>					
<p>Title: 4) Chemical Diagnostics</p> <p>Description: Provide innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum. Enhance force protection by investing in diagnostics for exposure to traditional and nontraditional CWAs, including pharmaceutical based agents. Coordinate with the Intelligence Community (IC) to understand the chemical threat space, adapting capabilities to meet the need.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Complete the research and development of a wearable device that is a continuous sensing platform for DICE, capable of alerting the Warfighter to potential exposure to traditional and nontraditional CWAs. - Initiate efforts that expand the capability of wearable devices from an alert to an FDA-approved diagnostic platform that can detect a chemical threat and allow a physician to diagnose and determine a treatment strategy for exposure to traditional/ nontraditional chemical agents. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.914 Million) transferred to UN3.</p>			4.085	4.371	-
<p>Title: 5) Chemical Diagnostics</p> <p>Description: Provide innovative and integrated capabilities to the Warfighter that are able to diagnose threats across the chemical spectrum. Enhance force protection by investing in diagnostics for exposure to traditional and nontraditional CWAs, including pharmaceutical based agents.</p>			1.973	-	-
<p>Title: 6) Clinical Evaluation</p> <p>Description: Optimize the diagnostic development pathway by incorporating independent testing and evaluation for more informed prototype transition prior to advanced development. Investments in this area allow e evaluation of diagnostic platforms through real world, austere environment testing. This area maintains access to research sites that offer native populations exposed to diseases of interest that would affect the Warfighter in battlefield settings, and provides the ability to acquire novel technologies and provide analytical testing, evaluation, and reach back support for technologies already fielded.</p>			6.004	3.871	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2022 Plans: - Continue to maintain the capability to access clinical samples for infectious diseases of interest, and collaborate with sites around the world where diseases of concern are circulating. - Complete third party testing for bacterial versus viral prototypes. - Initiate test plans for a prototype capable of single molecule-based pathogen identification and assessment of pathogen susceptibility to antimicrobial agents. - Initiate test plans for a wearable sensor capable of detecting exposure to chemical warfare agents.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.914 Million) transferred to UN3.					
Title: 7) Emerging Threats Description: Advance the diagnosis of emerging and/or low prevalence but high threat biological agents leveraging novel technologies. Develop threat agnostic tests based on host biomarkers that identify known or emerging bacterial or viral infections. Characterize markers for antibiotic resistance or susceptibility to identify challenging threats and inform treatment decisions. Improve capabilities to identify diverse biological agents that are not well characterized using molecular or immunodiagnostic approaches. FY 2022 Plans: - Complete work on POC diagnostics to identify AMR microorganisms and perform AST in less than one hour. - Initiate efforts that explore the proteomic expression profiles of bacterial pathogens when they are challenged with antibiotics to characterize regulatory mechanisms of antibiotic resistance. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$2.264 Million) transferred to EN3.			1.134	3.851	-
Title: 8) Emerging Threats Description: Push beyond the boundaries of the traditional threat list in the field of diagnostics to better prepare for surprise. Development of diagnostic systems that leverage novel approaches to characterize pathogen or host response and can identify the classification of threat (e.g., bacterial vs viral) from an unknown sample. Invest in diagnostic tests that enable the delivery of actionable information, such as administering the appropriate medical countermeasure (e.g. antibiotic, antiviral, vaccine), by a medic or primary care provider greatly improves turnaround time for soldier wellness and return to duty. FY 2022 Plans:			2.493	3.134	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<ul style="list-style-type: none"> - Complete work on POC diagnostics to identify Antimicrobial Resistance (AMR) microorganisms and perform AST in less than one hour. - Continue the development of a universal blood sample preparation platform to be compatible with several diagnostic systems. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.828 Million) transferred to UN3.</p>			
<p>Title: 9) Diagnostic Building Blocks</p> <p>Description: The Diagnostic Building Blocks thrust area lays a foundation for the entire diagnostics portfolio by exploiting areas such as machine learning (ML), synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue efforts that support the advancement of genomics capabilities at USAMRIID. - Initiate novel efforts in artificial intelligence (AI) and ML for designing broader and more specialized assay panels for Chemical and Biological (CB) threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$3.962 Million) transferred to EN3. Increase due to change in technical parameter.</p>		1.303	2.751
<p>Title: 10) Diagnostic Building Blocks</p> <p>Description: Develop novel, state of the art capabilities that lay the foundation for modernizing other areas within the diagnostics portfolio. This includes exploiting areas such as synthetic biology and chemistry to develop novel and rapid diagnostic tests for utilization in the event of an outbreak of an unknown threat. Invest in efforts that lead to accelerated assay development timelines and optimized test parameters through leveraging artificial intelligence (AI) and machine learning (ML) to allow us to quickly pivot and develop assays for emerging threats in days instead of weeks.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Complete the development of protocols for generating SYMBAs that are sensitive and specific and can be applied to various diagnostic platforms, supporting open-architecture capabilities. - Continue the research and development of CRISPR based solutions for field diagnostics that will provide an ultra-sensitive, cost-effective, and accurate medical diagnostic solution for the Warfighter against unknown biological threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		10.574	5.611

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.786 Million) transferred to UN3.					
Title: 11) Nerve Agent Prophylaxis/Pretreatments Description: Develop pretreatments and prophylactics that counter NTAs and emerging chemical threats to protect the lives and effectiveness of our Warfighters, thus maintaining force strength and force capability. Successful prophylactics will rapidly detoxify a broad spectrum of compounds of interest (COIs). FY 2022 Plans: - Continue efforts to develop OPNA catalytic scavenger enzymes in support of investigational new drug (IND) submission to the FDA. - Initiate GLP pharmacokinetics, immunogenicity and efficacy of catalytic scavenger enzyme lead candidates in small animals. - Initiate enzyme cGMP manufacturing scale-up. - Hold pre-IND Meeting with FDA to obtain guidance on the regulatory path. - Continue formulation efforts. - Continue enzyme non-cGMP manufacturing scale-up. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.174 Million) transferred to MT3.			9.821	6.742	-
Title: 12) Pharmaceutical Based Agents (PBAs) Description: Focuses on therapeutic and proactive strategies to effectively minimize injuries and/or death resulting from exposure to Pharmaceutical Based Agents (PBAs). This will allow the Warfighter to maintain operational capacity in a chemically contested battlefield scenario. This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for Food and Drug Administration (FDA) licensure or to identify previously licensed products for new uses in the treatment and pretreatment against chemical warfare injury. FY 2022 Plans: - Continue development of Rapid Opioid Countermeasure System (ROCS) higher concentration Naloxone formulation for use in a multiuse vial format through NDA by FDA. - Continue operational assessment of FDA approved drug products to inform MCM timing and sequence in the event of a known or unknown chemical exposure. - Assess operational feasibility of employing FDA approved opioid antagonist MCM to provide extended duration of protection. - Continue development of novel therapeutic products to mitigate Opioid-Induced Respiratory Depression (OIRD) to reduce lethality in CWA exposed Warfighters.			2.019	4.065	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
- Continue studies to assess safety, efficacy, and tolerance of COTS products and dosages for opioid based PBA exposure.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.185 Million) transferred to MT3.			
Title: 13) Reactivators of AChE as Therapeutics (ReACT) Description: The Warfighter requires rapid acting medical countermeasures (MCMs) to counter adverse effects from exposure to Nerve Agents (NAs) and maintain force lethality. This effort involves the development of improved therapies for acetylcholinesterase enzyme reactivation. Efforts in this area are focused on formulation development and pre-clinical studies for potential candidates that will ultimately be submitted for Food and Drug Administration (FDA) licensure or previously licensed products for new uses in the treatment of chemical warfare casualties. FY 2022 Plans: - Continue to advance pre-clinical development of lead therapeutic candidates. - Continue investigating technologies for delivering therapeutics to the brain. - Continue formulation efforts for lead therapeutic candidates. - Continue in vivo screening for lead therapeutic candidates. - Continue pre-clinical studies of lead reactivators to support future IND filing. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.618 Million) transferred to MT3.		3.904	6.534
Title: 14) Bacterial Therapeutics Description: Identify, optimize and evaluate potential therapeutic compounds effective against bacterial threat agents. FY 2022 Plans: - Continue multiple efforts to identify and advance candidate therapeutics, with a focus on non-traditional candidates, through preclinical evaluation toward IND and Phase 1 clinical studies. - Utilizing flexible and agile acquisition vehicles, continue to partner with interagency, international, and industry partners to develop nonclinical biodefense efficacy packages for therapeutic assets in advanced development. - Complete non-human primate studies to demonstrate efficacy at humanized doses against anthrax or melioidosis and transition to HHS BARDA. - Complete non-human primate pharmacokinetics studies for one immunomodulatory drug readying the candidate for transition to advanced development and transition to Health & Human Services (HHS) Biomedical Advance Research and Development Authority (BARDA).		13.106	12.618

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 3		R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>		Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<ul style="list-style-type: none"> - Continue to deliver proof of concept and humanized nonhuman primate efficacy biodefense data packages to interagency joint development programs for transition to HHS BARDA. - File INDs for novel orally-delivered and IV therapeutic for treatment of B. pseudomallei infection. This will support planned Phase I clinical trial. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred to another funding line. FY23 funding transferred to MT2. Beginning in FY23, the Viral/Bacterial/Toxin Therapeutics bullets will be consolidated into Biological Warfare Defense Therapeutics.</p>					
<p>Title: 15) Viral Therapeutics</p> <p>Description: Identify, optimize and evaluate potential therapeutic candidates effective against designated viral threat agents.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue broad-spectrum, small molecule and monoclonal antibody selection and evaluation in NHP models for multi therapeutic applications. - Transition lead Alphavirus Therapeutics small-molecule candidate to advanced development. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred to another funding line. FY23 funding transferred to MT2. Beginning in FY23, the Viral/Bacterial/Toxin Therapeutics bullets will be consolidated into Biological Warfare Defense Therapeutics.</p>			9.417	12.618	-
<p>Title: 16) Toxin Therapeutics</p> <p>Description: Discover and develop therapeutic countermeasures to protect the warfighter against biotoxin threats.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Continue evaluation of efficacy of repurposed drug for treatment of botulinum neurotoxin (BoNT) B, E or F intoxication in non-human primate animal model. <p>FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred to another funding line. In FY23 all Bacterial/Viral/Toxin Therapeutics bullets consolidated to new single bullet title Biological Warfare Defense Therapeutics.</p>			0.243	0.250	-
<p>Title: 17) Medical Countermeasures Initiative</p> <p>Description: The Chem Bio Incident Preparedness and Response-Medical Countermeasures Initiative (CBIPR-MCMI) will integrate advances in regulatory science and flexible manufacturing technologies and processes; and develop animal models and drug discovery and evaluation platforms as enablers of the advanced development of CBDP medical countermeasure products.</p>			21.281	21.602	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>These initiatives will lead to the establishment of multi-use platforms and animal models that can be leveraged during a CBRN response to accelerate medical product development and/or regulatory approval as well as reduce overall development costs.</p> <p>FY 2022 Plans:</p> <ul style="list-style-type: none"> - Conduct Phase 1 clinical trial for Venezuelan Equine Encephalitis (VEE) DNA vaccine. - Continue to invest in novel expression systems and expand outer membrane vesicle based bacterial expression platforms for bacterial vaccine candidates. - Invest in novel platform technologies to support rapid medical countermeasure candidate development, including prospective candidate DNA banking, additional cell line development. - Invest in novel expression systems, including rapid manufacturing systems. - Continue to invest in technologies that support regulatory science. - Continue to invest in animal model development to support, test, and evaluate MCMs and the capability to respond to emerging threats. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$21.928 Million) transferred to EN3</p>			
<p>Title: 18) Bacterial/Viral/Toxin/Broad Spectrum Prophylaxis</p> <p>Description: The ultimate protection of the Warfighter is by pretreating the Warfighter to withstand any biological threat with no adverse side effects from the pretreatment. Such pretreatment would enable the Warfighter to work in a less restrictive environment, absent of any personal protective equipment allowing operation at peak performance. Investments in this Program Element supports de-risking of candidates for transition into advanced development and includes: manufacturing process development, pre-clinical studies for lead candidates to allow initiation of clinical work, regulatory science to support clinical initiation, animal model development for FDA animal rule licensure, and Phase 1 clinical trials. Candidates transition into advanced development once the Phase 1 clinical trial is complete.</p> <p>FY 2022 Plans:</p> <p>Bacterial:</p> <ul style="list-style-type: none"> - Complete non-clinical safety and efficacy studies for Tularemia prophylaxis with the ClpB vaccine for advancement to clinical Phase 1. - Complete non-clinical safety and efficacy studies with the Tularemia Fn-IgID vaccine for advancement to clinical Phase 1. - Continue manufacturing and nonclinical development of next generation plague and tularemia monoclonal antibody cocktail. - Complete non-clinical safety and efficacy studies on a live attenuated plague vaccine candidate for advancement to clinical Phase 1. 		31.839	31.736
			-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) TM3 / Techbase Medical Defense (ATD)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
<p>- Complete the proof of efficacy animal testing for the anthrax CPS conjugate vaccine candidate for advancement to clinical Phase 1.</p> <p>- Complete Q Fever human seroprevalence study to determine what percentage of Warfighter would be eligible to receive QVax vaccine. Results will be transitioned to advanced development to support their evaluation of QVax for further advanced development.</p> <p>Viral:</p> <p>- Continue assay qualification and validation for Ebola virus, Marburg virus, and alphavirus vaccines.</p> <p>- Continued development of alphavirus animal models to support animal rule licensure of alphavirus vaccines</p> <p>- Complete evaluation of rVSV Ebola vaccine duration of protection assessment to support CONOPs development for Ebola Vaccine use by the Services.</p> <p>- Continue evaluation and mitigation studies of Filovirus aerosol pathology.</p> <p>- Initiate animal efficacy testing against panel of respiratory viruses of broad spectrum epithelial nanosponge technology.</p> <p>Toxins:</p> <p>- Complete transition of the multivalent monoclonal antibody cocktail for protection against A and B serotypes of botulinum neurotoxin to advanced development BoNT mAb program at JPEO-CBRND following the completion of the Phase 1 clinical trial.</p> <p>- Initiate large animal efficacy testing of mAb cocktail for protection against Palytoxin.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred to a new Project due to budget restructure. FY23 funding (\$27.632 Million) transferred to PT3. Starting in FY23, Viral/Bacterial/Toxin Therapeutic bullets will be consolidated into a single new bullet title Biological Warfare Defense Therapeutic.</p>											
Accomplishments/Planned Programs Subtotals									134.162	137.691	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cos
• EN3: Enabling Investments (ATD)	0.000	0.000	42.590	-	42.590	43.197	43.198	44.449	44.449	Continuing	Continuing
• MT3: Mitigate (ATD)	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
• PT3: Protect (ATD)	0.000	0.000	35.319	-	35.319	32.804	42.272	41.264	41.264	Continuing	Continuing
• UN3: Understand (ATD)	0.000	0.000	76.022	-	76.022	74.348	74.412	77.884	66.014	Continuing	Continuing
• EN4: Enabling Investments (ACD&P)	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) TM3 / <i>Techbase Medical Defense (ATD)</i>			
C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2023</u>	<u>FY 2023</u>	<u>FY 2023</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Complete</u>	<u>Total Cost</u>
• MB4: <i>Medical Biological Defense (ACD&P)</i>	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
N/A											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 3					R-1 Program Element (Number/Name) PE 0603384BP / CHEMICAL/BIOLOGICAL DEFENSE (ATD)				Project (Number/Name) TT3 / Technology Transition (ATD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TT3: Technology Transition (ATD)	-	10.341	8.787	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.128
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 to significantly improve Warfighter capabilities in preparation for transition of mature chemical and biological (CB) defense technologies to advanced development programs. This project addresses the three primary chemical and biological defense thrust areas of Assess, Protect, and Mitigate with an emphasis on Integrated Early Warning (IEW) and Integrated Layered Defense (ILD). IEW is conducted through a coordinated program approach focused on layering chemical and biological detection technologies and integrating CB threat indicators, providing a combination of awareness and understanding that facilitates effective decision making so the force can continue military operations and achieve mission success in a CBRN environment. The ILD achieves solutions for capability gaps across medical and non-medical commodity areas to enable warfighter survival and rapid recovery in a CBRN environment. In FY2023, the CBDDP RDT&E Projects have been restructured to align to the CBDDP portfolio. TT3 thrust areas in FY2022 progress to the Enabling Investments (EN3) portfolio. This restructuring is intended to provide standardization and alignment across CBDDP research, development and acquisition efforts.

Individual efforts in this Project include:

- Programs that offer the opportunity to identify and efficiently mature emerging technologies, reduce risks, and finalize engineering and integration efforts.
- Programs that 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.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Advanced Technology Demonstration	5.724	5.640	-
Description: Advanced Technology Demonstrations (ATDs) facilitate Warfighters and other operational stakeholders' participation in field demonstrations that evaluate integrated technologies or prototype systems with demonstrated technical performance in high fidelity and realistic operating environments. Building on the technology concepts and user assessments thrust areas conducted earlier in the technology maturation process, feedback from the Warfighters during ATDs ensures that these technologies are operationally relevant, value added, and can be matured and potentially transitioned in a timely and effective manner to S&T Managers or transition partners for advanced development and employment across the spectrum of Joint Force actions in a CBRN Defense Environment. In some cases, ATD residuals are left with ATD operating units for extended user			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 3	R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>	Project (Number/Name) TT3 / <i>Technology Transition (ATD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
evaluations which provides additional real world data to technology developers. ATD outcomes area designed to enhance transition of cutting edge CBRN technologies and mitigate transition risk by demonstrating operational utility and initial Technics, Tactics and Procedures.			
FY 2022 Plans: - Continue CMWD Integrated Tactical Information Recon System (CITRIS): heads up display CWMD Common Tactical Picture to support end user CWMD tactical situational awareness. - Continue Integrated Threat Response Advanced Technology Demonstration (ITR ATD) Demonstrate whole of force (IEW and ILD) Warfighter operations in a CBRN Environment.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.195 Million) transferred to EN3.			
Title: 2) Technology Concept Description: Initiatives to validate technology requirements and scope future S&T programs with Warfighter stakeholders, including Combat Developers and Service representatives. Results from these experiments shape Operating Concepts, doctrine, and materiel systems requirements for the future Joint Force and inform technology developers about potential Warfighter utility of emerging technologies and technology concepts for subsequent portfolio investment. Activities in this area focus on Surveys, User Groups, Table Top Exercises (TTXs), and practical demonstration or User feedback workshops to develop Use Cases, desired operational capabilities, key attributes and explore Concepts of Employment to assess feasibility/utility of emerging technologies.		2.242	1.296
FY 2022 Plans: - Conduct three to five concept studies including LMIT, LMOC, Leave and Forget Sensor Concept.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.296 Million) transferred to EN3.			
Title: 3) User Assessment Description: User Assessments examine maturing technologies and provide opportunities for early Warfighter input into the form, fit, and function of maturing S&T prototypes and technologies; and as appropriate, assess them within a simulated operational environment. The assessments serve as baselines for future Advanced Technology Demonstration (ATD) programs, and drive S&T gap analysis for key customers and partners. User assessments are characterized by TTXs, Early User Assessments, Technical demonstrations and field experiments that provide candid feedback focused on applicability, utility and recommended		2.375	1.851

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 3				R-1 Program Element (Number/Name) PE 0603384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ATD)</i>				Project (Number/Name) TT3 / <i>Technology Transition (ATD)</i>			
B. Accomplishments/Planned Programs (\$ in Millions)								FY 2021	FY 2022	FY 2023	
improvements while exploring system limitations, vulnerabilities and technology tradeoff analyses of innovative technologies in a non-attributional environment. FY 2022 Plans: - Continue the annual CB Operational Analysis (CBOA) event. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.851 Million) transferred to EN3.											
Accomplishments/Planned Programs Subtotals								10.341	8.787	-	
C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• TT4: <i>Technology Transition (ACD&P)</i>	0.577	0.866	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.443
Remarks											
D. Acquisition Strategy N/A											

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	78.825	133.945	291.364	-	291.364	261.239	220.430	201.350	166.257	Continuing	Continuing
EN4: <i>Enabling Investments (ACD&P)</i>	-	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing
MT4: <i>Mitigate (ACD&P)</i>	-	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
PT4: <i>Protect (ACD&P)</i>	-	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
UN4: <i>Understand (ACD&P)</i>	-	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing
CA4: <i>Contamination Avoidance (ACD&P)</i>	-	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
DE4: <i>Decontamination (ACD&P)</i>	-	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
IP4: <i>Individual Protection (ACD&P)</i>	-	3.448	3.968	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.416
IS4: <i>Information Systems (ACD&P)</i>	-	13.414	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.414
MB4: <i>Medical Biological Defense (ACD&P)</i>	-	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
TE4: <i>Test & Evaluation (ACD&P)</i>	-	4.107	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.107
TM4: <i>Techbase Medical Defense (ACD&P)</i>	-	0.000	30.452	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.452
TT4: <i>Technology Transition (ACD&P)</i>	-	0.577	0.866	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.443

A. Mission Description and Budget Item Justification

This program element (PE) resources Advanced Component Development and Prototypes across the Enabling Investments, Mitigate, Protect, and Understand portfolios. Program efforts validate high-risk/high-payoff technologies and their respective concepts-of-operations for significant improvement to Warfighter capabilities in preparation for transition of mature technologies to advanced development programs requiring chemical and biological (CB) defense technologies. Chemical Biological Defense Program (CBDP) investments provide an integrated, layered capability to enable Combating Weapons of Mass Destruction (CWMD) missions ranging from combat operations to Department of Defense (DoD) support to domestic incident prevention and response. The Projects in this PE support component and subsystem maturity prior to integration in major, complex systems and may involve risk reduction initiatives and include technology demonstrations. This effort facilitates transitions

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603884BP I CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	
of Integrated Early Warning and Integrated Layered Defense products. FY23 funding accelerates characterization and situational awareness of emerging biothreats and accelerates delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.		
Individual Projects include:		
<ul style="list-style-type: none">- Enabling Investments (EN4): Development of efforts to evaluate integrated technologies or prototype systems in a high fidelity and realistic operating environment, including system specific efforts that help expedite technology transition from the laboratory to operational use. Increase efforts to improve integration of collective protection into Service major combat platforms.- Mitigate (MT4): Sustain efforts in antiviral therapeutics. Develop capabilities to incorporate the use of in silico, "organs on a chip" and Machine Learning/Artificial Intelligence technologies for drug discovery and development up to phase II trials. Increase efforts regarding platform technologies. Development of repurposing pharmaceuticals that enable a rapid response capability to combat emerging threats.- Protect (PT4): Continued efforts to unencumber the Warfighter by delivering improved personal protection capabilities that incorporate inherent survivability into Service equipment and platforms and which offer protection against the diverse threat agents that near-peer adversaries are developing. Develop capability for next generation individual protective equipment.- Understand (UN4): Maintain effort in distinguishing between bacterial, viral, and toxin diagnostics. Update detector libraries for relevant detection and identification systems. Continue efforts to integrate detection capabilities into Service combat platforms. Develop detection and diagnostic technologies with compatibility to receive and transmit sensor data on Service networks. Identify Service concepts for Integrated Early Warning (IEW) and maintain cyber compliance of fielded Chemical Biological Radiological and Nuclear (CBRN) information systems.- Contamination Avoidance (CA4), Decontamination (DE4), Individual Protection (IP4), Information Systems (IS4), Medical Biological Defense (MB4), Techbase Medical Defense (TM4) and Technology Transition (TT4) are no longer active FY23 Projects due to budget restructure.- Test and Evaluation (TE4) Project concluded in FY21.		
The projects in this PE support the advanced component technology development phase of the DoD acquisition system and are therefore correctly placed in Budget Activity 4.		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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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)
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B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	76.167	129.445	0.000	-	0.000
Current President's Budget	78.825	133.945	291.364	-	291.364
Total Adjustments	2.658	4.500	291.364	-	291.364
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	4.500			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	5.234	-			
• SBIR/STTR Transfer	-2.576	-			
• Other Adjustments	0.000	-	291.364	-	291.364

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: TM4: Techbase Medical Defense (ACD&P)

Congressional Add: 1) Development of medical countermeasures against novel entities (DOMANE)

Congressional Add Subtotals for Project: TM4

Congressional Add Totals for all Projects

FY 2021	FY 2022
-	4.500
-	4.500
-	4.500

Change Summary Explanation

Funding: FY 2021 (+\$5.234 Million): Below threshold reprogramming increase for implementation of common CBRN integrated systems architecture within the CBRN Integrated Early Warning (CBRN IEW) program.

FY 2021 (-\$2.576 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.

FY 2022 (+\$4.500 Million): Congressional Add for development of medical countermeasures against novel entities (DOMANE).

FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for enhanced biodefense and pandemic preparedness investments (+\$150.600 Million), Departmental inflation rate adjustments (+\$14.779 Million), for the Compact Vapor Chemical Agent Detector (CVCAD) to continue and complete advanced development on prototype systems and the Plague Monoclonal Antibodies (PLG MAB) program to continue in the discovery of Plague mAbs and manufacturing development (+\$7.098 Million).

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) EN4 / Enabling Investments (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EN4: Enabling Investments (ACD&P)	-	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enabling Investments Advanced Component Development and Prototypes (ACD&P) Project maintains the Department of Defense (DoD) advanced development manufacturing facility to rapidly develop, manufacture, and approve medical countermeasures. Enabling efforts in this area support dedicated infrastructure capabilities, demonstrations, and overarching development support functions as portfolio enablers responding to emerging threats. Priority access to the facility provides an on demand manufacturing capability not only for the DoD but for the entire United States Government enterprise.

Efforts included in this Project are:

(1) Chem Bio Incident Preparedness and Response - Advanced Development and Manufacturing (CBIPR-ADM)

The CBIPR-ADM program maintains the DoD-ADM facility in a state of operational readiness so that it can rapidly develop and manufacture medical countermeasures (MCMs) against current and emerging chemical and biological threats including pandemic response. Operational readiness is achieved by establishing and enhancing proven biopharmaceutical manufacturing platform technologies and infrastructure at the facility. By establishing and enhancing proven manufacturing platform technologies and infrastructure, the DoD-ADM facility will have the capability to accelerate development of MCMs at all stages of development, enhance preparedness for existing threats, and rapidly respond to emerging threats as part of a medical integrated layered defense. MCMs impacted by these efforts include: Vaccines for Viral Agents, Vaccines for Bacterial Agents and Toxins, monoclonal antibodies, antibody fragments and conjugates for therapeutic and prophylactic use across all agent classes. Funds to support the facility in a state of operational readiness were previously provided via individual product development and manufacturing funding lines. The Department is now providing dedicated funds. The CBIPR-ADM return on investment is an increased level of preparedness and responsiveness. In FY23, the CBIPR-ADM program continues to establish and enhance new manufacturing platform technologies that will enable the development of MCMs against chemical and biological threats.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Chem Bio Incident Preparedness and Response - Advanced Development and Manufacturing (CBIPR-ADM)	-	-	8.781
Description: Establish proven enabling manufacturing technologies at the Department of Defense (DoD) ADM Capability Building.			
FY 2023 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) EN4 / Enabling Investments (ACD&P)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
Continue tech transfer and enhancement of manufacturing technologies to support manufacture medical countermeasures (MCM) development against biological threats. Manufacturing technologies can come from any government sources (including JSTO-CBD, the Walter Reed Army Institute of Research (WRAIR), the Biomedical Advanced Research and Development Authority (BARDA), etc. when mature enough for BA4 funding) and other external sources and targets of opportunity from industry.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.290 Million) remains in MB4.												
Accomplishments/Planned Programs Subtotals										-	-	8.781
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• EN5: Enabling Investments (SDD)	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
CHEM BIO INCIDENT PREPAREDNESS AND RESPONSE - (CBIPR-ADM)												
A contract was awarded to Ology Bioservices (then Nanotherapeutics, Inc.) on 20 March 2013 to establish a Department of Defense (DoD) Advanced Development and Manufacturing (ADM) capability that can rapidly develop and manufacture Medical Countermeasures (MCMs) from early stage development up through Food and Drug Administration (FDA) licensure. The establishment of this capability consisted of designing, commissioning, and validating a biopharmaceutical facility (both its infrastructure and equipment) that is equipped with two (2) advanced development and manufacturing suites, which utilize flexible, agile, single-use (disposable), modular, and multi-product technologies that comply with Good Manufacturing Practices (GMPs) and can operate at Biological Safety Level-3 (BSL-3). The capability was established on 31 March 2017.												
Since its establishment, the DoD ADM has been sustained in a state of operational readiness so that it can continue to be an enduring domestic MCM manufacturing capability that provides the DoD with priority access. The original sustainment strategy consisted of directly funding all costs/activities (i.e. calibration, maintenance, etc.) via sustainment options on the original contract. The CBIPR funds requested support this critical DoD infrastructure. The CBIPR-ADM funding line supports the infrastructure by funding new capability-building efforts (such as manufacturing platforms using FDA known technologies) that will enable new additional MCM product development. This strategy will result in the self-sustainability of the DoD ADM by spreading the sustainment costs equally across all projects (including commercial clients), which mimics the standard practice across the Contract Development and Manufacturing Organization (CDMO) industry.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>				Project (Number/Name) EN4 / <i>Enabling Investments (ACD&P)</i>				

Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost		Cost To Complete	Total Cost	Target Value of Contract
CBIPR-ADM - Enabling Manufacturing Technologies	C/CPFF	Ology : Alachua, FL	0.000	0.000		0.000		8.781	Dec 2022	0.000		8.781		Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		8.781		0.000		8.781		Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total		Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	0.000		0.000		8.781		0.000		8.781	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)						Project (Number/Name)			
0400 / 4						PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)						EN4 / Enabling Investments (ACD&P)			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)																												
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) EN4 / Enabling Investments (ACD&P)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)	1	2021	4	2027
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) MT4 / Mitigate (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT4: Mitigate (ACD&P)	-	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mitigate Advanced Component Development and Prototypes (ACD&P) Project provides the Joint Force the ability to conduct decontamination and medical actions that enable the quick restoration of combat power; maintain/recover essential functions that are free from the effects of Chemical Biological Radiological and Nuclear (CBRN) hazards; and facilitate the return to pre-incident operational capability as soon as possible.

Efforts included in this Project are:

- (1) Service Equipment Decontamination System (SEDS),
- (2) Tactical Contamination Mitigation System (TCMS),
- (3) Biological Warfare Defense Prototype (BIOPROTO),
- (4) Chemical Warfare Defense Therapeutics (CHEMTX), and
- (5) Discovery of Medical Countermeasures Against New and Emerging Threats (DOMANE)

The SEDS, which was a FY21 new start program, will develop reliable and modular hardware intended to decontaminate military equipment including personal effects, and weapons to pre-contamination conditions, which sustains Joint Force military advantages and a resilient force posture, and align with the National Defense Strategy. SEDS will provide contamination mitigation capabilities for critical equipment that have been exposed to chemical and biological contamination and achieve efficacy levels that allow unprotected post-decontamination exposures for long periods with less than negligible severity effects. In FY23, Developmental Test (DT) will continue for sub-systems and the integrated system as a whole to verify the SEDS system for safety, suitability, and effectiveness. In FY23, the Program will integrate system components into full prototype system(s), complete Special Operations Forces (SOF) Developmental Testing (DT) and Joint Service Early Developmental Testing (EDT), conduct Preliminary Design Review (PDR) for Other Services, and Technology Readiness Assessment (TRA), update Milestone documentation and conduct MS B Decision Reviews.

TCMS is a FY22 new start program and is one of two respond components (along with the Wide Area Decontamination System) of the Interdependent Contamination Mitigation concept and intends to address gaps related to the decontamination of sensitive equipment, personal equipment, individual & crew served weapons, and it will reduce the time and logistics associated with decontamination. TCMS will limit the spread and mitigate the effects of Chemical, Biological, and Radiological (CBR) contamination to allow warfighters to continue their mission for an extended period of time in a high threat, CBR contaminated environment. The Program's intent is to mitigate the risk to personnel and limit the potential spread of CBR contamination by minimizing contact and transfer hazards. TCMS will greatly enhance or eliminate the need for subsequent decontamination to mitigate contamination on military equipment by allowing the Warfighter to see areas of contamination, target contamination for treatment early, with minimal expenditure of time and material. Following application of TCMS, combined with weathering, Mission Oriented Protective Posture (MOPP) levels may be reduced without further decontamination, depending on the surface or material being decontaminated and the agent. In FY23 the TCMS

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MT4 / <i>Mitigate (ACD&P)</i>	
<p>program will complete Milestone A and procure prototypes of systems that meet the draft Capabilities Development Document requirements. The program will conduct a Systems Readiness Review (SRR), Test Readiness Review (TRR), begin prototype testing.</p> <p>BIOPROTO supports early-phase clinical development and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. This work provides safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This work also involves the evaluation of Food and Drug Administration (FDA) approved therapeutics for operational use, as well as generation of novel drug products and formulations, to enhance level of protection and/or operational utility for the Warfighter. This effort reduces programmatic risk of failure in the advanced development phase.</p> <p>CHEMTX will focus on therapeutic and prophylactic strategies to effectively minimize injuries and/or death resulting from exposure to Pharmaceutical Based Agents (PBA), including opioids. This will allow the Warfighter to maintain operational capacity in a chemically contested battlefield scenario. This effort involves the evaluation of FDA approved therapeutics for operational use, as well as generation of novel drug products and formulations to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment and pretreatment against chemical warfare injury.</p> <p>DOMANE supports prototype development of emerging technology platforms and technologies to identify medical countermeasures (MCMs), MCM targets, and disease pathogenesis and toxicity using the combination of Artificial Intelligence/Machine Learning, organs-on-a-chip, high-throughput screening as well as novel imaging platforms. Additionally, MT4 supports early-phase clinical development of prophylaxis treatments and therapeutic drugs through the use of adaptive clinical trials to provide safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This effort reduces programmatic risk of failure in the advanced development phase by developing validated prototypes and generating clinical and supporting non-clinical safety, tolerability and toxicity data for candidate prophylaxis treatments and therapeutic drugs prior to transition to System Development & Demonstration.</p>			
B. Accomplishments/Planned Programs (\$ in Millions)			
			FY 2021
			FY 2022
			FY 2023
Title: 1) Service Equipment Decontamination System (SEDS)			-
Description: Milestone (MS) B support and Prototype Development			-
FY 2023 Plans: Integrate system components into full prototype system(s). Complete Special Operations Forces (SOF) Developmental Testing (DT) and Joint Service Early Developmental Testing (EDT). Conduct Preliminary Design Review (PDR) for Other Services, and Technology Readiness Assessment (TRA). Update MS documentation and conduct MS B Decision Reviews.			10.015
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.988 Million) remains in DE4.			
Title: 2) Tactical Contamination Mitigation System (TCMS)			-
			-
			4.743

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)		Project (Number/Name) MT4 / Mitigate (ACD&P)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Description: Milestone (MS) A support and Prototype Development					
FY 2023 Plans: Complete Milestone A and award a prototyping Other Transaction Authority (OTA) contract. Conduct a Systems Readiness Review (SRR) and Test Readiness Review (TRR) of the prototypes to be tested. Begin prototype testing and update prototypes. Conduct a Business Case Analysis (BCA) for the program sustainment strategy.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.433 Million) remains in DE4. Increase to complete Milestone A, conduct SRR and TRR, and procure and test prototypes in support of the Draft Capability Development Document (CDD).					
Title: 3) PBA Medical Countermeasures			-	-	2.076
Description: Focuses on therapeutic and prophylactic strategies to effectively minimize injuries and/or death resulting from exposure to Pharmaceutical Based Agents (PBA). The goal is to allow the Warfighter to maintain operational capacity in a chemically contested battlefield scenario. The MT4 efforts focus on developing and achieving Food and Drug Administration (FDA) approval for a 10 ml, 10 mg/ml multi-dose vial of naloxone to counter ultra-potent opioids. As the Threat Agent Science informs needs and requirements, PBA efforts will continue with the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products and formulations to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment and pretreatment against PBA injury.					
FY 2023 Plans: - Continue medical countermeasures clinical studies to treat respiratory depression and intoxication caused by synthetic opioids.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.000 Million) remains in TM4.					
Title: 4) Biological Warfare Defense Prototype			-	-	3.114
Description: Funds biomedical research focused on the nonclinical and early clinical development of therapeutic countermeasures against known and emerging viral, bacterial, and toxin biological warfare (BW) threats for which FDA-approved therapeutics are limited or lacking. BW defense therapeutics mitigate and reverse the effects of known and emerging viral, bacterial, and toxin biological warfare threats in symptomatic warfighters diagnosed with BW disease. They are the last line of defense against BW threats and are critical to returning symptomatic warfighters to service. Biomedical research is focused on nonclinical development (e.g., animal model, and formulation/manufacturing studies) and early clinical evaluation of broad-					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>spectrum therapeutic candidates that target viruses, bacteria or toxins directly, enhance the host response (e.g., by modulating the immune system) and/or relieve BW disease symptoms.</p> <p>Therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for further non-clinical and/or clinical evaluation under RDT&E budget activity 5, and can be accelerated for use against emerging infectious diseases during an outbreak. Clinical and nonclinical evaluation of novel small molecules (chemically synthesized), novel biologic molecules (isolated from natural sources), drug and drug/vaccine combinations (aka layered defense), and repurposing of drugs approved by the US Food and Drug Administration or in clinical development for other indications, are included in this research. Refinement of appropriate animal models in which to evaluate therapeutic candidates is also included. Projects leverage interagency and commercial sector investments to accelerate development and reduce costs.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue nonclinical and regulatory activities to transition broad spectrum antibacterial candidate to BARDA. - Initiate clinical and/or nonclinical studies for broad-spectrum antibacterial/antiviral or toxin therapeutic candidate. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$7.476 Million) remains in TM4. Decrease due to change in program/project technical parameters.</p>			
<p>Title: 5) DOMANE - Discovery of Medical Countermeasures Against New and Emerging Threats - Prototype Development</p> <p>Description: Prototype Development and Early-Phase Clinical Development</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Supports the advanced development of medical countermeasures to include prophylaxes, pretreatments, antidotes and therapeutic drugs against identified and emerging biological warfare threat agents. - Demonstration of human safety and tolerability prior to entry of candidate prophylaxes and therapeutics into advanced development using adaptive clinical trials. - Continued development of prototypes for high-resolution forecasting of pathogenesis or toxicity that occurs during host interaction of a biological threat with its host. - Continued development of adaptive clinical trial platforms for drug re-purposing efforts. - Development of prototypes for precision predictions of medical countermeasures that interfere with key pathogenesis or toxicity events and restore homeostasis coupled with artificial intelligence/machine learning (AI/ML). - Initiate development of prototype for accurate prediction of targets on the biological threat and within the host that result in the necessary engagements to produces pathogenesis or toxicity using AI/ML. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p>		-	1.038

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding remains in TM4.			
Accomplishments/Planned Programs Subtotals	-	-	20.986

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MT3: <i>Mitigate (ATD)</i>	0.000	0.000	84.476	-	84.476	87.722	86.475	83.109	84.066	Continuing	Continuing
• DE4: <i>Decontamination (ACD&P)</i>	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
• TM4: <i>Techbase Medical Defense (ACD&P)</i>	0.000	30.452	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.452
• MT5: <i>Mitigate (SDD)</i>	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• PHM007: <i>SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)</i>	0.000	0.000	0.000	-	0.000	5.451	6.483	8.483	10.931	Continuing	Continuing
• PHM042: <i>TACTICAL CONTAMINATION MITIGATION SYSTEM (TCMS)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	1.250	5.072	Continuing	Continuing

Remarks

D. Acquisition Strategy

SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)

The SEDS program will utilize the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) to design and develop state of the art equipment using competitive and iterative prototyping. The program will test prototypes against live chemical warfare agents and biological warfare agents, conduct reliability, availability, and maintainability testing, conduct regular user evaluations to identify human system integration issues, and will conduct testing to ensure the system meets military standards. The program achieved a Milestone A decision in 4QFY21. The OTA vehicle will be used to request prototype development. Completed Request for Prototype Proposals (RPP) followed by award of Prototype Agreement. Started Developmental Testing (DT), and have a planned Milestone B approval in FY23 for the United States Special Operations Command (SOCOM) and Joint Service variant.

TACTICAL CONTAMINATION MITIGATION SYSTEM (TCMS)

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>The TCMS program will develop the equipment, processes and procedures for contamination mitigation related to post-incident operations in a Chemical Biological Radiological and Nuclear (CBRN) contaminated environment. The acquisition strategy includes market research through both Requests for Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. Data collected will inform a Milestone A decision in FY23. The OTA vehicle will also be used to request prototypes, which will undergo technology demonstrations and Early Field testing, followed by an analysis to determine the most suitable candidate. Results of Prototyping will inform Milestone B and Request for Proposals (RFPs) followed by developmental and operational testing and Milestone C/Full Rate Production Approval.</p> <p>BIOLOGICAL WARFARE DEFENSE PROTOTYPE (BIOPROTO)</p> <p>Supports early-phase clinical development and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. This work provides safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This work also involves the evaluation of Food and Drug Administration (FDA)-approved therapeutics for operational use, as well as generation of novel drug products and formulations, to enhance level of protection and/or operational utility for the Warfighter. This effort reduces programmatic risk of failure in the advanced development phase.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)					Project (Number/Name) MT4 / Mitigate (ACD&P)				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEDS - HW S - SEDS Product Development	SS/FFP	TBD : N/A	0.000	0.000		0.000		4.366	Nov 2022	0.000		4.366	Continuing	Continuing	0.000
TCMS - HW S - Product Development	C/FFP	TBD : N/A	0.000	0.000		0.000		1.508	Nov 2022	0.000		1.508	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		5.874		0.000		5.874	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEDS - ES SB - SEDS Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.000		0.000		2.098	Nov 2022	0.000		2.098	Continuing	Continuing	0.000
TCMS - ES SB - Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.000		0.000		2.030	Nov 2022	0.000		2.030	Continuing	Continuing	0.000
BIOPROTO - TD/D S - Biological Warfare Defense Prototype	MIPR	Army Contracting Command : Picatinny, NJ	0.000	0.000		0.000		3.114	Oct 2022	0.000		3.114	Continuing	Continuing	0.000
DOMANE - TD/D S - DOMANE - Discovery of Medical Countermeasures Against New and Emerging Threats - Prototype Development	MIPR	Army Contracting Command : Picatinny, NJ	0.000	0.000		0.000		1.038	Oct 2022	0.000		1.038	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		8.280		0.000		8.280	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)					Project (Number/Name)				
0400 / 4						PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)					MT4 / Mitigate (ACD&P)				
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEDS - OTHT S - SEDS T&E IPR Test Planning	MIPR	Various : Various	0.000	0.000		0.000		2.780	Nov 2022	0.000		2.780	Continuing	Continuing	0.000
TCMS - OTHT S - Prototype T&E IPR Test Planning	MIPR	Various : Various	0.000	0.000		0.000		0.700	Jan 2023	0.000		0.700	Continuing	Continuing	0.000
CHEMTX - DTE C - PBA Medical Countermeasures	MIPR	Army Contracting Command : Picatinny, NJ	0.000	0.000		0.000		2.076	Oct 2022	0.000		2.076	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		5.556		0.000		5.556	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SEDS - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.771	Nov 2022	0.000		0.771	Continuing	Continuing	0.000
TCMS - PM/MS S - Program Management Support	C/FFP	TBD : N/A	0.000	0.000		0.000		0.505	Nov 2022	0.000		0.505	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		1.276		0.000		1.276	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		20.986		0.000		20.986	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)					Project (Number/Name) MT4 / Mitigate (ACD&P)		

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SEDS - MS A Preparation (SOF)																												
SEDS - MS A (SOF)																												
SEDS - Acquisition Decision Memorandum(ADM) (SOF)																												
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)																												
SEDS - Prototype Agreement Award (SOF and Other Services)																												
SEDS - Developmental Testing (SOF)																												
SEDS - Early Developmental Testing (Other Services)																												
SEDS - Capability Development Document (CDD) (Other Services)																												
SEDS - MS B (SOF)																												
SEDS - MS B (Other Services)																												
SEDS - Developmental Testing (DT) (Other Services)																												
SEDS - MS C/Full Rate Production (SOF)																												
SEDS - Initial Operational Capability (SOF)																												
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)																												
SEDS - Full Rate Production (Other Services)																												
TCMS - Market Research																												
TCMS - Acquisition Shaping Panel (ASP)																												
TCMS - System Engineering Plan (SEP)																												
TCMS - Request for Proposal (RFP)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 4										PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)								MT4 / Mitigate (ACD&P)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TCMS - Test and Evaluation Master Plan (TEMP)																												
TCMS - Milestone A																												
TCMS - System Readiness Review (SRR)																												
TCMS - Test Readiness Review (TRR)																												
TCMS - Prototype Contract Award																												
TCMS - Prototype Testing																												
TCMS - Capability Development Document (CDD)																												
TCMS - Life Cycle Sustainment Plan (LCSP)																												
TCMS - Milestone B																												
TCMS - TCMS - Acquisition Program Baseline (APB)																												
TCMS - Developmental Test & Evaluation																												
TCMS - System Verification Review/Production Readiness Review																												
TCMS - Milestone C																												
TCMS - Full Rate Production (FRP)																												
CHEMTX - Vialled Naloxone Development																												
BIOPROTO - Biological Warfare Defense Prototype																												
DOMANE - Discovery of Medical Countermeasures Against New and Emerging threats -																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MT4 / <i>Mitigate (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
SEDS - MS A Preparation (SOF)	1	2021	3	2021
SEDS - MS A (SOF)	4	2021	4	2021
SEDS - Acquisition Decision Memorandum(ADM) (SOF)	4	2021	4	2021
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)	1	2022	1	2022
SEDS - Prototype Agreement Award (SOF and Other Services)	3	2022	3	2022
SEDS - Developmental Testing (SOF)	3	2022	1	2023
SEDS - Early Developmental Testing (Other Services)	3	2022	3	2023
SEDS - Capability Development Document (CDD) (Other Services)	2	2023	2	2023
SEDS - MS B (SOF)	2	2023	2	2023
SEDS - MS B (Other Services)	4	2023	4	2023
SEDS - Developmental Testing (DT) (Other Services)	2	2024	4	2025
SEDS - MS C/Full Rate Production (SOF)	4	2024	4	2024
SEDS - Initial Operational Capability (SOF)	4	2025	4	2025
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)	3	2026	3	2026
SEDS - Full Rate Production (Other Services)	4	2027	4	2027
TCMS - Market Research	3	2022	4	2022
TCMS - Acquisition Shaping Panel (ASP)	3	2022	3	2022
TCMS - System Engineering Plan (SEP)	4	2022	4	2022
TCMS - Request for Proposal (RFP)	4	2022	4	2022
TCMS - Test and Evaluation Master Plan (TEMP)	2	2024	2	2024
TCMS - Milestone A	1	2023	1	2023
TCMS - System Readiness Review (SRR)	1	2023	1	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MT4 / <i>Mitigate (ACD&P)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
TCMS - Test Readiness Review (TRR)	1	2023	1	2023
TCMS - Prototype Contract Award	1	2023	1	2023
TCMS - Prototype Testing	1	2023	2	2024
TCMS - Capability Development Document (CDD)	2	2024	2	2024
TCMS - Life Cycle Sustainment Plan (LCSP)	3	2024	3	2024
TCMS - Milestone B	3	2024	3	2024
TCMS - TCMS - Acquisition Program Baseline (APB)	3	2024	3	2024
TCMS - Developmental Test & Evaluation	1	2025	4	2025
TCMS - System Verification Review/Production Readiness Review	3	2026	3	2026
TCMS - Milestone C	4	2026	4	2026
TCMS - Full Rate Production (FRP)	4	2027	4	2027
CHEMTX - Vialled Naloxone Development	1	2023	4	2023
BIOPROTO - Biological Warfare Defense Prototype	1	2023	4	2027
DOMANE - Discovery of Medical Countermeasures Against New and Emerging threats -	1	2023	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) PT4 / Protect (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PT4: Protect (ACD&P)	-	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Protect Advanced Component Development and Prototypes (ACD&P) Project provides the ability to shield the Joint Force the force from harm caused by Chemical Biological Radiological and Nuclear (CBRN) hazards by preventing or reducing individual and collective exposures, applying prophylaxis to prevent or mitigate negative physiological effects, and protecting critical equipment.

Efforts included in this Project are:

- (1) Medical Countermeasure Platform Technologies (MCMPT),
- (2) Plague Monoclonal Antibodies (PLG MAB),
- (3) Biological Warfare Defense Prototype (BIOPROTO),
- (4) Generative Unconstrained Intelligent Drug Engineering-Enhanced Biodefense (GUIDE-ENBD),
- (5) Monoclonal Antibodies Therapeutics-Enhanced Biodefense (MAB TX-ENBD), and
- (6) Vaccine Acceleration by Modular Progression-Enhanced Biodefense (VAMP-ENBD)

The MCMPT program intends to streamline and accelerate medical countermeasure delivery to the Warfighter by reducing developmental risk using well known platform technologies. MCMPT is establishing enabling technologies and prepositioning platform systems within the Department of Defense (DoD)'s Advanced Development Manufacturing (ADM) network using standardized discovery, design, manufacturing, and testing processes to reduce the medical countermeasure (MCM) development risks. MCMPT will deliver an enduring capability from which future candidates can be manufactured. In FY23 the MCMPT program continues development of a rapid response capability.

The PLG MAB program that was transitioned from MCMPT Advanced Development and Manufacturing of Antibody Technology (ADAMANT), will provide an anti-plague bacteria monoclonal antibody (MAB) cocktail that protects the warfighter against exposure to plague. It will provide prophylaxis for Warfighter exposure to aerosolized plague and is intended for intramuscular route of administration. This capability is complementary to plague therapeutics and will provide a continuum of protection against plague bacteria. PLG MAB leverages the advanced platform technology developed within the DoD's Advanced Development Manufacturing (ADM) facility that was initiated by the MCMPT. In FY23 PLG MAB continues monoclonal antibody discovery and half-life extensions to produce product to support a Phase 1 clinical study.

BIOPROTO supports early-phase clinical development and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. This work provides safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This work also involves the evaluation of Food and Drug Administration (FDA)-approved

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) PT4 / Protect (ACD&P)
therapeutics for operational use, as well as generation of novel drug products and formulations, to enhance level of protection and/or operational utility for the Warfighter. This effort reduces programmatic risk of failure in the advanced development phase.		
GUIDE-ENBD is an advanced, integrated computational system intended to decrease product development risk throughout the drug development life cycle, accelerate candidate development, and enable preemptive preparedness and rapid response. GUIDE impacts the discovery and design of biologics products (e.g., monoclonal antibodies and vaccines) as well as small molecule drugs by simultaneously optimizing the critical quality attributes of safety, efficacy, manufacturability and pharmacokinetics/pharmacodynamics. GUIDE will incorporate computational approaches to manufacturing controls and preclinical/clinical testing. GUIDE is a collaboration between the interagency, academia and industry partners and is closely linked to the Accelerated Antibodies and RNA vaccine (VAMP) programs. FY23 funding is required to develop a fully integrated computational approach to accelerating medical countermeasure development.		
MAB TX-ENBD will develop prophylactic and therapeutic monoclonal antibody (mAb) MCM against a broad range of biological threats. Funded in FY22 as COVID TX MAB, this is a continuation which will target the discovery, identification and small scale manufacture of mAbs with sufficient material to support non-clinical and clinical testing. Sufficient doses will be produced and maintained for potential use in emergency response situations. In FY23, MAB TX-ENBD will target the discovery, identification, and small scale manufacture of at least two (2) monoclonal antibody prototypes.		
VAMP-ENBD will leverage lessons learned from the COVID-19 pandemic response to improve future emergency response and create interim vaccine capabilities. In FY23, VAMP will work with the interagency, industry, and academia to design and construct vaccine prototypes on vaccine platforms and evaluate them in the appropriate non-clinical and clinical studies. In FY22 this effort was funded under Project MB4 COVID VAC.		
B. Accomplishments/Planned Programs (\$ in Millions)		
Title: 1) Medical Countermeasure Platform Technologies (MCMPT)		FY 2021
Description: Rapid Response		FY 2022
FY 2023 Plans:		FY 2023
Continue polyclonals rapid response capability.		
FY 2022 to FY 2023 Increase/Decrease Statement:		
Funding transferred from another Project due to budget restructure. FY22 funding within MCMPT remains in MB4. Biologics on Demand Rapid Response effort completes in FY22.		
Title: 2) Medical Countermeasure Platform Technologies (MCMPT)		
Description: Nucleic Acid		
FY 2023 Plans:		
Initiate P3/Nucleic Acid Launched Antibodies Platform.		
FY 2022 to FY 2023 Increase/Decrease Statement:		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) PT4 / <i>Protect (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. P3/Nucleic Acid is a new effort within MCMPT starting in FY23.					
Title: 3) Plague Monoclonal Antibodies (PLG MAB) Description: Non-clinical FY 2023 Plans: Continue in the discovery of Plague mAbs. These efforts initiate Half-Life Extension to extend half-life candidate mAbs to meet service requirements. To include initiating Assay Development to provide validated assay support to manufacturing and Phase 1 study, and Conduct Primate Proof of Concept Study to demonstrate efficacy in Non-human primates using aerosol challenge. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. Program transferred from Medical Countermeasure Platform Technologies (MCMPT) Advanced Development and Manufacturing of antibody Technology (ADAMANT), in Project MB4, to PLG MAB in FY23.			-	-	32.132
Title: 4) Plague Monoclonal Antibodies (PLG MAB) Description: Manufacturing Development FY 2023 Plans: Initiate Small Model and At Scale Manufacturing development for Phase 1 Study. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in MB4.			-	-	7.446
Title: 5) Biological Warfare Defense Prototype (BIOPROTO) Description: Funds biomedical research focused on the nonclinical and early clinical development of therapeutic countermeasures against known and emerging viral, bacterial, and toxin biological warfare (BW) threats for which Food and Drug Administration (FDA)-approved therapeutics are limited or lacking. BW defense therapeutics mitigate and reverse the effects of known and emerging viral, bacterial, and toxin biological warfare threats in symptomatic warfighters diagnosed with BW disease. They are the last line of defense against BW threats and are critical to returning symptomatic warfighters to service. Biomedical research is focused on preclinical evaluation (e.g., in large animal models) of broad-spectrum therapeutic candidates that target viruses, bacteria or toxins directly, enhance the host response (e.g., by modulating the immune system) and/or relieve BW disease symptoms. Broad-spectrum therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for further clinical evaluation under RDT&E budget activity 5, and can be accelerated for use against emerging infectious diseases during			-	-	3.114

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) PT4 / <i>Protect (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>an outbreak. Clinical and nonclinical evaluation of novel small molecules (chemically synthesized), novel biologic molecules (isolated from natural sources), drug and drug/vaccine combinations (aka layered defense), and repurposing of drugs approved by the US Food and Drug Administration or in clinical development for other indications, are included in this research. Refinement of appropriate animal models in which to evaluate therapeutic candidates is also included. Projects leverage interagency and commercial sector investments to accelerate development and reduce costs.</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Complete human melioidosis clinical trial and continue Non-Human Primate (NHP) studies to establish efficacy of broad spectrum antibacterial candidate. Ready candidate for transition to Biomedical Advanced Research and Development Authority (BARDA). - Complete testing of broad spectrum antiviral in endemic Lassa fever disease and prepare to transition to advanced developer. <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Funding transferred from another Project due to budget restructure. FY22 funding (\$7.476 Million) remains in TM4. Decrease due to change in program/project technical parameters.</p>					
<p>Title: 6) GUIDE - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on Generative Unconstrained Intelligent Drug Engineering. Developing and implementing a fully integrated computational approach to accelerating medical countermeasure development.</p> <p>FY 2023 Plans:</p> <p>Develop and implement a fully integrated computational approach to accelerating medical countermeasure development by improving computational predictions of antibody-antigen interactions and affinity (strength of interaction), incorporating the ability to address manufacturing-related properties to include a panel of manufacturing tools, expanding the safety models to ensure selected candidates do not have known issues such as anti-drug antibodies and screening for polyreactive antibodies, and starting vaccine design modeling and technologies</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement:</p> <p>Additional investment in enhanced biodefense and pandemic preparedness.</p>			-	-	55.000
<p>Title: 7) MAB TX - Enhanced Biodefense (ENBD)</p> <p>Description: This effort will focus on Accelerated Antibody Development and Production. Target the discovery, identification and small scale manufacture of mAbs for 2 additional prototypes, with sufficient material to support non-clinical and clinical testing.</p> <p>FY 2023 Plans:</p>			-	-	59.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) PT4 / Protect (ACD&P)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Initiate Nonclinical IND enabling testing for the first 2 prototypes.											
FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.											
Title: 8) VAMP - Enhanced Biodefense (ENBD) Description: This effort will focus on Vaccine Acceleration by Modular Progression (VAMP, e.g. mRNA) FY 2023 Plans: Continue vaccine development to produce vaccine(s) against priority threats. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness. In FY22 this effort was funded under Project MB4, COVID VAC.									-	-	35.000
Accomplishments/Planned Programs Subtotals									-	-	203.689
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PT2: Protect (Applied Research)	0.000	0.000	58.758	-	58.758	59.338	59.855	61.517	63.612	Continuing	Continuing
• MB4: Medical Biological Defense (ACD&P)	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
• MT4: Mitigate (ACD&P)	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• MB5: Medical Biological Defense (SDD)	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505
• PT5: Protect (SDD)	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	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. Efforts will focus on establishing advanced platform technologies within the Department of Defense (DoD)'s Advanced Development Manufacturing (ADM) network and evaluating that capability through nonclinical and clinical testing. A subset of these technologies will be adapted to deliver a rapid											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>response capability to novel and emerging threats. Once established, future programs will be able to leverage these platforms for the development of future medical countermeasures. It is anticipated that these efforts will leverage the Other Transactions Authority (OTA) through the medical OTA consortium.</p> <p>PLAGUE MONOCLONAL ANTIBODIES (PLG MAB)</p> <p>The Plague Monoclonal Antibodies (PLG MAB) program was initiated by the Medical Countermeasure Platform Technologies (MCMPT). The goal of the PLG MAB advanced development effort is to counter exposure to Yersinia pestis. The program is leveraging the advanced platform technology developed within the DoD's Advanced Development Manufacturing (ADM) facility that was initiated by the MCMPT. The regulatory approach of the program is to pursue development of products for U.S. Food and Drug Administration (FDA) approval. The program will conduct clinical and non-clinical studies to confirm duration of protection and on-set of protection. The performer will complete small model development and procure long lead items during the Technology Maturation and Risk Reduction (TMRR) phase in order to mitigate risk and accelerate the schedule activities for Biologics License Application (BLA) submission during the Product & Development (P&D) phase. The performer will continue large scale manufacturing during the Engineering and Manufacturing Development (EMD) phase, along with conducting clinical trials and non-clinical testing.</p> <p>BIOLOGICAL WARFARE DEFENSE PROTOTYPE (BIOPROTO)</p> <p>Supports early-phase clinical development and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. This work provides safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This work also involves the evaluation of Food and Drug Administration (FDA)-approved therapeutics for operational use, as well as generation of novel drug products and formulations, to enhance level of protection and/or operational utility for the Warfighter. This effort reduces programmatic risk of failure in the advanced development phase.</p> <p>GENERATIVE UNCONSTRAINED INTELLIGENT DRUG ENGINEERING-ENHANCED BIODEFENSE (GUIDE-ENBD)</p> <p>The preemptive approach to broadly address threat space that is enabled by the GUIDE computational toolset is tailored specifically to Warfighter threats. It is clear that launching a countermeasure development campaign based on diagnosis of sick soldiers, or on sensor detection presents a worst-case scenario in terms of the ability of that MCM to be operationally relevant. GUIDE will enable medical countermeasures (MCM) candidates to be developed across threat space to eliminate early development time. In the case of high priority threats, these candidates can be advanced preemptively. Once mature, GUIDE offers a revolutionary approach to addressing unanticipated endemic and engineered threats through rapid retargeting and optimization. GUIDE is a collaboration between the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (CBRND) (JPEO-CBRND), Defense Advanced Research Projects Agency (DARPA), and the Department of Energy (DOE).</p> <p>MONOCLONAL ANTIBODIES THERAPEUTICS-ENHANCED BIODEFENSE (MAB TX-ENBD)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) PT4 / <i>Protect (ACD&P)</i>
<p>MAB TX -ENBD will, by 2028, address multiple high-priority threats by developing antibody solutions and advancing them through phase 1 clinical trials. Additionally, all necessary studies will be completed to enable advanced development, as desired. MAB TX-ENBD will provide a stockpile of 5-10K doses that will remain on a stability program as a potential rapid response capability for deployment. Furthermore, a manufacturing process will be developed that can be rapidly implemented for a larger response if needed. The intention is to work each candidate to the appropriate regulatory level (e.g., through Phase 1) within a codified timeframe (e.g., 2 years) from initiation. These efforts will leverage the Other Transactions Authority (OTA) through the medical OTA consortium.</p> <p>VACCINE ACCELERATION BY MODULAR PROGRESSION-ENHANCED BIODEFENSE (VAMP-ENBD)</p> <p>Vaccine Acceleration by Modular Progression (VAMP) program will leverage the Medical Chemical, Biological, Radiological, and Nuclear (CBRN) Defense Consortium (MCDC) Other Transaction Authority (OTA) prototype development or the Broad Agency Announcement to advance vaccine development against CBRN threats. Vaccine prototypes will be advanced through design, manufacturing, clinical and non-clinical studies to demonstrate safety and efficacy.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) PT4 / Protect (ACD&P)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - HW S - P3/ Nucleic Acid	C/CPFF	TBD : N/A	0.000	0.000		0.000		5.247	Dec 2022	0.000		5.247	Continuing	Continuing	0.000
MCMPT - HW S - Rapid Response	C/CPFF	Ology : Alachua, FL	0.000	0.000		0.000		5.638	Dec 2022	0.000		5.638	Continuing	Continuing	0.000
PLG MAB - HW S - Non-Clinical Efforts	Various	Various : Various	0.000	0.000		0.000		26.351	Dec 2022	0.000		26.351	Continuing	Continuing	0.000
PLG MAB - HW S - Manufacturing Development	Various	Various : Various	0.000	0.000		0.000		6.115	Mar 2023	0.000		6.115	Continuing	Continuing	0.000
PLG MAB - HW S - Product Management	Various	Various : Various	0.000	0.000		0.000		4.004	Dec 2022	0.000		4.004	Continuing	Continuing	0.000
GUIDE-ENBD - Development	Various	Various : Various	0.000	0.000		0.000		50.050	Dec 2022	0.000		50.050	Continuing	Continuing	0.000
MAB TX-ENBD - Development	Various	Various : Various	0.000	0.000		0.000		53.690	Dec 2022	0.000		53.690	Continuing	Continuing	0.000
VAMP-ENBD - Vaccine - Development	Various	Various : Various	0.000	0.000		0.000		29.925	Dec 2022	0.000		29.925	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		181.020		0.000		181.020	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BIOPROTO - TD/D S - Biological Warfare Defense Prototype	MIPR	Army Contracting Command : Picatinny, NJ	0.000	0.000		0.000		3.114	Oct 2022	0.000		3.114	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		3.114		0.000		3.114	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) PT4 / Protect (ACD&P)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - PM JPL /JPEO HQ Support	Various	JPL CBRN EB : Frederick, MD	0.000	0.000		0.000		1.112	Dec 2022	0.000		1.112	Continuing	Continuing	0.000
PLG MAB - PM/MS S - Program Managment	Various	Various : Various	0.000	0.000		0.000		3.108	Dec 2022	0.000		3.108	Continuing	Continuing	0.000
GUIDE-ENBD - Program Management	Various	Various : Various	0.000	0.000		0.000		4.950	Dec 2022	0.000		4.950	Continuing	Continuing	0.000
MAB TX-ENBD - Program Management	Various	Various : Various	0.000	0.000		0.000		5.310	Dec 2022	0.000		5.310	Continuing	Continuing	0.000
VAMP-ENBD - PM - Program Management	Various	Various : Various	0.000	0.000		0.000		5.075	Dec 2022	0.000		5.075	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		19.555		0.000		19.555	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		203.689		0.000		203.689	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) PT4 / <i>Protect (ACD&P)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MCMPT - Rapid Response Design, Manufacturing, Testing																												
MCMPT - MCM Optimization Phase Design, Manufacturing, Testing																												
MCMPT - ADAMANT Plague																												
MCMPT - Plague Manufacturing																												
MCMPT - Plague Nonclinical Studies																												
MCMPT - Plague Clinical Studies																												
MCMPT - P3/Nucleic Acid																												
PLG MAB - Non-Clinical Studies																												
PLG MAB - Manufacturing Development																												
BIOPROTO - Biological Warfare Defense Prototype																												
GUIDE-ENBD - Integrated computational approach development																												
MAB TX-ENBD - Discovery, identification and small scale manufacture of mAbs																												
VAMP-ENBD - Vaccine Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) PT4 / <i>Protect (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MCMPT - Rapid Response Design, Manufacturing, Testing	1	2021	4	2026
MCMPT - MCM Optimization Phase Design, Manufacturing, Testing	1	2021	4	2023
MCMPT - ADAMANT Plague	1	2021	4	2024
MCMPT - Plague Manufacturing	4	2021	1	2023
MCMPT - Plague Nonclinical Studies	1	2022	2	2024
MCMPT - Plague Clinical Studies	1	2023	2	2024
MCMPT - P3/Nucleic Acid	1	2023	4	2026
PLG MAB - Non-Clinical Studies	1	2023	4	2024
PLG MAB - Manufacturing Development	2	2023	4	2024
BIOPROTO - Biological Warfare Defense Prototype	1	2023	4	2027
GUIDE-ENBD - Integrated computational approach development	1	2023	4	2027
MAB TX-ENBD - Discovery, identification and small scale manufacture of mAbs	1	2023	4	2027
VAMP-ENBD - Vaccine Development	1	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) UN4 / Understand (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
UN4: Understand (ACD&P)	-	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Understand Advanced Component Development and Prototypes (ACD&P) Project provides the Joint Force the ability to continually receive information about the CBRN situation at a desired time and place by detecting, identifying, and quantifying Chemical Biological Radiological and Nuclear (CBRN) hazards in air, water, or on land, and on personnel, equipment or facilities. Efforts also develop a clear understanding of the current and predicted CBRN situation; collect, query, and assimilate information from sensors in real time to inform decisions and provide impacts of CBRN hazards.

Efforts included in this Project are:

- (1) Advanced Emerging Threat Defense (AET DEFENSE),
- (2) CBRN Support to Command and Control (CSC2),
- (3) Compact Vapor Chemical Agent Detector (CVCAD),
- (4) Proximate Chemical Agent Detector (PCAD),
- (5) Biological Defense Improvement Program (BDIP), and
- (6) Surveillance and Pathogen Characterization-Enhanced Biodefense (SPCHAR-ENBD)

The AET DEFENSE program continues to address the highest priority CBRN gaps and supports the Chemical Biological Defense Program (CBDP) Strategic Line of Effort to meet current and emerging threats by anticipating CB hazards and developing capabilities to counter emerging and future threats. The AET Defense program collaborates with the Joint Services, interagency, and international partners to align RDT&E resources to determine readiness against emerging threats, to include NTAs, such as Novichoks and Pharmaceutical-Based Agents (PBA) (e.g. synthetic opioids), emerging biological threats, and other advanced and emerging threats as they are identified across the entire CBDP enterprise portfolio. In FY23, AET Defense activities continue to focus on demonstrating and evaluating technologies to assess performance against emerging threats, particularly biological threats.

CSC2 is predicated on rapidly deploying CBRN situational awareness and understanding capabilities to the Joint Force through Capability Development Packages (CDPs). CSC2 will pull technology from Science & Technology (S&T) partners as well as integrate mature technologies into a baseline framework that enables risk based decision making. IEW Campaign Plan Lines of Effort are the driving bodies for service requirements and rapid capability development and deployment. Applicable technologies within the CBDP will be experimented, integrated, networked, and deployed through software acquisition pathway. In FY23 CSC2 will continue the integration of the CBRN sensor portfolio through a common sensor management system and conduct automated warning and reporting/analysis to support operations, planning & execution. The prototype from FY22 efforts will be refined for service specific Common Operating Environment (COE) and Computing Environment (CE) interfaces for a delivery of a minimally viable product in FY23 meeting CDP-1 requirements. Investments will accelerate the advanced development of next generation warning, reporting and hazard prediction capabilities. Initial investments will be made in artificial intelligence and machine learning applications

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>
<p>and processes. Digital engineering and model-based systems engineering will be used to develop a common architecture in order to reduce risk and accelerate development and deployment of the CSC2 capability.</p> <p>CVCAD is designed to be an unobtrusive, low-profile chemical detection capability that will continuously, and autonomously, monitor and alert general and specialized units to an unsafe environment without further burdening the warfighters payload or interfering with the primary mission. The small form factor is amenable to both man-worn and unmanned aerial or ground system operations to enable timely personnel protective action and other force protection decisions. In FY22 CVCAD Science & Technology (S&T) prototypes will transition into the program of record and continue in Technology Maturation and Risk Reduction (TMRR) phase and conduct development testing and early user feedback events to inform design changes. In FY23 the four competing prototypes will undergo down selects based on performance to prepare for Milestone B/Middle Tier Acquisition (MTA).</p> <p>PCAD will transition from Science & Technology (S&T) to a program of record in FY23 and will be a handheld standoff, liquid and solid trace chemical agent detector to detect a wide range of chemical threats. The technology will provide detection and location of chemical agents on various surfaces and under a variety of environmental conditions.</p> <p>The BDIP will enhance the set of biodefense capabilities to significantly improve its ability to rapidly understand, prevent, prepare for, respond to, and recover from a vast array of future biological threats. BDIP will support the Department of Defense (DoD) CBDP mission through enhanced capabilities to understand, and protect against threats. BDIP will address joint and service gaps and priorities related to biodefense, and will develop and execute a biodefense strategy. It considers the BW threat and vulnerabilities to give biodefense the agility and speed necessary to provide relevant, effective, affordable, and sustainable capabilities that can be ubiquitously deployed on the battlefield against current, emerging and future biological threat. The DoD with academia, industry and other interagency departments will partner to gain opportunities to accelerate technology, adopt surge capacity and advance consumable and alternative solution across the entire Biodefense portfolio. FY23 funding will conduct market research to support the refinement and the building of technologically mature prototypes.</p> <p>SPCHAR-ENBD will enhance the flow of surveillance data and samples through a network of laboratories, expand deployed analytical capabilities to expedite pathogen characterization, and integrate contact tracing capabilities to provide case management contact tracing and digital proximity tools that enable commanders to identify, notify, monitor, and case manage service members that test positive for an emerging threat. This enhancement delivers early detection and characterization, which informs protection capabilities needed for biodefense and pandemic preparedness.</p>		
B. Accomplishments/Planned Programs (\$ in Millions)		
Title: 1) Biological Defense Improvement Program (BDIP)		FY 2021
Description: Product Development, Program Management, Test and Evaluation and Support.		FY 2022
FY 2023 Plans: Initiate market research and conduct a requirements table top exercise in order to release the Request for Information (RPI) and request for white papers for prototyping plan#1 and Other Transactional Agreements (OTA) Award.		FY 2023
FY 2022 to FY 2023 Increase/Decrease Statement:		
		-
		-
		2.398

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Increase due to accelerated development effort.					
Title: 2) Compact Vapor Chemical Agent Detector (CVCAD) Description: Prototype Advanced Development, Testing & Program Management FY 2023 Plans: Continue and complete advanced development on prototype systems, conduct down select on competing technologies, prepare for initiation of engineering development. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA). Activities will include milestone documentation, developmental testing and program office management and administration processes to include program oversight, resource justification, budgeting and programming, milestone and schedule tracking. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$6.137 Million) remains in CA4. Program/ project transitions to Engineering and Manufacturing Development or Middle Tier Acquisition in 4QFY23.			-	-	16.852
Title: 3) CBRN Support to Command and Control (CSC2) Description: Product Development, Integration and Sensor Management FY 2023 Plans: Continue integration of Chemical Biological Radiological and Nuclear (CBRN) sensor portfolio through a common sensor management system to include data visualization, analysis and movement of data from CBRN sensors to and through service network. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$14.381 Million) remains in CA4.			-	-	12.380
Title: 4) CBRN Support to Command and Control (CSC2) Description: Automated Warning, Reporting , Analysis and decision support tools. Service Common Operating Environment (COE) and CoE Convergence. FY 2023 Plans: Advanced development of next generation warning and reporting capabilities to support operations, planning & execution. Integration of Non CBRN Data source into decision support tools. Initial convergence of CBRN information onto Service COEs/			-	-	18.168

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
CE and associated Cyber security requirements. Initial investments in artificial intelligence and machine learning applications and processes, and digital engineering and model-based systems engineering.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.400 Million) remains in CA4.					
Title: 5) CBRN Support to Command and Control (CSC2) Description: Program Management and Support FY 2023 Plans: Continue Program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.321 Million) remains in CA4.			-	-	2.800
Title: 6) Proximate Chemical Agent Detector (PCAD) Description: Technology Evaluation and Program Management. FY 2023 Plans: Evaluate prototype development under Science & Technology (S&T) activities, interagency collaboration with Defense Threat Reduction Agency (DTRA), and conduct developmental testing and program management activities. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Advanced Development.			-	-	0.918
Title: 7) SPCHAR - Enhanced Biodefense (ENBD) Description: This effort will focus on Pathogenicity Studies. FY 2023 Plans: Initiate studies to investigate CBRN threat pathogenesis and/or pathogenicity models. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	1.600
Title: 8) Advanced Emerging Threat (AET) Defense			-	-	2.792

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
<p>Description: Program Management, Product Development, Support and Testing to demonstrate and evaluate technologies to assess performance against advanced and emerging threats.</p> <p>FY 2023 Plans: Continue efforts to address emerging biological threats and Pharmaceutical Based Agents (PBAs). Update spectral libraries and hazard data management tools to incorporate emerging threat information. Produce additional data to better assess detection and decontamination capabilities against new requirements and inform rapid fielding decisions. Conduct table top exercises to support Joint Service and interagency tactics, techniques, and procedures (TTP) development and gaps analysis for materiel solutions. Monitor market surveys and assessments of technologies for rapid fielding by Chemical Biological Defense Program to mitigate emerging threat gaps as threats are identified.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.684 Million) remains in CA4. Decrease due to change in program/project technical parameters. Test activities have decreased compared to previous years as community is working to better define additional emerging threats prior to extensive testing.</p>			
Accomplishments/Planned Programs Subtotals	-	-	57.908

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• CA5: Contamination Avoidance (SDD)	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• SA0024: COMPACT VAPOR CHEMICAL AGENT DETECTOR (CVCAD)	0.000	0.000	0.000	-	0.000	0.000	0.000	11.854	9.444	Continuing	Continuing
• SA0050: CBRN SUPPORT TO C2 (CSC2)	0.000	1.750	11.803	-	11.803	1.857	1.912	1.970	2.000	Continuing	Continuing
• SA0053: BDIP	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	10.200	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>D. Acquisition Strategy</p> <p>BIO DEFENSE IMPROVEMENT PROGRAM (BDIP)</p> <p>BDIP will provide and integrate prototypes in cyclic prototyping plan cycles based on Service requirements. The prototyping plans will use a streamlined hybrid acquisition process in order to keep pace with industry and the rapid advancement of technologies. The BDIP strategy is to utilize the rapid prototyping process in Middle Tier Acquisition (MTA) enabled by the Other Transactional Agreements (OTA) contract vehicle. These prototypes will be demonstrated, evaluated and tested by the Services as well as laboratories and academia. Successful prototypes will be evaluated for transition to the platforms and Services for the next steps in acquisition, production and eventual fielding across the services. Funding provides market research to support the refinement and the building of technologically mature prototypes.</p> <p>COMPACT VAPOR CHEMICAL AGENT DETECTOR (CVCAD)</p> <p>The CVCAD program will use the Combating Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) contract vehicle to transition four technologies from Science & Technology (S&T) into the program of record. This streamlined acquisition approach is broken into four phases uses one contracting mechanism to award one contract with follow-on acquisition awards; Phase I S&T advanced development, Phase II technology transition maturation evaluation, Phase III competitive prototyping down select and Engineering decision. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA). Phase IV will execute Production and Development for low rate initial production systems.</p> <p>CBRN SUPPORT TO C2 (CSC2)</p> <p>CSC2 focuses on technology maturation, demonstration, integration and transitioning early warning capability sets to fielded Chemical Biological Defense Program (CBDP) programs of record to combat emerging and potentially urgent threats within Joint All Domain Operations. Contracting strategy includes the use of Other Transaction Authority Research & Development and prototyping. Annual development cycles and capability drops are requested and validated by all Department of Defense (DoD) Services in the OASD (NCB/CB) IEW Campaign Plan as well as approved capability development packages designated through the Joint Requirements Office and prioritized based on National Defense Strategy and National Military Strategy goals. Current strategy also collaborates with multi-agency partners to obtain synergy and interoperability across the areas of sensor data analytics, integrated early warning, and protect to warn/protect to treat capabilities. Efforts within CSC2 are driven by Service Chemical Biological Radiological and Nuclear (CBRN) capability gaps that are identified on an annual basis and evaluated by CBDP stakeholders; possible solutions and applicable technologies within the CBDP will be experimented, integrated, networked, and deployed through the software acquisition pathway.</p> <p>PROXIMATE CHEMICAL AGENT DETECTOR (PCAD)</p> <p>PCAD will leverage the existing S&T CWMD OTA contract in FY23 to procure prototypes for Technology Maturation Risk Reduction (TMRR) phase. This streamlined approach will use one contracting mechanism to transition technology from S&T to acquisition and allow follow-on acquisitions up through Low Rate Initial Production.</p> <p>SURVEILLANCE AND PATHOGEN CHARACTERIZATION-ENHANCED BIODEFENSE (SPCHAR-ENBD)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>
<p>SPCHAR-ENBD develops secure interfaces between the joint service contact tracing solutions emerging from the JEONS JS-0003 response and the pre-symptomatic exposure wearable capabilities outlined in CB WEARABLES-ENBD. The integrated system will provide case management contact tracing and digital proximity tools that enable commanders to identify, notify, monitor, and case manage service members that test positive for an emerging threat. The result is a consolidated system that 1) predicts potential infection via pre-symptomatic exposure wearable capabilities, and 2) directly supports and manages response actions for infected individuals.</p> <p>Pathogenicity Studies will investigate pathogenesis, biomarkers, endpoints, or disease surrogates of selected CBRN threat agents and/or verify usefulness of pathogenicity models. Results from these studies will be utilized to: identify targets for potential MCMs and MCM development, test and evaluate MCMs, and identify groups of CBRN threat agents that can be treated by broad-spectrum MCMs.</p> <p>ADVANCED AND EMERGING THREAT DEFENSE (AET DEFENSE)</p> <p>The AET Defense program will use a variety of acquisition approaches to survey, develop, assess, and rapidly field technologies to inform and fill advanced and emerging threat gaps. The program will utilize an existing Multiple Award Indefinite Delivery Indefinite Quantify Task Order Contract to provide technical support to studies and assessments of performance against emerging threats. For Program of Record (PoR) systems currently in development that will be assessed for performance against emerging threats, those PoR's existing contracts will be modified to incorporate development engineering and test support for emerging threat capability. The AET Defense program will utilize OTAs for system development and prototyping activities and Government Agencies and Federally Funded Research and Development Centers to provide development, testing and technical support.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) UN4 / Understand (ACD&P)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BDIP - HW C - Surveillance and Pathogen Characterization (Wearables)	MIPR	Various : Various	0.000	0.000		0.000		0.621	Oct 2022	0.000		0.621	Continuing	Continuing	0.000
BDIP - HW C - Surveillance and Pathogen Characterization (Genomic Sequencing)	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.551	Oct 2022	0.000		1.551	Continuing	Continuing	0.000
CVCAD - HW S - Advanced Prototype Development	C/FFP	Advanced Technologies International : Summerville, SC	0.000	0.000		0.000		11.100	May 2023	0.000		11.100	Continuing	Continuing	0.000
CSC2 - SW S- Contractor Product Development Team Labor	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.000		0.491	Oct 2022	0.000		0.491	Continuing	Continuing	0.000
CSC2 - SW S - Operational Capability	C/CPAF	TBD : N/A	0.000	0.000		0.000		19.816	Oct 2022	0.000		19.816	Continuing	Continuing	0.000
CSC2 - SW S - Government Product Development Team Labor	MIPR	Various : Various	0.000	0.000		0.000		1.963	Oct 2022	0.000		1.963	Continuing	Continuing	0.000
CSC2 - SW S - Service CoE and CE Convergence	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.000		4.540	Oct 2022	0.000		4.540	Continuing	Continuing	0.000
SPCHAR-ENBD - Pathogenicity Studies	Various	Various : Various	0.000	0.000		0.000		1.600	Dec 2023	0.000		1.600	Continuing	Continuing	0.000
AET DEFENSE - SW C - Spectral library enhancements	MIPR	Various : Various	0.000	0.000		0.000		0.900	Dec 2022	0.000		0.900	Continuing	Continuing	0.000
AET DEFENSE - SW C - Hazard awareness tool updates	MIPR	Various : Various	0.000	0.000		0.000		0.500	Dec 2022	0.000		0.500	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AET DEFENSE - HW C - Emerging threat detection/decontamination/protection capability prototyping	Various	Various : Various	0.000	0.000		0.000		0.444	Dec 2022	0.000		0.444	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		43.526		0.000		43.526	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - ES S - OGA Support	MIPR	Various : Various	0.000	0.000		0.000		1.952	Nov 2022	0.000		1.952	Continuing	Continuing	0.000
CSC2 - ES C - Contractor Support	C/CPAF	TBD : N/A	0.000	0.000		0.000		0.885	Oct 2022	0.000		0.885	Continuing	Continuing	0.000
CSC2 - ES C - Support	MIPR	TBD : N/A	0.000	0.000		0.000		0.775	Feb 2023	0.000		0.775	Continuing	Continuing	0.000
PCAD - ES S - OGA Support	MIPR	Various : Various	0.000	0.000		0.000		0.485	Nov 2022	0.000		0.485	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		4.097		0.000		4.097	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - DTE S - Vapor Testing	MIPR	MRIGlobal : Kansas City, MO	0.000	0.000		0.000		0.400	Feb 2023	0.000		0.400	Continuing	Continuing	0.000
CVCAD - DTE S - MIL STD/Surety Testing	MIPR	Various : Various	0.000	0.000		0.000		1.900	Feb 2023	0.000		1.900	Continuing	Continuing	0.000
CSC2 - DTE C - Technical/Operational Demo	MIPR	TBD : N/A	0.000	0.000		0.000		2.548	Feb 2023	0.000		2.548	Continuing	Continuing	0.000
PCAD - DTE S - Technology Readiness Evaluation	MIPR	U.S. Army Combat Capabilities Development	0.000	0.000		0.000		0.348	Mar 2023	0.000		0.348	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) UN4 / Understand (ACD&P)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD													
AET DEFENSE - DTE S - Technology Assessments	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.517	Dec 2022	0.000		0.517	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		5.713		0.000		5.713	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BDIP - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.226	Oct 2022	0.000		0.226	Continuing	Continuing	0.000
CVCAD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		1.500	Nov 2022	0.000		1.500	Continuing	Continuing	0.000
CSC2 - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		2.330	Oct 2022	0.000		2.330	Continuing	Continuing	0.000
PCAD - PM/MS S - Program Management	MIPR	Various : Various	0.000	0.000		0.000		0.085	Oct 2022	0.000		0.085	Continuing	Continuing	0.000
AET DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	U.S. Army Combat Capabilities Development Command	0.000	0.000		0.000		0.431	Dec 2022	0.000		0.431	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>				Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		(DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD													
Subtotal			0.000	0.000		0.000		4.572		0.000		4.572	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		57.908		0.000		57.908	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program

Date: April 2022

Appropriation/Budget Activity

0400 / 4

R-1 Program Element (Number/Name)

PE 0603884BP / CHEMICAL/BIOLOGICAL
DEFENSE (ACD&P)

Project (Number/Name)

UN4 / Understand (ACD&P)

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BDIP - Joint Services Engagement/ Requirements Decision, System Engineering																												
BDIP - OTA Request for Information, Request for White paper- Prototyping Plan #1																												
CVCAD - CDD																												
CVCAD - Milestone B																												
CVCAD - Critical Design Review																												
CVCAD - CPD																												
CVCAD - Milestone C																												
CSC2 - Software Pathway Acquisition Planning Phase																												
CSC2 - Software Pathway Acquisition Execution Phase																												
CSC2 - Minimal Viable Product																												
CSC2 - Minimal Viable Capability Release - 1																												
CSC2 - Minimal Viable Capability Release - 2																												
CSC2 - Minimal Viable Capability Release - 3																												
CSC2 - Minimal Viable Capability Release - 4																												
SPCHAR-ENBD - Pathogenicity Studies																												
AET DEFENSE - Technology Assessments																												
AET DEFENSE - Systems Engineering/ Program Management																												
AET DEFENSE - System Development and Prototyping																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) UN4 / <i>Understand (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
BDIP - Joint Services Engagement/Requirements Decision, System Engineering	1	2023	1	2024
BDIP - OTA Request for Information, Request for White paper- Prototyping Plan #1	2	2023	4	2023
CVCAD - CDD	2	2023	2	2023
CVCAD - Milestone B	4	2023	4	2023
CVCAD - Critical Design Review	3	2024	3	2024
CVCAD - CPD	3	2025	3	2025
CVCAD - Milestone C	4	2025	4	2025
CSC2 - Software Pathway Acquisition Planning Phase	2	2022	2	2023
CSC2 - Software Pathway Acquisition Execution Phase	3	2023	4	2027
CSC2 - Minimal Viable Product	2	2024	2	2024
CSC2 - Minimal Viable Capability Release - 1	1	2025	1	2025
CSC2 - Minimal Viable Capability Release - 2	4	2025	4	2025
CSC2 - Minimal Viable Capability Release - 3	3	2026	3	2026
CSC2 - Minimal Viable Capability Release - 4	2	2027	2	2027
SPCHAR-ENBD - Pathogenicity Studies	1	2023	4	2023
AET DEFENSE - Technology Assessments	1	2022	4	2027
AET DEFENSE - Systems Engineering/Program Management	1	2022	4	2027
AET DEFENSE - System Development and Prototyping	1	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CA4: Contamination Avoidance (ACD&P)	-	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Contamination Avoidance Advanced Component Development and Prototypes (ACD&P) Project supports reconnaissance, detection, identification, and hazard prediction equipment, hardware, and software. In FY2023, the Chemical Biological Defense Program (CBDP) RDT&E Projects have been restructured to align to the CBDP portfolio. CA4 efforts in FY2022 progress to the Understand (UN4) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Compact Vapor Chemical Agent Detector (CVCAD) **Progresses to UN4 in FY2023**,
- (2) CBRN Support to Command and Control (CSC2) **Progresses to UN4 in FY2023**,
- (3) Chemical Biological Radiological and Nuclear (CBRN) Sensor Integration on Robotics Platforms (CSIRP),
- (4) Non-Traditional Agent Defense (NTA DEFENSE), and
- (5) Advanced Emerging Threat Defense (AET DEFENSE) **Progresses to UN4 in FY2023**

CVCAD is designed to be an unobtrusive, low-profile chemical detection capability that will continuously, and autonomously, monitor and alert general and specialized units to an unsafe environment without further burdening the warfighters payload or interfering with the primary mission. The small form factor (less than 2 lbs) is amenable to both man-worn and unmanned aerial or ground system operations to enable timely personnel protective action and other force protection decisions. In FY23 the four competing prototypes will undergo down selects based on performance. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA).

CSC2 is predicated on rapidly deploying CBRN situational awareness and understanding capabilities to the Joint Force through Capability Development Packages (CDPs). CSC2 will pull technology from Science & Technology (S&T) partners as well as integrate mature technologies into a baseline framework that enables risk based decision making. Integrated Early Warning (IEW) Campaign Plan Lines of Effort are the driving bodies for service requirements and rapid capability development and deployment. Applicable technologies within the CBDP will be experimented, integrated, networked, and deployed through rapid acquisition methods. In FY23 CSC2 will continue the efforts of integration of the CBRN sensor portfolio through a common sensor management system and conduct automated warning and reporting/analysis to support operations, planning & execution. The prototype from FY22 efforts will be refined for service specific Common Operating Environment (COE) and Computing Environment (CE) interfaces for a delivery of a minimally viable product in FY23 meeting CDP-1 requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
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)	
CSIRP is a prototyping and fielding effort that will focus on repackaging and integrating modular sensor solutions to enhance Unmanned Air Systems (UAS) and Unmanned Ground Systems (UGS) Programs of Record (PORs) to provide situational awareness across the echelons of command in order to enable freedom of maneuver and action on the battlefield. An integrated CSIRP capability will exploit advances in artificial intelligence, machine learning and autonomy, sensing and communication capabilities that enable timely and accurate detection, warning and reporting of CBRN hazards for increased risk reduction opportunities at tactical and operational echelons in mounted and dismounted configurations. CSIRP gives the Joint Force an opportunity to enhance capabilities and maintain operational advantage in a lethal and sophisticated operating environment.			
The Advanced Emerging Threat (AET) DEFENSE program, formerly known as the Non-Traditional Agent (NTA) DEFENSE program, continues to address the highest priority CBRN gaps and supports the Chemical Biological Defense Program (CBDP) Strategic Line of Effort to meet current and emerging threats by anticipating CB hazards and developing capabilities to counter emerging and future threats. The AET Defense program collaborates with the Joint Services, interagency, and international partners to align RDT&E resources to determine readiness against emerging threats, to include NTAs, such as Novichoks and Pharmaceutical-Based Agents (PBA) (e.g. synthetic opioids), emerging biological threats, and other advanced and emerging threats as they are identified across the entire CBDP enterprise portfolio. NTA DEFENSE efforts transitioned to the AET DEFENSE program in FY22 to better align with strategic guidance and expand to threats beyond those identified specifically as NTAs. In FY23, AET Defense activities continue to focus on demonstrating and evaluating technologies to assess performance against emerging threats, particularly biological threats.			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Title: 1) Compact Vapor Chemical Agent Detector (CVCAD) Description: Prototype Advanced Development, Testing & Program Management FY 2022 Plans: Initiate award Phase II contracts on the Combating Weapons of Mass Destruction Other Transaction Authority and conduct Technology Maturation and Risk Reduction (TMRR) activities. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$16.852 Million) transferred to UN4.	0.962	6.137	-
Title: 2) CBRN Support to Command and Control (CSC2) Description: Product Development, Integration and Sensor Management FY 2022 Plans: Initiate and conduct integration of Chemical Biological Radiological and Nuclear (CBRN) sensor portfolio through a common sensor management system to include data visualization, analysis and movement of data from CBRN sensors to and through a network. FY 2022 to FY 2023 Increase/Decrease Statement:	-	14.381	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$12.380 Million) transferred to UN4.					
<p>Title: 3) CBRN Support to Command and Control (CSC2)</p> <p>Description: Automated Warning, Reporting , Analysis and decision support tools. Service Common Operating Environment (COE) and CoE Convergence.</p> <p>FY 2022 Plans: Initiate and conduct automated warning and reporting/analysis to support operations, planning & execution.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$18.168 Million) transferred to UN4.</p>			-	4.400	-
<p>Title: 4) CBRN Support to Command and Control (CSC2)</p> <p>Description: Program Management and Support</p> <p>FY 2022 Plans: Initiate Program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.800 Million) transferred to UN4.</p>			-	2.321	-
<p>Title: 5) CBRN Sensor Integration on Robotic Platforms (CSIRP)</p> <p>Description: Product Development, Program Management, Support, Testing and Evaluation.</p>			3.921	-	-
<p>Title: 6) Non-Traditional Agent (NTA) Defense</p> <p>Description: Program Management, Product Development, Support and Testing to demonstrate and evaluate technologies to assess performance against NTAs.</p>			4.484	-	-
<p>Title: 7) Advanced Emerging Threat (AET) Defense</p> <p>Description: Program Management, Product Development, Support and Testing to demonstrate and evaluate technologies to assess performance against advanced and emerging threats.</p> <p>FY 2022 Plans: Continue efforts from NTA Defense to leverage expanded requirements to broaden data set for emerging biological threats and Pharmaceutical Based Agents (PBA). Continue updates to spectral libraries and hazard data management tools to incorporate</p>			-	5.684	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023
emerging threat information. Produce additional data to better assess detection and decontamination capabilities against new requirements and inform rapid fielding decisions. Conduct table top exercises and field exercises to support Joint Service and interagency tactics, techniques, and procedures (TTP) development and gaps analysis for materiel solutions. Initiate market surveys and assessments of new technologies for rapid fielding by Chemical Biological Defense Program to mitigate emerging threat gaps as threats are identified.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.792 Million) transferred to UN4.												
Accomplishments/Planned Programs Subtotals										9.367	32.923	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• UN4: Understand (ACD&P)	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing	
• CA5: Contamination Avoidance (SDD)	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209	
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing	
• SA0005: CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)	0.503	3.461	2.099	-	2.099	2.626	3.014	3.753	4.563	Continuing	Continuing	
• SA0050: CBRN SUPPORT TO C2 (CSC2)	0.000	1.750	11.803	-	11.803	1.857	1.912	1.970	2.000	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
COMPACT VAPOR CHEMICAL AGENT DETECTOR (CVCAD)												
The CVCAD program will use the Combating Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) contract vehicle to transition four technologies from Science & Technology (S&T) into the program of record. This streamlined acquisition approach is broken into four phases uses one contracting mechanism to award one contract with follow-on acquisition awards; Phase I S&T advanced development, Phase II technology transition maturation evaluation, Phase III competitive prototyping down select and Engineering decision. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA). Phase IV will execute Production and Development for low rate initial production systems.												
CBRN SUPPORT TO C2 (CSC2)												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) CA4 / <i>Contamination Avoidance (ACD&P)</i>
<p>CSC2 focuses on technology maturation, demonstration, integration and transitioning early warning capability sets to fielded Chemical Biological Defense Program (CBDP) programs of record to combat emerging and potentially urgent threats within Joint All Domain Operations. Contracting strategy includes the use of Other Transaction Authority Research & Development and prototyping. Annual development cycles and capability drops are requested and validated by all Department of Defense (DoD) Services in the OASD (NCB/CB) IEW Campaign Plan as well as approved capability development packages designated through the Joint Requirements Office and prioritized based on National Defense Strategy and National Military Strategy goals. Current strategy also collaborates with multi-agency partners to obtain synergy and interoperability across the areas of sensor data analytics, integrated early warning, and protect to warn/protect to treat capabilities. Efforts within CSC2 are driven by Service Chemical Biological Radiological and Nuclear (CBRN) capability gaps that are identified on an annual basis and evaluated by CBDP stakeholders; possible solutions and applicable technologies within the CBDP will be experimented, integrated, networked, and deployed through the software acquisition pathway.</p> <p>CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)</p> <p>CSIRP is a streamlined and tailored acquisition effort to rapidly prototype and field CBRN payload capabilities for unmanned platforms. CSIRP will provide and integrate unmanned CBRN payload prototypes in cyclic prototyping plan cycles based on service requirements. The prototyping plans will use a streamlined acquisition process in order to keep pace with industry and the rapid advancement of technologies. The CSIRP strategy is to utilize the rapid prototyping process enabled by the Other Transactional Agreements (OTA) contract vehicle. Upon award, the awardees will have two to three years to produce prototype sensors that are integrated onto service selected (air and/or ground) platforms. These prototypes will be demonstrated, evaluated and tested by the Services as well as laboratories and academia. Successful prototypes will be transitioned to the platforms and services for the next steps in acquisition, production and eventual fielding across the services. BA4 funding provided market research to support the refinement and the building of technologically mature prototypes. BA5 funding provides integration, demonstrations, testing and operational assessments of prototypes to support transition decisions for residual capabilities and final configurations to Program of Record (PoR) or sustained capability.</p> <p>NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)</p> <p>The NTA Defense program transitions to the AET DEFENSE program starting in FY22.</p> <p>ADVANCED AND EMERGING THREAT DEFENSE (AET DEFENSE)</p> <p>The AET Defense program will use a variety of acquisition approaches to survey, develop, assess, and rapidly field technologies to inform and fill advanced and emerging threat gaps. The program will utilize an existing Multiple Award Indefinite Delivery Indefinite Quantify Task Order Contract to provide technical support to studies and assessments of performance against emerging threats. For Program of Record (PoR) systems currently in development that will be assessed for performance against emerging threats, those PoR's existing contracts will be modified to incorporate development engineering and test support for emerging threat capability. The AET Defense program will utilize OTAs for system development and prototyping activities and Government Agencies and Federally Funded Research and Development Centers to provide development, testing and technical support.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - HW S - Advanced Prototype Development	C/FFP	Advanced Technologies International : Summerville, SC	0.000	0.000		4.538	Oct 2021	0.000		0.000		0.000	0.000	4.538	0.000
CVCAD - HW S - Government Team Labor	Various	Various : Various	0.000	0.581	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.581	0.000
CSC2 - HW C - Contractor Product Development Team Labor	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.500	Feb 2022	0.000		0.000		0.000	0.000	0.500	0.000
CSC2 - HW C - CSC2 Operational Capability	C/CPAF	Various : Various	0.000	0.000		12.281	Feb 2022	0.000		0.000		0.000	0.000	12.281	0.000
CSC2 - HW - C Government Product Development Team Labor	MIPR	Various : Various	0.000	0.000		2.500	Oct 2021	0.000		0.000		0.000	0.000	2.500	0.000
CSIRP - HW C - RN Sensor Design	C/FFP	Radiation Monitoring Devices : Inc, Boston, MA	0.000	0.380	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.380	0.000
CSIRP - HW C Chem Sensor Design	Various	Various : Various	0.000	0.150	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.150	0.000
CSIRP - HW C OTA - Chemical Sensor Prototype and Integration	C/FFP	Intelligent Optical Systems (IOS) : Torrance, CA	0.687	0.320	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.007	0.000
CSIRP - HW C Contractor Product Development Team Labor	C/FFP	Various : Various	0.550	0.438	Feb 2021	0.000		0.000		0.000		0.000	0.000	0.988	0.000
CSIRP - HW C - Government Product Development Team Labor	MIPR	Various : Various	2.726	0.291	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.017	0.000
CSIRP - SW C Sensor Integration	C/CPFF	Charles Stark Draper Laboratories : Inc., Cambridge, MA	1.915	1.270	Nov 2020	0.000		0.000		0.000		0.000	0.000	3.185	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) CA4 / <i>Contamination Avoidance (ACD&P)</i>
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSIRP - SW C UAS and Sensor Manufacturing and Design	C/CPFF	T2S Solutions (T2S : LLC), Belcamp, MD	1.086	0.425	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.511	0.000
NTA DEFENSE - HW S - Threat Understanding and Characterization	MIPR	Various : Various	2.608	0.449	Jan 2021	0.000		0.000		0.000		0.000	0.000	3.057	0.000
NTA DEFENSE - HW S - Government SE & Technical Management Team	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	2.015	1.461	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.476	0.000
AET DEFENSE - HW C - Emerging threat detection/ decontamination/protection capability prototyping	Various	Various : Various	0.000	0.000		0.936	Dec 2021	0.000		0.000		0.000	0.000	0.936	0.000
AET DEFENSE - SW C - Spectral library enhancements	MIPR	Various : Various	0.000	0.000		2.021	Nov 2021	0.000		0.000		0.000	0.000	2.021	0.000
AET DEFENSE - SW C - Hazard awareness tool updates	MIPR	Various : Various	0.000	0.000		1.076	Dec 2021	0.000		0.000		0.000	0.000	1.076	0.000
Subtotal			11.587	5.765		23.852		0.000		0.000		0.000	0.000	41.204	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - OGA Support & Analysis (IPT)	Various	Various : Various	0.000	0.301	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.301	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - ES S - Human System Integration (HSI) Support	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.114	Oct 2021	0.000		0.000		0.000	0.000	0.114	0.000
CVCAD - ES S - Readiness, Availability, and Maintainability (RAM) Analysis	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.155	Nov 2021	0.000		0.000		0.000	0.000	0.155	0.000
CSC2 - ES C - Contractor Support	C/CPAF	TBD : N/A	0.000	0.000		0.800	May 2022	0.000		0.000		0.000	0.000	0.800	0.000
CSC2 - ES C - Support	MIPR	TBD : N/A	0.000	0.000		0.700	May 2022	0.000		0.000		0.000	0.000	0.700	0.000
CSIRP - HW/SW Sensor Interface Design and Concept Development	Various	Various : Various	0.545	0.200	Nov 2021	0.000		0.000		0.000		0.000	0.000	0.745	0.000
Subtotal			0.545	0.501		1.769		0.000		0.000		0.000	0.000	2.815	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - DTE S - MIL-STD Testing	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.500	Jun 2022	0.000		0.000		0.000	0.000	0.500	0.000
CVCAD - DTE S - Chemical Surety Testing	MIPR	U.S. Army Combat Capabilities	0.000	0.000		0.200	Aug 2022	0.000		0.000		0.000	0.000	0.200	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD													
CSC2 - DTE C - Technical/ Operational Demo	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		2.000	Jun 2022	0.000		0.000		0.000	0.000	2.000	0.000
NTA DEFENSE - DTE S - Technology Assessments	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.945	0.610	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.555	0.000
NTA DEFENSE - DTE S - Systems Prototyping and Development	MIPR	Various : Various	1.956	1.116	Nov 2020	0.000		0.000		0.000		0.000	0.000	3.072	0.000
AET DEFENSE - DTE S - Technology Assessments	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		1.156	Dec 2021	0.000		0.000		0.000	0.000	1.156	0.000
Subtotal			2.901	1.726		3.856		0.000		0.000		0.000	0.000	8.483	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.080	Feb 2021	0.630	Nov 2021	0.000		0.000		0.000	0.000	0.710	0.000
CSC2 - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.000		2.321	Oct 2021	0.000		0.000		0.000	0.000	2.321	0.000
CSIRP - PM/MS C Program Management Support	MIPR	Various : Various	0.604	0.447	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.051	0.000
NTA DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	2.423	0.848	Jan 2021	0.000		0.000		0.000		0.000	0.000	3.271	0.000
AET DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.495	Dec 2021	0.000		0.000		0.000	0.000	0.495	0.000
Subtotal			3.027	1.375		3.446		0.000		0.000		0.000	0.000	7.848	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			18.060	9.367		32.923		0.000		0.000		0.000	0.000	60.350	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>					Project (Number/Name) CA4 / <i>Contamination Avoidance (ACD&P)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CVCAD - CDD																												
CVCAD - Milestone B																												
CVCAD - Critical Design Review																												
CVCAD - CPD																												
CVCAD - Milestone C																												
CSC2 - Software Pathway Acquisition Planning Phase																												
CSC2 - Software Pathway Acquisition Execution Phase																												
CSC2 - Minimal Viable Product																												
CSC2 - Minimal Viable Capability Release - 1																												
CSC2 - Minimal Viable Capability Release - 2																												
CSC2 - Minimal Viable Capability Release - 3																												
CSC2 - Minimal Viable Capability Release - 4																												
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #1																												
CSIRP - Transition Decision - Prototyping Plan #1																												
NTA DEFENSE - Capabilities Assessment																												
NTA DEFENSE - Technology Assessments																												
NTA DEFENSE - Strategic Coordination/ Information Management																												
NTA DEFENSE - Systems Prototyping and Development																												
AET DEFENSE - Technology Assessments																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) CA4 / <i>Contamination Avoidance (ACD&P)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AET DEFENSE - Systems Engineering/ Program Management																												
AET DEFENSE - System Development and Prototyping																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) CA4 / <i>Contamination Avoidance (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CVCAD - CDD	2	2023	2	2023
CVCAD - Milestone B	4	2023	4	2023
CVCAD - Critical Design Review	3	2024	3	2024
CVCAD - CPD	3	2025	3	2025
CVCAD - Milestone C	4	2025	4	2025
CSC2 - Software Pathway Acquisition Planning Phase	2	2022	2	2023
CSC2 - Software Pathway Acquisition Execution Phase	3	2023	4	2027
CSC2 - Minimal Viable Product	2	2024	2	2024
CSC2 - Minimal Viable Capability Release - 1	1	2025	1	2025
CSC2 - Minimal Viable Capability Release - 2	4	2025	4	2025
CSC2 - Minimal Viable Capability Release - 3	3	2026	3	2026
CSC2 - Minimal Viable Capability Release - 4	2	2027	2	2027
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #1	1	2021	2	2022
CSIRP - Transition Decision - Prototyping Plan #1	3	2022	3	2022
NTA DEFENSE - Capabilities Assessment	1	2021	4	2021
NTA DEFENSE - Technology Assessments	1	2021	4	2021
NTA DEFENSE - Strategic Coordination/Information Management	1	2021	4	2021
NTA DEFENSE - Systems Prototyping and Development	1	2021	4	2021
AET DEFENSE - Technology Assessments	1	2022	4	2027
AET DEFENSE - Systems Engineering/Program Management	1	2022	4	2027
AET DEFENSE - System Development and Prototyping	1	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) DE4 / Decontamination (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DE4: Decontamination (ACD&P)	-	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports the development of Contamination Mitigation (ConMit) systems that reduce operational impact and logistics burden, reduce sustainment costs, increase safety, and minimize environmental effects associated with decontamination and contamination mitigation operations. These efforts align with Chemical, Biological, Radiological, and Nuclear the National Defense Strategy by prioritizing preparedness for war and sustaining Joint Force military advantage and resilient force posture. In FY2023, the Chemical Biological Defense Program (CBDP) RDT&E Projects have been restructured to align to the CBDP portfolio. DE4 efforts in FY2022 progress to the Mitigate (MT4) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Chemical, Biological, Radiological, and Nuclear (CBRN) Covers, Coatings and Protective Overlays (C3PO),
- (2) Mass Personnel Decontamination (MPD),
- (3) Service Equipment Decontamination System (SEDS) ****Progresses to MT4 in FY2023****,
- (4) Tactical Contamination Mitigation System (TCMS) ****Progresses to MT4 in FY2023****, and
- (5) Wide Area Decontamination System (WADS)

The C3PO program, which was a new start in FY21, uses a Family of Systems approach to provide contamination mitigation capability to critical equipment and assets prior to a CBRN attack. This mitigates the effects and amount of CBRN contamination exposure allowing the Joint Force to be better prepared for war, maintain a resilient force posture, and remain lethal. These capabilities include CBRN protective covers, coatings, paints, and other preventative measures. In FY23 and beyond, the CBDP reduced the program for higher priorities. All programmatic documentation will be archived and the Joint Requirements Office will archive the Draft Capability Development Document.

The MPD program will provide Warfighters with the capability to reduce the hazards associated with mass casualty decontamination efforts for protected and unprotected personnel, casualties and contaminated human remains potentially exposed to CBRN hazards. 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 ambulatory and non-ambulatory patients, and allow for the processing of contaminated human remains. This reduces and limits the spread of contamination among potentially contaminated population groups through a standardized, modular system scalable to increase capability, aligning with the National Defense Strategy by prioritizing preparedness for war in order to remain lethal. In FY22 and beyond, the CBDP reduced the program for higher priorities. All programmatic documentation will be archived and the Joint Requirements Office will enter the Draft Capability Development Document in the Knowledge Management/ Decision Support tool for Archiving.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>

The SEDS program, which was a new start in FY21, will develop reliable and modular hardware intended to decontaminate military equipment in operational environments, including personal effects and weapons, to pre-contamination conditions. This capability is needed to sustain the Joint Force military by reducing logistical burden to increase tactical agility and sustain a resilient force posture, and align with the National Defense Strategy. SEDS will provide contamination mitigation capabilities for critical equipment that have been exposed to chemical and biological contamination and achieve efficacy levels that allow unprotected post-decontamination exposures for long periods with less than negligible severity effects.

TCMS is a FY22 new start program and is one of two respond components (along with the Wide Area Decontamination System) of the Interdependent Contamination Mitigation concept and intends to address gaps related to the decontamination of sensitive equipment, personal equipment, individual & crew served weapons, and it will reduce the time and logistics associated with decontamination. TCMS will limit the spread and mitigate the effects of Chemical, Biological, and Radiological (CBR) contamination to allow warfighters to continue their mission for an extended period of time in a high threat, CBR contaminated environment. The program will provide a forward deployed contamination mitigation capability that allows expeditious execution of decontamination that results in MOPP reduction/removal. TCMS will greatly enhance or eliminate the need for subsequent decontamination to mitigate contamination on military equipment by allowing the Warfighter to see areas of contamination, target contamination for treatment early, with minimal expenditure of time and material. In FY23 the TCMS program will complete Milestone A and procure prototypes of systems that meet the draft Capabilities Development Document requirements. The program will conduct a Systems Readiness Review (SRR), Test Readiness Review (TRR), begin prototype testing.

The WADS is a FY22 new start program that will provide contamination mitigation capabilities against chemical and biological warfare agents on various types of terrain and exterior of fixed site facilities. The WADS will be employed to conduct Airport of Debarkation, Seaport of Debarkation, Terrain, Fix Site and Anti-access/Anti-denial decontamination operations. The WADS will be a replacement for the M12. The M12A1, Power Driven Decontamination Apparatus (PDDA) system is an Army lead program that consists of a pump unit, a 500 gallon tank unit, and a 600 gallon per hour liquid fuel water heater with a spray bar mounted to the system for terrain decontamination. The WADS will use the principles of the PDDA to further enhance terrain decontamination capabilities. In FY23 and beyond, the CDDP reduced the program for higher priorities. All programmatic documentation will be archived and the Joint Requirements Office will enter the Draft Capability Development Document in the Knowledge Management/Decision Support tool for Archiving.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Title: 1) Covers, Coatings, and Protective Overlays (C3PO)	1.643	3.572	-
Description: Prototype Development			
FY 2022 Plans: Continue and complete using agile program management to obtain laboratory and user testing through iterative (test-fix-test) prototyping to improve system performance.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)	Project (Number/Name) DE4 / Decontamination (ACD&P)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Program/project terminated in FY 2023.					
Title: 2) Mass Personnel Decontamination (MPD) Description: Milestone (MS) A Support and Preliminary Systems Component Testing			1.500	-	-
Title: 3) Service Equipment Decontamination System (SEDS) Description: Milestone (MS) B support and Prototype Development FY 2022 Plans: Initiate Special Operations Forces (SOF) combined Developmental Test/Operational Test (DT/OT) and conduct Early Developmental Testing (EDT) for remaining Services, prepare for Preliminary Design Review (PDR). FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$9.649M) transferred to MT4.			1.776	8.988	-
Title: 4) Tactical Contamination Mitigation System (TCMS) Description: Milestone (MS) A support and Prototype Development FY 2022 Plans: Initiate market research and conduct a requirements table top exercise in order to release the Request for Prototype Proposal (RPP) and award a prototyping Other Transaction Authority (OTA) contract. Draft program documentation for a Milestone A decision. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$4.743 Million) transferred to MT4.			-	3.433	-
Title: 5) Wide Area Decontamination System (WADS) Description: Prototype Development and Evaluation FY 2022 Plans: Develop and demonstrate a demonstrator platform and prototype capability for autonomous contamination mitigation technologies. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project terminated in FY 2023.			-	2.392	-
Accomplishments/Planned Programs Subtotals			4.919	18.385	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MT4: <i>Mitigate (ACD&P)</i>	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• DE5: <i>Decontamination (SDD)</i>	17.274	7.874	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	25.148
• MT5: <i>Mitigate (SDD)</i>	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• PHM007: <i>SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)</i>	0.000	0.000	0.000	-	0.000	5.451	6.483	8.483	10.931	Continuing	Continuing
• PHM042: <i>TACTICAL CONTAMINATION MITIGATION SYSTEM (TCMS)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	1.250	5.072	Continuing	Continuing

Remarks

D. Acquisition Strategy

CBRN COVERS COATINGS AND PROTECTIVE OVERLAYS (C3PO)

The C3PO acquisition approach involves testing fielded material against live chemical warfare agents and biological warfare agents. The C3PO program will evaluate Government and Commercial Off the Shelf options to reduce development costs. The program will test Government and Commercial Off the Shelf options against live chemical warfare agents and biological warfare agents, conduct regular user evaluations to identify human system integration issues, and will conduct testing to ensure the system meets military standards. The C3PO program funding ends in FY22 and all program contract, test, and acquisition documentation will be archived and the Joint Requirements Office will archive the Draft Capability Development Document.

MASS PERSONNEL DECON (MPD)

The MPD program will develop the equipment, processes and procedures for Department of Defense (DoD) -affiliated personnel contaminated by chemical, biological, and radiological agents to achieve ambulatory and non-ambulatory throughput requirements as dictated by the needs of the Services, while considering various mission scenarios. The acquisition strategy includes several key product developmental efforts and the program achieved Milestone A in February 2020. Also included are efforts for the reduction of current MPD System costs by assessing existing Mass Casualty Decontamination (MCD) equipment and processes as well as new technology through the use of Requests For Information (RFI's), Market Research Analyses and Technology Demonstrations. Data collected from prior equipment demonstrations and fielding of commercial MCD systems in support of two validated Operational Needs Statements, will inform the program as well. In FY22 and beyond, the Chemical Biological Defense Program (CBDP) reduced the program for higher priorities. All programmatic documentation will be archived and the Joint Requirements Office will enter the Draft Capability Development Document in the Knowledge Management/Decision Support tool for Archiving.

SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>
<p>The SEDS program will utilize the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) to design and develop state of the art equipment using competitive and iterative prototyping. The program will test prototypes against live chemical warfare agents and biological warfare agents, conduct reliability, availability, and maintainability testing, conduct regular user evaluations to identify human system integration issues, and will conduct testing to ensure the system meets military standards. The program achieved a Milestone A decision in 4QFY21. The OTA vehicle will be used to request prototype development. Completed Request for Prototype Proposals (RPP) followed by award of Prototype Agreement. Started Developmental Testing (DT), and have a planned Milestone B approval in FY23 for the United States Special Operations Command (SOCOM) and Joint Service variant.</p> <p>TACTICAL CONTAMINATION MITIGATION SYSTEM (TCMS)</p> <p>The TCMS program will develop the equipment, processes and procedures for contamination mitigation related to post-incident operations in a Chemical Biological Radiological and Nuclear (CBRN) contaminated environment. The acquisition strategy includes market research through both Requests for Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. Data collected will inform a Milestone A decision in FY23. The OTA vehicle will also be used to request prototypes, which will undergo technology demonstrations and Early Field testing, followed by an analysis to determine the most suitable candidate. Results of Prototyping will inform Milestone B and Request for Proposals (RFPs) followed by developmental and operational testing and Milestone C/Full Rate Production Approval.</p> <p>WIDE AREA DECONTAMINATION SYSTEM (WADS)</p> <p>The WADS program will develop the equipment, processes and procedures for contamination mitigation of various types of terrain and the exterior of DoD fixed site facilities contaminated by chemical, biological, and radiological agents. The acquisition strategy includes market research through both Requests for Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. The OTA vehicle will also be used to request prototypes, which will undergo technology demonstrations and Early Field testing, followed by an analysis to determine the most suitable candidate. The WADS program funding ends in FY22 and all program contract, test, and acquisition documentation will be archived and the Joint Requirements Office will enter the Draft Capability Development Document into Knowledge Management/Decision Support tool for archiving.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) DE4 / Decontamination (ACD&P)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C3PO - HW S - Advanced Product Development	Various	Various : Various	0.000	0.203	Feb 2021	0.208	Nov 2021	0.000		0.000		0.000	0.000	0.411	0.000
MPD - HW S - Hardware System	C/FFP	Advanced Technologies International : Summerville, SC	0.441	0.320	Oct 2022	0.000		0.000		0.000		0.000	0.000	0.761	0.000
SEDS - HW S - SEDS Product Development	SS/FFP	TBD : N/A	0.000	0.000		3.298	Aug 2022	0.000		0.000		0.000	0.000	3.298	0.000
SEDS - HW S - MPCAD Devices/Product Development	C/FFP	FLIR Systems Inc : Wilsonville, OR	0.000	0.897	Jul 2021	0.000		0.000		0.000		0.000	0.000	0.897	0.000
TCMS - HW S - Product Development	C/FFP	TBD : N/A	0.000	0.000		2.408	May 2022	0.000		0.000		0.000	0.000	2.408	0.000
WADS - HW C - Autonomous Contamination Mitigation Prototype	C/FFP	TBD : N/A	0.000	0.000		1.127	May 2022	0.000		0.000		0.000	0.000	1.127	0.000
Subtotal			0.441	1.420		7.041		0.000		0.000		0.000	0.000	8.902	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C3PO - ES SB - Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.525	Feb 2021	0.270	Nov 2021	0.000		0.000		0.000	0.000	0.795	0.000
SEDS - ES SB - SEDS Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.066	Mar 2021	1.348	Oct 2021	0.000		0.000		0.000	0.000	1.414	0.000
TCMS - ES SB - Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.000		0.515	May 2022	0.000		0.000		0.000	0.000	0.515	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WADS - ES C - Engineer and Logistics Support	MIPR	Various : Various	0.000	0.000		0.378	Apr 2022	0.000		0.000		0.000	0.000	0.378	0.000
Subtotal			0.000	0.591		2.511		0.000		0.000		0.000	0.000	3.102	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C3PO - Other S - Developmental Testing and Test Planning Support	MIPR	Various : Various	0.000	0.784	Feb 2021	2.698	Dec 2021	0.000		0.000		0.000	0.000	3.482	0.000
MPD - OTH S - System Component Testing, Prototype Testing, DT, Test Planning	C/FFP	Advanced Technologies International : Summerville, SC	2.492	0.955	Jul 2021	0.000		0.000		0.000		0.000	0.000	3.447	0.000
SEDS - OTH S - SEDS T&E IPR Test Planning	MIPR	Various : Various	0.000	0.562	Aug 2021	3.501	Nov 2021	0.000		0.000		0.000	0.000	4.063	0.000
TCMS - OTH S - Prototype T&E IPR Test Planning	MIPR	Various : Various	0.000	0.000		0.254	Jun 2022	0.000		0.000		0.000	0.000	0.254	0.000
WADS - OTH C - T&E Support	MIPR	Various : Various	0.000	0.000		0.709	Apr 2022	0.000		0.000		0.000	0.000	0.709	0.000
Subtotal			2.492	2.301		7.162		0.000		0.000		0.000	0.000	11.955	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
C3PO - PM/MS S- Program Management Support	MIPR	Various : Various	0.000	0.131	Feb 2021	0.396	Nov 2021	0.000		0.000		0.000	0.000	0.527	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) DE4 / Decontamination (ACD&P)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MPD - PM/MS S - Program Management Support	MIPR	Various : Various	0.807	0.225	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.032	0.000
SEDS - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.251	Mar 2021	0.841	Jan 2022	0.000		0.000		0.000	0.000	1.092	0.000
TCMS - PM/MS S - Program Management Support	C/FFP	TBD : N/A	0.000	0.000		0.256	May 2022	0.000		0.000		0.000	0.000	0.256	0.000
WADS - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.178	Apr 2022	0.000		0.000		0.000	0.000	0.178	0.000
Subtotal			0.807	0.607		1.671		0.000		0.000		0.000	0.000	3.085	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			3.740	4.919		18.385		0.000		0.000		0.000	0.000	27.044	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>					Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
C3PO - Proof of Concept Demonstration and Testing																												
C3PO - Government and Commercial Off the Shelf Options Testing																												
C3PO - Prepare Programmatic Acquisition Documentation for Archive																												
MPD - Prepare Programmatic Acquisition Documentation for Archive																												
MPD - Contract Award																												
SEDS - MS A Preparation (SOF)																												
SEDS - MS A (SOF)																												
SEDS - Acquisition Decision Memorandum(ADM) (SOF)																												
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)																												
SEDS - Prototype Agreement Award (SOF and Other Services)																												
SEDS - Developmental Testing (SOF)																												
SEDS - Early Developmental Testing (Other Services)																												
SEDS - Capability Development Document (CDD) (Other Services)																												
SEDS - MS B (SOF)																												
SEDS - MS B (Other Services)																												
SEDS - Developmental Testing (DT) (Other Services)																												
SEDS - MS C/Full Rate Production (SOF)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																	Date: April 2022											
Appropriation/Budget Activity 0400 / 4										R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)								Project (Number/Name) DE4 / Decontamination (ACD&P)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SEDS - Initial Operational Capability (SOF)																												
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)																												
SEDS - Full Rate Production (Other Services)																												
TCMS - Market Research																												
TCMS - Acquisition Shaping Panel (ASP)																												
TCMS - System Engineering Plan (SEP)																												
TCMS - Request for Proposal (RFP)																												
TCMS - Test and Evaluation Master Plan (TEMP)																												
TCMS - Milestone A																												
TCMS - System Readiness Review (SRR)																												
TCMS - Test Readiness Review (TRR)																												
TCMS - Prototype Contract Award																												
TCMS - Prototype Testing																												
TCMS - Capability Development Document (CDD)																												
TCMS - Life Cycle Sustainment Plan (LCSP)																												
TCMS - Milestone B																												
TCMS - TCMS - Acquisition Program Baseline (APB)																												
TCMS - Developmental Test & Evaluation																												
TCMS - System Verification Review/Production Readiness Review																												
TCMS - Milestone C																												
TCMS - Full Rate Production (FRP)																												
WADS - Prototype Development																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
WADS - Market Research																												
WADS - Requirements Table Top Exercise																												
WADS - Prepare Programmatic Acquisition Documentation for Archive																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C3PO - Proof of Concept Demonstration and Testing	3	2021	4	2022
C3PO - Government and Commercial Off the Shelf Options Testing	4	2021	4	2022
C3PO - Prepare Programmatic Acquisition Documentation for Archive	4	2022	4	2022
MPD - Prepare Programmatic Acquisition Documentation for Archive	4	2021	4	2021
MPD - Contract Award	4	2021	1	2022
SEDS - MS A Preparation (SOF)	1	2021	3	2021
SEDS - MS A (SOF)	4	2021	4	2021
SEDS - Acquisition Decision Memorandum(ADM) (SOF)	4	2021	4	2021
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)	1	2022	1	2022
SEDS - Prototype Agreement Award (SOF and Other Services)	3	2022	3	2022
SEDS - Developmental Testing (SOF)	3	2022	1	2023
SEDS - Early Developmental Testing (Other Services)	3	2022	3	2023
SEDS - Capability Development Document (CDD) (Other Services)	2	2023	2	2023
SEDS - MS B (SOF)	2	2023	2	2023
SEDS - MS B (Other Services)	4	2023	4	2023
SEDS - Developmental Testing (DT) (Other Services)	2	2024	4	2025
SEDS - MS C/Full Rate Production (SOF)	4	2024	4	2024
SEDS - Initial Operational Capability (SOF)	4	2025	4	2025
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)	3	2026	3	2026
SEDS - Full Rate Production (Other Services)	4	2027	4	2027
TCMS - Market Research	3	2022	4	2022
TCMS - Acquisition Shaping Panel (ASP)	3	2022	3	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) DE4 / <i>Decontamination (ACD&P)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
TCMS - System Engineering Plan (SEP)	4	2022	4	2022
TCMS - Request for Proposal (RFP)	4	2022	4	2022
TCMS - Test and Evaluation Master Plan (TEMP)	2	2024	2	2024
TCMS - Milestone A	1	2023	1	2023
TCMS - System Readiness Review (SRR)	1	2023	1	2023
TCMS - Test Readiness Review (TRR)	1	2023	1	2023
TCMS - Prototype Contract Award	1	2023	1	2023
TCMS - Prototype Testing	1	2023	2	2024
TCMS - Capability Development Document (CDD)	2	2024	2	2024
TCMS - Life Cycle Sustainment Plan (LCSP)	3	2024	3	2024
TCMS - Milestone B	3	2024	3	2024
TCMS - TCMS - Acquisition Program Baseline (APB)	3	2024	3	2024
TCMS - Developmental Test & Evaluation	1	2025	4	2025
TCMS - System Verification Review/Production Readiness Review	3	2026	3	2026
TCMS - Milestone C	4	2026	4	2026
TCMS - Full Rate Production (FRP)	4	2027	4	2027
WADS - Prototype Development	3	2022	4	2022
WADS - Market Research	3	2022	3	2022
WADS - Requirements Table Top Exercise	3	2022	3	2022
WADS - Prepare Programmatic Acquisition Documentation for Archive	4	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IP4: Individual Protection (ACD&P)	-	3.448	3.968	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.416
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project includes the development of next generation individual protective ensembles (e.g., suits, boots, and gloves) that enable the Joint Forces to survive and continue the mission in Chemical, Biological, and Radiological (CBR) contaminated environments. In FY2023, the Chemical Biological Defense Program (CBDP) RDT&E Projects have been restructured to align to the CBDP portfolio. IP4 efforts in FY2022 progress to the Protect (PT) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) UIPE FoS Gloves **Progresses to PT5 in FY2023**, and
- (2) UIPE FoS General Purpose (GP) (i.e. Land) **Progresses to PT5 in FY2023**

The UIPE FoS program is a family of systems that provides 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 provides protection from operationally relevant traditional and non-traditional Chemical Biological Radiological and Nuclear (CBRN) threats likely to be encountered during joint force operations.

UIPE FoS Gloves provides percutaneous protection to the Warfighter against traditional and non-traditional CBRN threats. UIPE FoS Gloves provides improved comfort, tactility and dexterity, and for some mission profiles advanced features such as touch screen and flame resistance. In FY22 UIPE FoS Gloves will finalize UIPE FoS Glove prototype development and testing for multiple mission profiles (General Purpose, Aviation Light and Aviation Heavy Variants) and conduct Developmental Testing/Operational Testing (DT/OT) events on mature prototypes.

UIPE FoS GP is part of a family of systems that will give the Warfighter percutaneous protection from operationally relevant traditional, non-traditional, and advanced CBRN/Toxic Industrial Material (TIM) threats likely to be encountered during joint force operations. The legacy chemical biological garment is nearing the end of its service life and does not meet updated requirements such as emerging threats, aerosol protection, and flame resistance. The UIPE FoS GP is a two-piece lightweight (compared to the legacy system) duty uniform replacement that has an aerosol liner, is flame resistant, and does not reduce Warfighter effectiveness in the areas of mobility and thermal burden. In FY22 UIPE FoS GP will conduct Critical Design Review (CDR), Joint Independent Logistics Assessment (JILA), Prototype Development, update the Capability Development Document (CDD), Engineering/Technical IPT Support, and Technical Manual validation and verification.

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

	FY 2021	FY 2022	FY 2023
Title: 1) UIPE FoS GP	2.954	3.028	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IP4 / <i>Individual Protection (ACD&P)</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Description: Development of the Next Generation Protective Ensembles FY 2022 Plans: Conduct Critical Design Review (CDR), Conduct the Joint Independent Logistics Assessment (JILA), Prototype Development, update the Capability Development Document (CDD), Engineering/Technical IPT Support, and Technical Manual validation and verification. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Engineering and Manufacturing Development Phase. Funding transferred to a new Project due to budget restructure. FY23 budget activity 5 (BA5) funding transferred to Project PT5.			
Title: 2) UIPE FoS Gloves Description: Development of the Next Generation Protective Glove FY 2022 Plans: Finalize UIPE FoS Glove prototype development and testing for multiple mission profiles (General Purpose, Aviation Heavy and Aviation Light). Conduct Developmental Testing/Operational Testing (DT/OT) events on mature prototypes. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Engineering and Manufacturing Development Phase. Funding transferred to a new Project due to budget restructure. FY23 budget activity 5 (BA5) funding transferred to Project PT5.	0.494	0.940	-
Accomplishments/Planned Programs Subtotals	3.448	3.968	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• IP5: <i>Individual Protection (SDD)</i>	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
• PT5: <i>Protect (SDD)</i>	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	Continuing	Continuing
• PHM032: <i>UNIFORM</i>	0.000	0.000	0.000	-	0.000	7.478	7.974	7.974	8.328	Continuing	Continuing
INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)											
• PHM033: <i>UNIFORM</i>	0.000	17.686	51.130	-	51.130	101.486	174.124	194.691	264.433	Continuing	Continuing
INTEGRATED PROTECTIVE											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>				Project (Number/Name) IP4 / <i>Individual Protection (ACD&P)</i>			

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)											
Remarks											
D. Acquisition Strategy											
UNIFORM INTEGRATED PROTECTIVE ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)											
<p>UIPE FoS GP used an Other Transaction Authority (OTA) and Government designed prototypes produced in conjunction with an Industry Partner to acquire prototypes for early user testing. Warfighter feedback, trade space analysis, and chemical testing resulted in three government designed candidates being down selected in 3QFY20. These three candidates are designed to minimize operational burden and provide improved form, fit, function, and integration with the current Warfighter kits compared to legacy systems. Additional testing, review of the results, stakeholder guidance, and a risk analysis led to the selection of one candidate in FY21 - the Integrated Chemical Biological Lightweight Improved Thermal Ensemble Flame Resistant (ICBLITE FR). UIPE FoS GP will be executing multiple awards in the next 3 years, where production occurring before the milestone to allow for completion of UIPE evaluation (effectiveness, suitability and survivability) prior to award of a high ceiling production contract. This will allow the vendor to better estimate pricing (labor and material) with an initial production ramp up; and Mitigates schedule risk for award of a high ceiling production contract.</p>											
UNIFORM INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)											
<p>The UIPE FoS Glove program conducted market research through both Requests For Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. Eight white papers were deemed acceptable and will be pursued through a Mid-Tier Acquisition Rapid Prototyping strategy. Candidate technologies will undergo Early User Tests/Wear events and material and system level testing to identify available capabilities as well as Analytical framework analyses to determine the most suitable solution(s) per mission profile.</p>											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) IP4 / <i>Individual Protection (ACD&P)</i>			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - HW C - Prototype Development	Various	Various : Various	0.000	0.256	Dec 2020	1.949	Nov 2021	0.000		0.000		0.000	0.000	2.205	0.000
UIPE FOS GLOVES - HW C - Prototype Development	C/CPFF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.100	Dec 2020	0.033	Jan 2022	0.000		0.000		0.000	0.000	0.133	0.000
Subtotal			0.000	0.356		1.982		0.000		0.000		0.000	0.000	2.338	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - ES C - Engineering and Technical IPT Support/PM and SME Support	Various	Various : Various	0.000	0.858	Dec 2020	0.454	Apr 2022	0.000		0.000		0.000	0.000	1.312	0.000
UIPE FOS GLOVES - ES C - Engineering and Technical IPT Support / SME Support	MIPR	Various : Various	0.000	0.113	Dec 2020	0.089	Nov 2021	0.000		0.000		0.000	0.000	0.202	0.000
Subtotal			0.000	0.971		0.543		0.000		0.000		0.000	0.000	1.514	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - OTHT S - DT/OT	Various	Various : Various	0.000	1.616	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.616	0.000
UIPE FOS GP - DTE C - Surveillance Testing	MIPR	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	0.000		0.399	Nov 2021	0.000		0.000		0.000	0.000	0.399	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) IP4 / <i>Individual Protection (ACD&P)</i>			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GLOVES - DTE C - Prototype Testing & Test Support	MIPR	Various : Various	0.000	0.241	Sep 2021	0.761	Nov 2021	0.000		0.000		0.000	0.000	1.002	0.000
Subtotal			0.000	1.857		1.160		0.000		0.000		0.000	0.000	3.017	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.224	Dec 2020	0.226	Apr 2022	0.000		0.000		0.000	0.000	0.450	0.000
UIPE FOS GLOVES - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.040	Dec 2020	0.057	Nov 2021	0.000		0.000		0.000	0.000	0.097	0.000
Subtotal			0.000	0.264		0.283		0.000		0.000		0.000	0.000	0.547	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	3.448		3.968		0.000		0.000		0.000	0.000	7.416	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 4										PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)								IP4 / Individual Protection (ACD&P)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment	■																											
UIPE FOS GP - Capability Development Document (CDD)	■																											
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update			■																									
UIPE FOS GP - Milestone B			■																									
UIPE FOS GP - DT/OT					■	■	■	■	■	■	■	■																
UIPE FOS GP - Critical Design Review (CDR)						■	■																					
UIPE FOS GP - Operational Assessment								■	■	■																		
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)											■	■																
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)												■	■															
UIPE FOS GP - Capability Development Document (CDD) Update												■	■															
UIPE FOS GP - Milestone C LRIP												■	■															
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)													■	■														
UIPE FOS GP - MS C FRP															■	■												
UIPE FOS GLOVES - Early User, material and system level testing		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■												
UIPE FOS GLOVES - Draft CDD			■																									
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation				■	■	■																						
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT						■	■	■	■	■	■	■																

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																				Date: April 2022									
Appropriation/Budget Activity										R-1 Program Element (Number/Name)										Project (Number/Name)									
0400 / 4										PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)										IP4 / Individual Protection (ACD&P)									
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
UIPE FOS GLOVES - Mid-Tier Acquisition IPR	█																												
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point	█																												
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C	█																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IP4 / <i>Individual Protection (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment	1	2021	1	2021
UIPE FOS GP - Capability Development Document (CDD)	1	2021	1	2021
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update	3	2021	3	2021
UIPE FOS GP - Milestone B	3	2021	3	2021
UIPE FOS GP - DT/OT	1	2022	3	2023
UIPE FOS GP - Critical Design Review (CDR)	3	2022	3	2022
UIPE FOS GP - Operational Assessment	4	2022	1	2023
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)	3	2023	3	2023
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)	4	2023	4	2023
UIPE FOS GP - Capability Development Document (CDD) Update	4	2023	4	2023
UIPE FOS GP - Milestone C LRIP	4	2023	4	2023
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)	2	2024	2	2024
UIPE FOS GP - MS C FRP	1	2025	1	2025
UIPE FOS GLOVES - Early User, material and system level testing	2	2021	2	2024
UIPE FOS GLOVES - Draft CDD	3	2021	3	2021
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation	4	2021	1	2022
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT	2	2022	3	2023
UIPE FOS GLOVES - Mid-Tier Acquisition IPR	2	2023	2	2023
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point	2	2024	2	2024
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C	3	2024	3	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IS4: Information Systems (ACD&P)	-	13.414	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.414
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) Software Support Activity (SSA), and
- (2) CBRN Integrated Early Warning (CBRN IEW).

The SSA program provides for enterprise services in the areas of software development, system/network architectures, cybersecurity, information assurance standards and policies and interoperability. The SSA emphasizes development of reference implementations to guide Government and industry system and software developers to ensure that their products meet risk management framework compliance and common interoperability standards such as the Integrated Sensor Architecture (ISA). SSA efforts will transition to budget activity 7 (BA7) under the MOD CBRN IS program (Project IS7) starting in FY22.

CBRN IEW program will transition and integrate successful mature technologies into a baseline IEW framework to support environmental monitoring and biological surveillance to support immediate force health protection requirements. Applicable technologies within the Chemical Biological Defense Program (CBDP) will be experimented, integrated, networked, and deployed through rapid acquisition methods and transitioned to programs of record to achieve integrated early warning in accordance with Office of the Secretary of Defense (OSD) IEW Campaign Plan. CBRN IEW will utilize Table-Top exercises (TTX), Operational Demonstrations, and other venues to provide sensor interoperability and interdependence and integrated layered defense in order to increase readiness within the CBRN IEW efforts will move from Project IS4 to Project CA4 within the CBRN Support to Command and Control (CSC2) program.

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

	FY 2021	FY 2022	FY 2023
Title: 1) CBRN Integrated Early Warning (CBRN IEW)	13.342	-	-
Description: Implementation of common Chemical Biological Radiological and Nuclear (CBRN) integrated systems architecture throughout the sensor portfolio enabling a common operating environment and integration hub with sensor data analysis and integrated layered defense.			
Title: 2) Software Support Activity (SSA)	0.072	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023
Description: Enterprise Service												
Accomplishments/Planned Programs Subtotals										13.414	-	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290	
• UN4: Understand (ACD&P)	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing	
• IS5: Information Systems (SDD)	5.810	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.810	
• IS7: Information Systems (Op Sys Dev)	3.122	15.281	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.403	
Remarks												
D. Acquisition Strategy												
CBRN INTEGRATED EARLY WARNING (CBRN IEW)												
CBRN IEW focuses on technology maturation, demonstration, integration and transitioning early warning capability sets to fielded Chemical Biological Defense Program (CBDP) programs of record to combat emerging and potentially urgent threats within the multi-domain operations spectrum. Contracting strategy includes the use of Other Transaction Authority R&D and prototyping. Annual development cycles and capability drops are requested and validated by all Department of Defense (DoD) services in the OASD(NCB/CB) IEW Campaign Plan and prioritized based on National Defense Strategy and National Military Strategy goals. Current strategy also collaborates with multi-agency partners to obtain synergy and interoperability across the areas of sensor data analytics, integrated early warning, and protect to warn/protect to treat capabilities.												
SOFTWARE SUPPORT ACTIVITY (SSA)												
Software Support Activity (SSA) is a non-acquisition, service organization that provides professional subject matter expertise support throughout the CBDP Enterprise. These services are provided by government and contract personnel with expertise in software development, network architecture, cybersecurity, technology transitions, information assurance, and standards and policies compliance, and are provided throughout the lifecycle of programs within the CBDP portfolio. These efforts facilitate the efficient development, transition, fielding, modernization, and sustainment of interoperable and integrated Chemical Biological Radiological and Nuclear (CBRN) capabilities. In FY22, SSA efforts will transition to Modernization CBRN Information Systems (MOD CBRN IS).												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IEW - SW C - Network Architecture	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	6.795	Mar 2021	0.000		0.000		0.000		0.000	0.000	6.795	0.000
CBRN IEW - SW C- Systems Integration	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	1.000	Jan 2021	0.000		0.000		0.000		0.000	0.000	1.000	0.000
CBRN IEW - SW C - Government/Contractor Team Labor	MIPR	Various : Various	0.000	1.545	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.545	0.000
CBRN IEW - SW C - Operational Capability	C/CPFF	Various : Various	0.000	1.665	Jan 2021	0.000		0.000		0.000		0.000	0.000	1.665	0.000
Subtotal			0.000	11.005		0.000		0.000		0.000		0.000	0.000	11.005	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - TD/D C - Engineering Support	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.656	0.072	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.728	0.000
Subtotal			0.656	0.072		0.000		0.000		0.000		0.000	0.000	0.728	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IEW - DT C - Development Test	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.800	Jan 2021	0.000		0.000		0.000		0.000	0.000	0.800	0.000
Subtotal			0.000	0.800		0.000		0.000		0.000		0.000	0.000	0.800	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IEW - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	1.537	Jan 2021	0.000		0.000		0.000		0.000	0.000	1.537	0.000
Subtotal			0.000	1.537		0.000		0.000		0.000		0.000	0.000	1.537	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.656	13.414		0.000		0.000		0.000		0.000	0.000	14.070	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IS4 / <i>Information Systems (ACD&P)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBRN IEW - ICD																												
CBRN IEW - Initial Sensor Integration																												
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation																												
SSA - Provide Enterprise Architecture Products and Services																												
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing																												
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy																												
SSA - Sustain Common Components products, process and services																												
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations																												
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) IS4 / <i>Information Systems (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBRN IEW - ICD	2	2021	2	2021
CBRN IEW - Initial Sensor Integration	1	2021	4	2021
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2021	4	2021
SSA - Provide Enterprise Architecture Products and Services	1	2021	4	2021
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2021	4	2021
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	1	2021	4	2021
SSA - Sustain Common Components products, process and services	1	2021	4	2021
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2021	4	2021
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MB4: Medical Biological Defense (ACD&P)	-	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project includes Medical Countermeasure platform technologies, Medical Countermeasures (vaccines and therapeutics), development of reagents, assays, diagnostic equipment, biosurveillance and supporting efforts. In FY2023, the Chemical Biological Defense Program (CBDP) RDT&E Projects have been restructured to align to the CBDP portfolio. MB4 efforts in FY2022 progress to the Enabling Investments (EN) and Protect (PT) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) COVID Therapies Monoclonal Antibodies (COVID TX MAB) **Progresses to PT4 in FY2023**,
- (2) Validated Nucleic Acid Vaccine Construction (COVID VAC) **Progresses to PT4 in FY2023**,
- (3) Biosafety Level 4 Good Laboratory Practice Test and Evaluation (BSL4 GLP T&E),
- (4) Chem Bio Incident Preparedness and Response - Biosafety Level 4 Research Institute of Infectious Diseases (CBIPR - BSL4 RIID),
- (5) Chem Bio Incident Preparedness and Response - Advanced Development and Manufacturing (CBIPR - ADM) **Progresses to EN4 in FY2023**,
- (6) Medical Countermeasure Platform Technologies (MCMPT) **Progresses to PT4 in FY2023**, and
- (7) Next Generation Diagnostic System 2 Chemical Diagnostics (NGDS 2 CHEMDX)

The COVID TX MAB program will leverage lessons learned from the COVID response to rapidly discover, manufacture and clinically evaluate new monoclonal antibodies to deliver short term capabilities against long standing biological threats. Monoclonal antibodies are a proven technology and first line of defense for many biological threats. In FY22, COVID TX MAB will target the discovery, identification and small scale manufacture of mAbs, with sufficient material to support non-clinical and clinical testing.

COVID VAC will leverage lessons learned from the COVID response to shorten future emergency response timelines and creating interim capabilities for prophylaxis. In FY2022, COVID VAC will work with the interagency, industry, and academia to design and construct vaccine prototypes on validated nucleic acid vaccine platforms then evaluate them in appropriate animal models through Phase 1 clinical trials for safety as needed.

The BSL4 GLP T&E program performs T&E and provides the essential data packages to support US Food and Drug Administration (FDA) approval of leading biodefense medical countermeasure candidates to protect the Warfighter and the Nation. This capability provides dedicated capacity at U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) for Department of Defense (DoD) to conduct biosafety level "4" studies that produce Good Laboratory Practices (GLP) study reports required by the FDA.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>

The CBIPR - BSL4 RIID program continues to utilize and maintain a testing capability at the existing and planned new USAMRIID facilities supporting testing of Medical Countermeasures (MCM) against threats that require high-level containment using non-human primates.

The CBIPR-ADM program maintains the DoD-ADM facility in a state of operational readiness so that it can rapidly develop and manufacture medical countermeasures (MCMs) against current and emerging chemical and biological threats including pandemic response. Operational readiness is achieved by establishing and enhancing proven biopharmaceutical manufacturing platform technologies and infrastructure at the facility. By establishing and enhancing proven manufacturing platform technologies and infrastructure, the DoD-ADM facility will have the capability to accelerate development of MCMs at all stages of development, enhance preparedness for existing threats, and rapidly respond to emerging threats as part of a medical integrated layered defense. MCMs impacted by these efforts include: Vaccines for Viral Agents, Vaccines for Bacterial Agents and Toxins, monoclonal antibodies, antibody fragments and conjugates for therapeutic and prophylactic use across all agent classes. Funds to support the facility in a state of operational readiness were previously provided via individual product development and manufacturing funding lines. The Department is now providing dedicated funds. The CBIPR-ADM return on investment is an increased level of preparedness and responsiveness. In FY22, the CBIPR-ADM program continues to establish and enhance new manufacturing platform technologies that will enable the development of MCMs against chemical and biological threats.

The MCMPT program intends to streamline and accelerate medical countermeasure delivery to the Warfighter by reducing developmental risk using well known platform technologies. MCMPT is establishing enabling technologies and prepositioning platform systems within the DoD's Advanced Development Manufacturing (ADM) network using standardized discovery, design, manufacturing, and testing processes to reduce the medical countermeasure (MCM) development risks. MCMPT will deliver an enduring capability from which future candidates can be manufactured. In FY23 the MCMPT program continues development of a rapid response capability.

The NGDS 2 ChemDx program will provide a rapid, hand-held, point-of-care device. It utilizes an electrochemical assay for the quantitative detection of acetylcholinesterase (AChE) activity in finger stick and venous whole blood samples of individuals suspected of being exposed to cholinesterase inhibiting substances, such as nerve agents. NGDS 2 ChemDx diagnostic capabilities will be employed in Army, Air Force, Navy, Marines and United States Special Operations Command (SOCOM) (Roles 1-3), with applicability to routine healthcare at higher echelons. NGDS 2 ChemDx test results are to be used to aid in the diagnosis of cholinesterase inhibition in an individual suspected of having exposure to non-traditional agents (NTAs) and his/her treatment decision with an Antidote Treatment Nerve Agent, Autoinjector (ATNAA): self-aid; buddy aid; combat lifesaver; or medic. In FY22 NGDS 2 ChemDx continues Engineering & Manufacturing Development.

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

	FY 2021	FY 2022	FY 2023
Title: 1) COVID TX MAB	-	10.000	-
Description: Rapid Monoclonal Antibody Development			
FY 2022 Plans: Target the discovery, identification and small scale manufacture of mAbs, with sufficient material to support non-clinical and clinical testing.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Program/project funding transferred from another funding line. Supports COVID-19/pandemic response efforts which transition to Project PT4 starting in FY23.					
Title: 2) COVID VAC Description: Validated Nucleic Acid Vaccine Construction Development FY 2022 Plans: Leverage lessons learned from the COVID response to design and construct vaccine prototypes on validated nucleic acid vaccine platforms then evaluate them in appropriate animal models through Phase 1 clinical trials for safety as needed. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred to another funding line. Supports COVID-19/pandemic response efforts which transition to Project PT4 starting in FY23.			-	10.000	-
Title: 3) BSL-4 GLP Test & Evaluation Description: Clinical Studies			3.694	-	-
Title: 4) CBIPR-BSL4 RIID Description: 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			2.411	-	-
Title: 5) CBIPR - ADM Description: Establish proven enabling manufacturing technologies at the Department of Defense (DoD) ADM Capability Building. FY 2022 Plans: Continue tech transfer and enhancement of manufacturing technologies to support medical countermeasures (MCM) development against biological threats. Manufacturing technologies can come from any government sources (including JSTO, WRAIR, BARDA, etc. when mature enough for BA4 funding) and other external sources and targets of opportunity from industry. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$8.781 Million) transferred to EN4.			7.844	8.290	-
Title: 6) Medical Countermeasure Platform Technologies (MCMPT) Description: Rapid Response			11.104	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023
Title: 7) MCMPT										15.476	19.061	-
Description: ADAMANT												
FY 2022 Plans: Continue development of ADAMANT Plague mAbs to support delivery of a product MCM.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to PT4, under the PLG MAB effort.												
Title: 8) NGDS 2 Chemical Diagnostics (NGDS 2 CHEMDX)										2.464	-	-
Description: Chemical Diagnostic System												
Accomplishments/Planned Programs Subtotals										42.993	47.351	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• EN4: Enabling Investments (ACD&P)	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing	
• PT4: Protect (ACD&P)	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing	
• EN5: Enabling Investments (SDD)	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing	
• MB5: Medical Biological Defense (SDD)	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505	
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing	
• SA0043: NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEM DX)	0.000	0.000	0.000	-	0.000	7.778	12.730	12.730	12.730	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
COVID THERAPIES MONOCLONAL ANTIBODIES (COVID TX MAB)												
COVID TX MAB will leverage industry capabilities, in the interest of speed, in order to establish capabilities that can be tech transferred to the DoD ADM for longer term use and scale up as necessary.												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>
<p>COVID VACCINE (COVID VAC)</p> <p>The COVID VAC Validated Nucleic Acid Vaccine Construction program will leverage lessons learned from the COVID response to shorten future emergency response timelines and creating interim capabilities for prophylaxis. COVID VAC will work with the interagency, industry, and academia to design and construct vaccine prototypes on validated nucleic acid vaccine platforms then evaluate them in appropriate animal models through Phase 1 clinical trials for safety as needed in FY22.</p> <p>BSL4 GOOD LABORATORY PRACTICES TEST & EVALUATION (BSL4 GLP T&E)</p> <p>The Medical Countermeasure Systems (MCM) Biosafety Level (BSL) 4 Test and Evaluation (T&E) capability continues to utilize and maintain a testing capability at the existing and planned new United States Army Medical Research Institute of Infectious Diseases (USAMRIID) facilities. MCM BSL-4 T&E costs support testing of Medical Countermeasures (MCMs) against threats that require high-level containment using non-clinical studies. Continue to support the testing, training and continuous qualification of the lab equipment and resources to ensure Good Laboratory Practices (GLP) Food and Drug Administration (FDA) standards are maintained as RIID is the only BSL 4 lab with GLP capability to support the Department of Defense (DoD).</p> <p>CHEM BIO INCIDENT PREPAREDNESS AND RESPONSE - BIOSAFETY LEVEL 4 RESEARCH INSTITUTE OF INFECTIOUS DISEASES (CBIPR-BSL4 RIID)</p> <p>The Medical Countermeasure Systems (MCM) Biosafety Level (BSL) 4 Test and Evaluation (T&E) capability continues to utilize and maintain a testing capability at the existing and planned new USAMRIID facilities. MCM BSL-4 T&E costs support testing of Medical Countermeasures (MCMs) against threats that require high-level containment using non-clinical studies. The BSL-4 capability supports the testing , training and continuous qualification of the lab equipment and resources to ensure Good Laboratory Practices (GLP) Food and Drug Administration (FDA) standards are maintained as RIID is the only BSL 4 lab with GLP capability to support the Department of Defense (DoD).</p> <p>CHEM BIO INCIDENT PREPAREDNESS AND RESPONSE - (CBIPR-ADM)</p> <p>A contract was awarded to Ology Bioservices (then Nanotherapeutics, Inc.) on 20 March 2013 to establish a Department of Defense (DoD) Advanced Development and Manufacturing (ADM) capability that can rapidly develop and manufacture Medical Countermeasures (MCMs) from early stage development up through Food and Drug Administration (FDA) licensure. The establishment of this capability consisted of designing, commissioning, and validating a biopharmaceutical facility (both its infrastructure and equipment) that is equipped with two (2) advanced development and manufacturing suites, which utilize flexible, agile, single-use (disposable), modular, and multi-product technologies that comply with Good Manufacturing Practices (GMPs) and can operate at Biological Safety Level-3 (BSL-3). The capability was established on 31 March 2017.</p> <p>Since its establishment, the DoD ADM has been sustained in a state of operational readiness so that it can continue to be an enduring domestic MCM manufacturing capability that provides the DoD with priority access. The original sustainment strategy consisted of directly funding all costs/activities (i.e. calibration, maintenance, etc.) via sustainment options on the original contract. The CBIPR funds requested support this critical DoD infrastructure. The CBIPR-ADM funding line supports the</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>
<p>infrastructure by funding new capability-building efforts (such as manufacturing platforms using FDA known technologies) that will enable new additional MCM product development. This strategy will result in the self-sustainability of the DoD ADM by spreading the sustainment costs equally across all projects (including commercial clients), which mimics the standard practice across the Contract Development and Manufacturing Organization (CDMO) industry.</p> <p>MCM PLATFORM TECHNOLOGIES (MCMPT)</p> <p>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. Efforts will focus on establishing advanced platform technologies within the Department of Defense (DoD)'s Advanced Development Manufacturing (ADM) network and evaluating that capability through nonclinical and clinical testing. A subset of these technologies will be adapted to deliver a rapid response capability to novel and emerging threats. Once established, future programs will be able to leverage these platforms for the development of future medical countermeasures. It is anticipated that these efforts will leverage the Other Transactions Authority (OTA) through the medical OTA consortium.</p> <p>NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEMDX)</p> <p>NGDS Increment 2 ChemDx is using an Other Transactions Authority (OTA) agreement to take advantage of nontraditional Defense contractor offerings. NGDS 2 ChemDx will use the agreement holder to conduct system development, clinical trials and pre-developmental testing (pre-DT) testing. ChemDx will use Department of Defense (DoD) test agencies to conduct Development Testing and operational user evaluations. Clinical trials will inform approval of the ChemDx system by the U.S. Food and Drug Administration for "Prescription Home Use."</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
COVID TX MAB - Accelerated Antibody Development	C/CPFF	Various : Various	0.000	0.000		9.053	Apr 2022	0.000		0.000		0.000	0.000	9.053	0.000
COVID VAC - Vaccine - Development	Various	Various : Various	0.000	0.000		8.275	Dec 2021	0.000		0.000		0.000	0.000	8.275	0.000
CBIPR-ADM - Enabling Manufacturing Technologies	C/CPFF	Ology : Alachua, FL	6.706	7.098	Dec 2020	7.756	Mar 2022	0.000		0.000		0.000	0.000	21.560	0.000
MCMPT - HW S - ADAMANT PLAGUE MCM Development	C/CPFF	Various : Various	22.506	13.609	Dec 2020	17.529	Apr 2022	0.000		0.000		0.000	0.000	53.644	0.000
MCMPT - HW S - Rapid Response	C/CPFF	Ology : Alachua, FL	11.549	9.330	Dec 2020	0.000	Dec 2021	0.000		0.000		0.000	0.000	20.879	0.000
NGDS 2 CHEMDX - HW C - Develop and mature prototypes for Chemical Agent Diagnostics	C/CPFF	MRIGlobal : Palm Bay, FL	0.000	0.883	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.883	0.000
NGDS 2 CHEMDX - PM/MS S - ChemDx Product Management	Various	Various : Various	0.000	1.248	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.248	0.000
Subtotal			40.761	32.168		42.613		0.000		0.000		0.000	0.000	115.542	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS 2 CHEMDX - ES C - Studies and WIPT Support	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.129	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.129	0.000
Subtotal			0.000	0.129		0.000		0.000		0.000		0.000	0.000	0.129	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
BSL4 GLP T&E - DTE SB - T&E Facility	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	34.692	3.298	Dec 2020	0.000		0.000		0.000		0.000	0.000	37.990	0.000
CBIPR-BSL4 RIID - DTE C - DTE SB - T&E Facility	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	2.411	Dec 2020	0.000		0.000		0.000		0.000	0.000	2.411	0.000
Subtotal			34.692	5.709		0.000		0.000		0.000		0.000	0.000	40.401	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
COVID TX MAB - Program Management Support	Various	JPL CBRN EB : Frederick, MD	0.000	0.000		0.947	Dec 2021	0.000		0.000		0.000	0.000	0.947	0.000
COVID VAC - PM/MS C - Program Management	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.725	Dec 2021	0.000		0.000		0.000	0.000	0.725	0.000
COVID VAC - PM/MS C - PM/MS S - Program Management (SETA)	C/CPFF	Various : Various	0.000	0.000		0.500	Dec 2021	0.000		0.000		0.000	0.000	0.500	0.000
COVID VAC - PM/MS C - Management Support	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.000	0.000		0.500	Dec 2021	0.000		0.000		0.000	0.000	0.500	0.000
BSL4 GLP T&E - Program Management Support	Various	JPM CBRN Medical : Ft. Detrick, MD	0.142	0.090	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.232	0.000
BSL4 GLP T&E - Management Services	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.960	0.306	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.266	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBIPR-ADM - Program Management Support	Various	JPL CBRN EB : Frederick, MD	0.734	0.746	Dec 2020	0.534	Feb 2022	0.000		0.000		0.000	0.000	2.014	0.000
MCMPT - Program Management Support	Various	JPL CBRN EB : Frederick, MD	2.969	1.180	Dec 2020	1.532	Dec 2021	0.000		0.000		0.000	0.000	5.681	0.000
MCMPT - PM/MS C Program Management	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	3.804	2.461	Dec 2020	0.000	Dec 2021	0.000		0.000		0.000	0.000	6.265	0.000
NGDS 2 CHEMDX - PM/MS S - JPM/JPEO Management Services	Various	Various : Various	0.000	0.204	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.204	0.000
Subtotal			8.609	4.987		4.738		0.000		0.000		0.000	0.000	18.334	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			84.062	42.993		47.351		0.000		0.000		0.000	0.000	174.406	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
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)	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
COVID TX MAB - Accelerated Antibody Development																												
COVID VAC - Development																												
BSL4 GLP T&E - T&E - Maintain Bio-Safety Level and Evaluation Capability																												
CBIPR-BSL4 RIID - T&E - Maintain Bio-Safety and Evaluation Capability																												
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)																												
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)																												
MCMPT - Rapid Response Design, Manufacturing, Testing																												
MCMPT - MCM Optimization Phase Design, Manufacturing, Testing																												
MCMPT - ADAMANT Plague																												
MCMPT - Plague Manufacturing																												
MCMPT - Plague Nonclinical Studies																												
MCMPT - Plague Clinical Studies																												
MCMPT - P3/Nucleic Acid																												
NGDS 2 CHEMDX Increment 2 - TMRR																												
NGDS 2 CHEMDX Increment 2 - MS B																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) MB4 / <i>Medical Biological Defense (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
COVID TX MAB - Accelerated Antibody Development	1	2022	4	2022
COVID VAC - Development	1	2022	4	2022
BSL4 GLP T&E - T&E - Maintain Bio-Safety Level and Evaluation Capability	1	2021	4	2021
CBIPR-BSL4 RIID - T&E - Maintain Bio-Safety and Evaluation Capability	1	2021	4	2021
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)	1	2021	4	2027
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)	1	2021	4	2027
MCMPT - Rapid Response Design, Manufacturing, Testing	1	2021	4	2026
MCMPT - MCM Optimization Phase Design, Manufacturing, Testing	1	2021	4	2023
MCMPT - ADAMANT Plague	1	2021	4	2024
MCMPT - Plague Manufacturing	4	2021	1	2023
MCMPT - Plague Nonclinical Studies	1	2022	2	2024
MCMPT - Plague Clinical Studies	1	2023	2	2024
MCMPT - P3/Nucleic Acid	1	2023	4	2026
NGDS 2 CHEMDX Increment 2 - TMRR	1	2021	1	2022
NGDS 2 CHEMDX Increment 2 - MS B	1	2022	1	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TE4: Test & Evaluation (ACD&P)	-	4.107	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.107
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification
 This Project supports the Chemical Biological Material Assessment Infrastructure (CBMAI). CBMAI addresses test infrastructure needs with improvements, modifications, and/or new critical test capabilities for chemical, biological, and emerging threat products across the Chemical Biological Defense Program (CBDP). CBMAI provides test fixtures and methodology to support advanced development test and evaluation intended to meet a changing threat regardless of the test site/ location.

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Title: 1) CBMAI	3.306	-	-
Description: CBMAI conducts requirements analysis to ensure the availability of needed test infrastructure to meet Program of Record (PoR) testing and milestone schedules. Conduct studies of the capabilities and limitations of existing infrastructure and methodologies to align with POR test requirements. Initiate requirements generation and early development of new test infrastructure to support POR test requirements.			
Title: 2) CBMAI	0.801	-	-
Description: Government Integrated Product Team (IPT) program management and IPT Support to all Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) programs and external partners.			
Accomplishments/Planned Programs Subtotals			
	4.107	-	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023 Base</u>	<u>FY 2023 OCO</u>	<u>FY 2023 Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• TE5: Test & Evaluation (SDD)	5.995	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.995

Remarks

D. Acquisition Strategy
 CHEMICAL BIOLOGICAL MATERIEL ASSESSMENT INFRASTRUCTURE (CBMAI)

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) TE4 / <i>Test & Evaluation (ACD&P)</i>
<p>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 Chemical Biological Defense Program (CBDP) test and evaluation needs. The CBMAI program will be ending in FY21 as development efforts come to completion. Future test infrastructure needs, improvements, or modifications will be managed and funded by the supported programs of record beginning in FY22.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - HW C - Low Volume Surface Deposition	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.373	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.373	0.000
CBMAI - HW C - OADMS	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.537	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.537	0.000
CBMAI - HW C - Joint Ambient Breeze Tunnel Active Standoff Chamber Upgrades	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.831	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.831	0.000
CBMAI - HW C - WSLAT	MIPR	West Desert Test Center : Dugway, UT	0.000	0.650	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.650	0.000
CBMAI - HW C - Seams & Closure Fixture Development	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.150	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.150	0.000
CBMAI - HW S - Government/Contractor SE & Technical Management Team	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	2.396	0.765	Mar 2021	0.000		0.000		0.000		0.000	0.000	3.161	0.000
Subtotal			2.396	3.306		0.000		0.000		0.000		0.000	0.000	5.702	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 4						PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				TE4 / Test & Evaluation (ACD&P)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - PM/MS C - IPT Support/Program Management	MIPR	JPM CBRN Sensors : JPEO-CBRND, Aberdeen Proving Ground, MD	1.504	0.801	Dec 2020	0.000		0.000		0.000		0.000	0.000	2.305	0.000
Subtotal			1.504	0.801		0.000		0.000		0.000		0.000	0.000	2.305	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			3.900	4.107		0.000		0.000		0.000		0.000	0.000	8.007	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) TE4 / <i>Test & Evaluation (ACD&P)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBMAI - Whole System Live Agent Test (WSLAT) System																												
CBMAI - Remote Detection Chemical Test Fixture																												
CBMAI - JABT, ASC, Staging Facility Upgrades																												
CBMAI - Seams & Closure Fixture Development																												
CBMAI - Low Volume Service Deposition																												
CBMAI - Open Architecture Data Management System (OADMS) Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

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

Events	Start		End	
	Quarter	Year	Quarter	Year
CBMAI - Whole System Live Agent Test (WSLAT) System	1	2021	4	2021
CBMAI - Remote Detection Chemical Test Fixture	1	2021	2	2021
CBMAI - JABT, ASC, Staging Facility Upgrades	2	2021	4	2021
CBMAI - Seams & Closure Fixture Development	2	2021	4	2021
CBMAI - Low Volume Service Deposition	2	2021	4	2021
CBMAI - Open Architecture Data Management System (OADMS) Development	2	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) TM4 / Techbase Medical Defense (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TM4: Techbase Medical Defense (ACD&P)	-	0.000	30.452	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	30.452
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project TM4 supports early-phase clinical development of vaccines and therapeutic drugs to provide safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This effort reduces programmatic risk of failure in the advanced development phase by generating clinical and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. In FY2023, the Chemical Biological Defense Program (CBDP) RDT&E Projects have been restructured to align to the CBDP portfolio. TM4 efforts in FY2022 progress to the Mitigate (MT4) and Protect (PT4) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Individual efforts in this project include:

- Supports the advanced development of medical countermeasures to include prophylaxes, pretreatments, antidotes and therapeutic drugs against identified and emerging biological warfare threat agents.
- Demonstration of human safety and tolerability prior to entry of candidate vaccines and therapeutics into advanced development, supporting the preparation of technical data packages that conform to the Food and Drug Administration (FDA) Investigational New Drug (IND) processes, Department of Defense (DoD) acquisition regulations, and the oversight of early phase clinical trials in accordance with FDA guidelines.
- In addition, this project supports innovative biotechnology approaches to advance medical systems designed to rapidly identify, diagnose, prevent, and treat emerging biological threats whether naturally occurring or engineered.
- Focuses on therapeutic and prophylactic strategies to effectively minimize injuries resulting from exposure to Chemical Weapons Agents. This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products and formulations to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for FDA licensure or to identify previously licensed products for new uses in the treatment and pretreatment against chemical warfare injury.

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

	FY 2021	FY 2022	FY 2023
Title: 1) DOMANE/LIMIT (Layered Integrated Medical Countermeasure Intervention Technologies)	-	9.000	-
Description: Develop both prophylactic and therapeutic medical countermeasures against viral, bacterial, and biological toxin threats using a layered approach looking at combinations of effective therapies.			
FY 2022 Plans:			
- Initiate plans to evaluate new countermeasures for novel and emerging threats in animal and organoid models.			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) TM4 / <i>Techbase Medical Defense (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Initiate plans to conduct clinical trials to evaluate safety and efficacy for new medical countermeasures.					
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred to another funding line. FY23 funding transferred to Project MT4 and PT4.					
Title: 2) Biological Warfare Defense Therapeutics Description: Biomedical research focused on the nonclinical and early clinical development of therapeutic countermeasures against known and emerging viral, bacterial, and toxin biological warfare (BW) threats for which Food and Drug Administration (FDA)-approved therapeutics are limited or lacking. BW defense therapeutics mitigate and reverse the effects of known and emerging viral, bacterial, and toxin biological warfare threats in symptomatic warfighters diagnosed with BW disease. They are the last line of defense against BW threats and are critical to returning symptomatic warfighters to service. Biomedical research is focused on preclinical evaluation (e.g., in large animal models) of broad-spectrum therapeutic candidates that target viruses, bacteria or toxins directly, enhance the host response (e.g., by modulating the immune system) and/or relieve BW disease symptoms. Broad-spectrum therapeutic candidates that are shown to be both safe and efficacious against BW threats will advance for further clinical evaluation and can be accelerated for use against emerging infectious diseases during an outbreak. Clinical and nonclinical evaluation of novel small molecules (chemically synthesized), novel biologic molecules (isolated from natural sources), drug and drug/vaccine combinations (aka layered defense), and repurposing of drugs approved by the US Food and Drug Administration or in clinical development for other indications, are included in this research. Refinement of appropriate animal models in which to evaluate therapeutic candidates is also included. Projects leverage interagency and commercial sector investments to accelerate development and reduce costs. FY 2022 Plans: - Initiate human clinical trial and supportive current Good Manufacturing Practice (cGMP) manufacture and Non-Human Primate (NHP) studies to establish safety, tolerability, and efficacy of broad spectrum antibacterial candidate. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.114 Million) transferred to MT4.			-	7.476	-
Title: 3) Bacterial/Viral/Toxin/Broad Spectrum Prophylaxis Description: The ultimate protection of the Warfighter is by pretreating the Warfighter to withstand any biological threat with no adverse side effects from the pretreatment. Such pretreatment would enable the Warfighter to work in a less restrictive environment, absent of any personal protective equipment allowing operation at peak performance. Investments in this Program Element supports GMP manufacturing of candidates for clinical testing, toxicology studies necessary for entry into Phase 1 clinical trials and Phase 1 clinical trials just prior to transition to advanced development. FY 2022 Plans:			-	7.476	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 4		R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>		Project (Number/Name) TM4 / <i>Techbase Medical Defense (ACD&P)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
- Initiate support of cGMP manufacture to supply and the initiation of phase 1 human clinical trial for antiviral vaccine candidate.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.000 Million) transferred to PT4.					
Title: 4) PBA Medical Countermeasures Description: Focuses on therapeutic and prophylactic strategies to effectively minimize injuries and/or death resulting from exposure to Pharmaceutical Based Agents (PBA). This will allow the Warfighter to maintain operational capacity in a chemically contested battlefield scenario. This effort involves the evaluation FDA approved therapeutics for operational use, as well as generation of novel drug products and formulations to enhance level of protection and/or operational utility for the Warfighter. Efforts in this area are designed to develop drug candidates that will ultimately be submitted for Food and Drug Administration (FDA) licensure or to identify previously licensed products for new uses in the treatment and pretreatment against chemical warfare injury. FY 2022 Plans: - Initiate medical countermeasures clinical studies to treat respiratory depression and intoxication caused by synthetic opioids. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.076 Million) transferred to MT4.			-	2.000	-
Accomplishments/Planned Programs Subtotals			-	25.952	-
			FY 2021	FY 2022	
Congressional Add: 1) Development of medical countermeasures against novel entities (DOMANE) FY 2022 Plans: DOMANE: Deliver platform biotechnologies, capabilities, processes and candidate MCMs in support of the JSTO-CBD Vaccines and Therapeutics Division, Therapeutics and Prophylaxes product development teams. Investments will develop a rapid drug discovery and development engine to enable the joint force to rapidly respond to new & emerging BW threats by providing BW MCMs. Immediate alignment with DTRA-RD-CBM Biological Prophylaxis and Therapeutics Programs to respond and treat the Joint Force against BW threats. - Enhance high-throughput screening technologies and advanced artificial intelligence/machine learning tools for rapid target and drug identification, with an emphasis on repurposing Food and Drug Administration-approved drugs. In cases where no existing drug solution can be identified, new drugs will be identified to fill gaps in the Nations approved drug inventory.			-	4.500	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) TM4 / <i>Techbase Medical Defense (ACD&P)</i>	

	FY 2021	FY 2022
- If sufficient funds remain, additional investments will be made in Microphysiological organ-on-a-chip pathogenesis forecasting systems to address mechanisms of action, safety, efficacy to enhance drug development platforms.		
Congressional Adds Subtotals	-	4.500

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• TM2: <i>Techbase Medical Defense (Applied Research)</i>	93.525	105.594	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	199.119
• MT4: <i>Mitigate (ACD&P)</i>	0.000	0.000	20.986	-	20.986	13.556	12.702	20.846	18.167	Continuing	Continuing
• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing

Remarks

D. Acquisition Strategy

TECH BASE MEDICAL TRANSITIONAL MED TECHNOLOGY INTIATIVE (TBMD TMTI)

Supports early-phase clinical development and supporting non-clinical safety, tolerability and toxicity data for candidate vaccines and therapeutic drugs prior to transition to System Development & Demonstration. This work provides safe and effective medical defense against validated biological threat agents and emerging infectious disease biothreats including bacteria, toxins, and viruses. This work also involves the evaluation of Food and Drug Administration (FDA)-approved therapeutics for operational use, as well as generation of novel drug products and formulations, to enhance level of protection and/or operational utility for the Warfighter. This effort reduces programmatic risk of failure in the advanced development phase.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) TM4 / Techbase Medical Defense (ACD&P)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TBMD TMTI - DTE C - Bacterial Therapeutics	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	0.000		7.476	Oct 2021	0.000		0.000		0.000	0.000	7.476	0.000
TBMD TMTI - DTE C - Viral Prophylaxis	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	0.000		7.476	Oct 2021	0.000		0.000		0.000	0.000	7.476	0.000
TBMD TMTI - DTE C - DOMANE/LIMIT (Layered Integrated Medical Countermeasure Intervention Technologies)	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	0.000		9.000	Oct 2021	0.000		0.000		0.000	0.000	9.000	0.000
TBMDC CHEM CM - DTE C - PBA Medical Countermeasures	MIPR	TBD : N/A	0.000	0.000		2.000	Oct 2021	0.000		0.000		0.000	0.000	2.000	0.000
CONG - DTE C - DOMANE	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	0.000		4.500	Oct 2022	0.000		0.000		0.000	0.000	4.500	0.000
Subtotal			0.000	0.000		30.452		0.000		0.000		0.000	0.000	30.452	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		30.452		0.000		0.000		0.000	0.000	30.452	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>					Project (Number/Name) TM4 / <i>Techbase Medical Defense (ACD&P)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TBMD TMTI - DOMANE (COVID-19)																												
TBMD TMTI - Biological Therapeutics																												
TBMD TMTI - Viral Prophylaxis																												
TBMD TMTI - DOMANE/LIMIT (Layered Integrated Medical Countermeasure Intervention Technologies)																												
TBMDC CHEM CM - PBA Medical Countermeasures																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) TM4 / <i>Techbase Medical Defense (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TBMD TMTI - DOMANE (COVID-19)	1	2021	4	2021
TBMD TMTI - Biological Therapeutics	1	2022	4	2027
TBMD TMTI - Viral Prophylaxis	1	2022	4	2027
TBMD TMTI - DOMANE/LIMIT (Layered Integrated Medical Countermeasure Intervention Technologies)	1	2022	4	2026
TBMDC CHEM CM - PBA Medical Countermeasures	1	2022	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) TT4 / Technology Transition (ACD&P)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TT4: Technology Transition (ACD&P)	-	0.577	0.866	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.443
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project TT4 validates technologies and their respective concepts-of-operations in preparation for transition to advanced development programs requiring chemical and biological (CB) defense technologies. These demonstrations seek to demonstrate the potential for enhanced military operational capability and/or cost effectiveness while soliciting end-user determination of the military utility and operational impact of the technology and capability demonstrated. Successfully demonstrated technologies with proven military utility can either be left in place for extended user evaluations, accepted into 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.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Techbase Technology Transition (ACD&P)	0.577	-	-
Description: Integrated Early Warning (IEW) and Integrated Layered Defense (ILD) Advanced Technology Demonstration (ATD) Transition: This project validates high-risk/high-payoff technologies and their respective concepts-of-operations for significant improvement to Warfighter capabilities in preparation for transition of mature technologies to advanced development programs requiring chemical and biological (CB) defense technologies. In FY22, this effort transfers to Advanced Technology Demonstration.			
Title: 2) Advanced Technology Demonstration	-	0.866	-
Description: ATDs enable the effective transition of cutting edge Chemical Biological Radiological and Nuclear (CBRN) Science & Technology (S&T) Technologies to the Warfighter by providing them an opportunity to engage with these new technologies in a mission oriented demonstration. Feedback from the Warfighters ensures that these technologies are operationally relevant, value added, and can be matured and transitioned in a timely and effective manner to end users for employment.			
FY 2022 Plans: Demonstrate in the Resolute Dragon 2 Integrated Threat Response (ITR) ATD, novel and innovative S&T CBRN technologies and the integration of their information outputs into a Command and Control (C2) Common Operating Picture (COP). The C2 COP will be instantiated through the employment of integrated systems architectures, software, and hardware and will measuring the information's impact to C2 Decisions using decision support tools. Ensure demonstrations compatibility with the CBDP Enterprise, Joint Requirements Office (JRO) led CBRNE Support to Command and Control (CSC2) initiative and into the overarching Joint All Domain Command and Control (JADC2) cross service environment. Develop, integrate and deliver			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 4				R-1 Program Element (Number/Name) PE 0603884BP / CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)				Project (Number/Name) TT4 / Technology Transition (ACD&P)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
integrated Chemical, Biological, Radiological, and Nuclear (CBRN) defense capabilities to include sensors, controllers, and other CBRN enabling capabilities such as medical counter measures (MCMs) and modeling and simulation tools. Technologies to be integrated include an Expeditionary Field Forwarding and Sequencing Technology (F-FAST) and other biological sensors and mitigating technologies, UAV-Borne Hyperspectral Imager (HIS) chemical vapor stand-off detector, Opioid and Pharmaceutical Based Agents (PBAs) prophylaxis and therapeutics, Rapid Analysis of Threat Exposure (RATE) Algorithm, EpiGrid Human Effects and Medical modeling tool, advanced service aligned integrated command and control Common Operating Picture (COP) hardware and software capabilities, and medical diagnostics such as Layered and Integrated Medical Intervention Technologies (LIMIT). Delivered products will increase mission readiness profiles for personnel and resources during operations in hazardous environments.												
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project is entering completion and all activities will be closed.												
Accomplishments/Planned Programs Subtotals										0.577	0.866	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• TT3: Technology Transition (ATD)	10.341	8.787	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.128	
Remarks												
D. Acquisition Strategy												
TECHBASE TECH TRANSITION (TECHTRAN)												
Advanced Technology Demonstrations (ATDs) exploit mature and maturing technologies to solve important military problems. ATDs emphasize technology integration, operational utility assessment, and transition of operational prototypes for practical use. The goals of efforts under Project TT4 are to provide a prototype capability to the Warfighter and support the evaluation of that capability in operationally-relevant field environments. This will allow Warfighters to evaluate the capabilities in real military exercises and at a scale sufficient to fully assess military utility. The Defense Threat Reduction Agency (DTRA) will fund Department of Defense (DoD) laboratories and DoD Federally Funded Research Development Centers (FFRDCs) through the Military Interdepartmental Purchase Request (MIPR) in accordance with the Economy Act in order to conduct operational evaluation of technology solutions for Integrated Early Warning (IEW) and Integrated Layered Defense (ILD) ATD efforts. Upon completion of efforts under this project, operational prototypes of Technology Readiness Level (TRL) 6 or TRL 7 with documented operational utility assessment outcomes will be transitioned to Service stakeholders and programs of record to support rapid acquisition and fielding decisions.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>						Project (Number/Name) TT4 / <i>Technology Transition (ACD&P)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TECHTRAN - IEW and ILD Transition	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.116	0.116	Nov 2020	0.174	Jan 2022	0.000		0.000		0.000	0.000	0.406	0.000
Subtotal			0.116	0.116		0.174		0.000		0.000		0.000	0.000	0.406	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TECHTRAN - IEW and ILD Transition	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.412	0.411	Nov 2020	0.617	Jan 2022	0.000		0.000		0.000	0.000	1.440	0.000
Subtotal			0.412	0.411		0.617		0.000		0.000		0.000	0.000	1.440	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TECHTRAN - PM/MS S - IEW and ILD Transition	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center	0.000	0.050	Nov 2020	0.075	Jan 2022	0.000		0.000		0.000	0.000	0.125	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022		
Appropriation/Budget Activity 0400 / 4						R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>				Project (Number/Name) TT4 / <i>Technology Transition (ACD&P)</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost To Complete	Total Cost	Target Value of Contract
		(CBC) : Aberdeen Proving Ground, MD														
Subtotal			0.000	0.050		0.075		0.000		0.000		0.000		0.000	0.125	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.528	0.577	0.866	0.000	0.000	0.000	0.000	1.971	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 4					R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>					Project (Number/Name) TT4 / <i>Technology Transition (ACD&P)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TECHTRAN - IEW ATD																												
TECHTRAN - ITR ATD																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 4	R-1 Program Element (Number/Name) PE 0603884BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (ACD&P)</i>	Project (Number/Name) TT4 / <i>Technology Transition (ACD&P)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TECHTRAN - IEW ATD	1	2021	2	2021
TECHTRAN - ITR ATD	3	2021	1	2023

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	353.472	299.848	312.148	-	312.148	276.205	259.927	201.075	143.983	Continuing	Continuing
EN5: <i>Enabling Investments (SDD)</i>	-	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing
MT5: <i>Mitigate (SDD)</i>	-	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
PT5: <i>Protect (SDD)</i>	-	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	Continuing	Continuing
UN5: <i>Understand (SDD)</i>	-	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
CA5: <i>Contamination Avoidance (SDD)</i>	-	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209
CO5: <i>Collective Protection (SDD)</i>	-	7.688	3.028	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.716
DE5: <i>Decontamination (SDD)</i>	-	17.274	7.874	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	25.148
IP5: <i>Individual Protection (SDD)</i>	-	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
IS5: <i>Information Systems (SDD)</i>	-	5.810	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.810
MB5: <i>Medical Biological Defense (SDD)</i>	-	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505
MC5: <i>Medical Chemical Defense (SDD)</i>	-	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867
TE5: <i>Test & Evaluation (SDD)</i>	-	5.995	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.995

A. Mission Description and Budget Item Justification

This program element (PE) resources System Development & Demonstration across the Enabling Investments, Mitigate, Protect, and Understand portfolios. CBDP investments provide an integrated, layered capability to enable CWMD missions ranging from combat operations to DoD support to domestic incident prevention and response. The projects in this PE support the development, build, and test of products to verify that all operational and derived requirements have been met, and to support production or deployment decisions. The activities include mature system development, integration, and demonstration to support Milestone C decisions, and conducting operational test and evaluation of production representative articles. FY23 funding accelerates characterization and situational awareness of emerging biothreats and accelerates delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.

Individual Projects include:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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)	
<p>- Enabling Investments (EN5): Provides fundamental knowledge, and technology demonstrations as key portfolio enablers integral to responding to emerging threats. Dedicated funding in this Project supports National and Departmental incident response and preparedness regarding CB threats.</p> <p>- Mitigate (MT5): Preserves combat power by mitigating exposure to CB hazards and restoring combat readiness of critical personnel and platforms. Enables Joint Force lethality by providing capabilities for Warfighters to rapidly respond to and mitigate the adverse effects of CB hazards. Fields mitigation capabilities against engineered biological agents, opioids and other Pharmaceutical-Based Agents, and Fourth Generation Agents (FGAs).</p> <p>- Protect (PT5): Provides the Joint Force the ability to prevent the effects from exposure to chemical and biological hazards. Protects personnel against chemical, biological, and radiological (CBR) liquid, vapor, and aerosol hazards through next-generation prototypes of masks, filters, and ensembles to reduce physiological, psychological and logistical burdens to the Warfighter. Medical countermeasure efforts conducted during this phase include the development of a large scale manufacturing process and validation of that process, nonclinical studies, demonstration of manufacturing consistency, and expanded clinical human safety studies. Focuses on platform based approaches to accelerate development of prophylactic medical countermeasures that rapidly and durably protect against BWAs, toxins, non-traditional and emerging chemical threats with minimal doses. The results of these efforts will be used to submit a Biologics License Application (BLA) to the FDA for product licensure.</p> <p>- Understand (UN5): Provides the Joint Force the ability to detect and identify hazards from traditional and emerging chemical and biological threats to improve the timeliness and confidence of information for decision makers. Supports freedom of maneuver and informs commanders' decisions by predicting, locating, identifying, analyzing, and warning of CB hazards.</p> <p>- Contamination Avoidance (CA5), Collective Protection (CO5), Decontamination (DE5), Individual Protection (IP5), Information Systems (IS5), Medical Biological Defense (MB5) and Medical Chemical Defense (MC5) are no longer active FY23 Projects due to budget restructure.</p> <p>- Test and Evaluation (TE5) Project concluded in FY21.</p> <p>The projects in this PE support the engineering and manufacturing development phase of the Department of Defense (DoD) acquisition system and are therefore correctly placed in Budget Activity 5.</p> <p>Middle Tier Acquisition programs:</p> <p>The total cost of the Rapid Opioid Countermeasure System (ROCS) Middle Tier of Acquisition effort is \$21.4 million, including RDT&E (Project MC5) and procurement of prototype units (CBDP BLIN Protection & Hazard Mitigation). The ROCS program is fully funded across the Future Years Defense Program.</p> <p>The total cost of the Forward Area Mobility Spray System (FAMS-S) Middle Tier of Acquisition effort is \$30.5 million, including RDT&E (Project MT5) and procurement of prototype units (CBDP BLIN Protection & Hazard Mitigation). The FAMS-S program is fully funded across the Future Years Defense Program.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022			
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604384BP I CHEMICAL/BIOLOGICAL DEFENSE (EMD)				
The total cost of the Uniform Integrated Protective Ensemble Family of Systems Gloves (UIPE FOS GLOVES) Middle Tier of Acquisition effort is \$38.4 million, including RDT&E (Project PT5) and procurement of prototype units (CBDP BLIN Protection & Hazard Mitigation). The UIPE FOS GLOVES program is fully funded across the Future Years Defense Program.						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		356.472	299.848	0.000	-	0.000
Current President's Budget		353.472	299.848	312.148	-	312.148
Total Adjustments		-3.000	0.000	312.148	-	312.148
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		0.000	-			
• Congressional Directed Transfers		0.000	-			
• Reprogrammings		8.351	-			
• SBIR/STTR Transfer		-11.351	-			
• Other Adjustments		0.000	-	312.148	-	312.148
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: DE5: Decontamination (SDD)						
Congressional Add: 1) Decontamination Technologies - Development and Testing						
Congressional Add Subtotals for Project: DE5						
Project: MB5: Medical Biological Defense (SDD)						
Congressional Add: 1) Antiviral Prophylaxis Studies						
Congressional Add: 2) Recombinant Botulinum and Plague Vaccines - Storage						
Congressional Add: 3) Adaptive Clinical Trial						
Congressional Add: 4) Recombinant Botulinum and Plague Vaccines - Stability Testing						
Congressional Add Subtotals for Project: MB5						
Congressional Add Totals for all Projects						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>
<p>Change Summary Explanation</p> <p>Funding: FY 2021 (+\$8.351 Million): Below threshold reprogramming to increase advanced development programs for Joint Nuclear Biological Chemical Radiological System (JNBCRS) 1 CBRN sensor development and integration, Joint Biological Tactical Detection System (JBTDS) program test and evaluation, Man Portable Diagnostic System (MPDS) product development, and Special Purpose Unit Rapid Capability Development and Deployment (SPU RCDD) program development of specialized equipment for agent-specific threats.</p> <p>FY 2021 (-\$11.351 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.</p> <p>FY 2021 (+\$36.496 Million): Joint vaccine for botulinum and plague vaccines funding restoration (+\$26.996 Million), Congressional Add for decontamination technologies (+\$5.000 Million), and Congressional Add for smallpox antiviral (+\$4.500 Million) are all reflected in the Current President's Budget amount.</p> <p>FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for enhanced biodefense and pandemic preparedness investments (+\$60.500 Million), Departmental inflation rate adjustments (+\$8.958 Million), Aerosol Vapor Chemical Agent Detector (AVCAD) program network readiness and testing (+\$6.456 Million), and the Mitigate portfolio medical countermeasures efforts and Understand portfolio emerging chemical threats efforts (+\$27.157 Million).</p> <p>Schedule: N/A</p> <p>Technical: N/A</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) EN5 / Enabling Investments (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
EN5: Enabling Investments (SDD)	-	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enabling Investments System Development & Demonstration (SDD) Project provides the capability to rapidly develop, manufacture, and approve medical countermeasures through sustaining the DoD advanced development manufacturing facility. Enabling efforts in this area support dedicated infrastructure capabilities, demonstrations, and overarching development support functions as portfolio enablers responding to emerging threats. Additional efforts facilitate incorporation of CB survivability equipment into Service major acquisition programs.

Efforts included in this Project are:

- (1) Chem Bio Incident Preparedness and Response - Advanced Development and Manufacturing (CBIPR-ADM), and
- (2) Major Defense Acquisition Program (MDAP)

The CBIPR-ADM program maintains the DoD-ADM facility in a state of operational readiness so that it can rapidly develop and manufacture medical countermeasures (MCMs) against current and emerging chemical and biological threats including pandemic response. Operational readiness is achieved by establishing and enhancing proven biopharmaceutical manufacturing platform technologies and infrastructure at the facility. By establishing and enhancing proven manufacturing platform technologies and infrastructure, the DoD-ADM facility will have the capability to accelerate development of MCMs at all stages of development, enhance preparedness for existing threats, and rapidly respond to emerging threats as part of a medical integrated layered defense. MCMs impacted by these efforts include: Vaccines for Viral Agents, Vaccines for Bacterial Agents and Toxins, monoclonal antibodies, antibody fragments and conjugates for therapeutic and prophylactic use across all agent classes. Funds to support the facility in a state of operational readiness were previously provided via individual product development and manufacturing funding lines. The Department is now providing dedicated funds. The CBIPR-ADM return on investment is an increased level of preparedness and responsiveness. In FY23, the CBIPR-ADM program continues to establish and enhance new manufacturing platform technologies that will enable the development of MCMs against chemical and biological threats.

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 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.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Major Defense Acquisition Program (MDAP)	-	-	2.418

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) EN5 / Enabling Investments (SDD)	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Description: CBRN Survivability Support FY 2023 Plans: Continue to ensure CBRN survivability requirements are met for MDAP's by cross-walking requirements documents with program execution plans. Attend meetings to address integration needs and present CBRN system and hardware options. Provide subject matter expertise in the execution of CBRN survivability requirements for both materiel and non-material solutions. Review and assist in document preparation for milestones and programs reviews. Conduct CBRN survivability compliance reviews for Optionally Manned Fighting Vehicle, Robotic Combat Vehicle, Future Long Range Assault Aircraft, Future Attack Reconnaissance Aircraft, Synthetic Training Environment, Precision Navigation and Timing, multiple Soldier Lethality programs, and other CBRN survivability system integration in preparation for various program acquisition milestones, design reviews and low rate initial production reviews. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.291 Million) remains in DE5. Increase is due to additional prototyping efforts within the MDAP programs.			
Title: 2) Chem Bio Incident Preparedness and Response - Adv Dev Mfg (CBIPR - ADM) Description: ADM Infrastructure FY 2023 Plans: Continue activities to maintain the DoD ADM's capabilities in a state of readiness to support Medical Countermeasure (MCM) development and manufacturing. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$10.363 Million) remains in MB5.	-	-	10.974
Accomplishments/Planned Programs Subtotals	-	-	13.392

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• EN4: Enabling Investments (ACD&P)	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing
• MB4: Medical Biological Defense (ACD&P)	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
• DE5: Decontamination (SDD)	17.274	7.874	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	25.148

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022	
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) EN5 / <i>Enabling Investments (SDD)</i>	

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MB5: <i>Medical Biological Defense (SDD)</i>	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505

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.

CHEM BIO INCIDENT PREPAREDNESS AND RESPONSE - (CBIPR-ADM)

A contract was awarded to Ology Bioservices (then Nanotherapeutics, Inc.) on 20 March 2013 to establish a Department of Defense (DoD) Advanced Development and Manufacturing (ADM) capability that can rapidly develop and manufacture Medical Countermeasures (MCMs) from early stage development up through Food and Drug Administration (FDA) licensure. The establishment of this capability consisted of designing, commissioning, and validating a biopharmaceutical facility (both its infrastructure and equipment) that is equipped with two (2) advanced development and manufacturing suites, which utilize flexible, agile, single-use (disposable), modular, and multi-product technologies that comply with Good Manufacturing Practices (GMPs) and can operate at Biological Safety Level-3 (BSL-3). The capability was established on 31 March 2017.

Since its establishment, the DoD ADM has been sustained in a state of operational readiness so that it can continue to be an enduring domestic MCM manufacturing capability that provides the DoD with priority access. The original sustainment strategy consisted of directly funding all costs/activities (i.e. calibration, maintenance, etc.) via sustainment options on the original contract. The CBIPR funds requested support this critical DoD infrastructure. The CBIPR-ADM funding line supports the infrastructure by funding new capability-building efforts (such as manufacturing platforms using FDA known technologies) that will enable new additional MCM product development. This strategy will result in the self-sustainability of the DoD ADM by spreading the sustainment costs equally across all projects (including commercial clients), which mimics the standard practice across the Contract Development and Manufacturing Organization (CDMO) industry.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>						Project (Number/Name) EN5 / <i>Enabling Investments (SDD)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MDAP - TD/D SB - IPT and Technical Support	MIPR	Various : Various	0.000	0.000		0.000		2.081	Nov 2022	0.000		2.081	Continuing	Continuing	0.000
CBIPR-ADM - Infrastructure	C/CPFF	Ology : Alachua, FL	0.000	0.000		0.000		9.944	Dec 2022	0.000		9.944	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		12.025		0.000		12.025	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MDAP - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.337	Nov 2022	0.000		0.337	Continuing	Continuing	0.000
CBIPR-ADM - PM/MS C - Program Managment JPL EB	MIPR	JPL CBRN EB : Frederick, MD	0.000	0.000		0.000		0.348	Dec 2022	0.000		0.348	Continuing	Continuing	0.000
CBIPR-ADM - PM/MS C - Program Management Support (SETA)	Various	JPL CBRN EB : Frederick, MD	0.000	0.000		0.000		0.682	Dec 2022	0.000		0.682	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		1.367		0.000		1.367	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		13.392		0.000		13.392	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>					Project (Number/Name) EN5 / <i>Enabling Investments (SDD)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP																												
MDAP - Armored Multi-Purpose Vehicle (AMPV) FRP																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) RP Contract																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) RFP 2																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) LRIP																												
MDAP - Robotic Combat Vehicle Experimental Prototype Build																												
MDAP - Future Long Range Assault Aircraft (FLRAA)																												
MDAP - Future Attack Reconnaissance Aircraft (FARA)																												
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)																												
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) EN5 / <i>Enabling Investments (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP	1	2021	4	2021
MDAP - Armored Multi-Purpose Vehicle (AMPV) FRP	3	2021	4	2023
MDAP - Optionally Manned Fighting Vehicle (OMFV) RP Contract	1	2021	2	2022
MDAP - Optionally Manned Fighting Vehicle (OMFV) RFP 2	2	2022	3	2023
MDAP - Optionally Manned Fighting Vehicle (OMFV) LRIP	3	2023	2	2026
MDAP - Robotic Combat Vehicle Experimental Prototype Build	1	2021	3	2023
MDAP - Future Long Range Assault Aircraft (FLRAA)	1	2021	4	2027
MDAP - Future Attack Reconnaissance Aircraft (FARA)	1	2021	4	2027
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)	1	2021	4	2027
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>			
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT5: <i>Mitigate (SDD)</i>	-	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Mitigate System Development & Demonstration (SDD) Project provides the Joint Force the ability to recover from exposure to chemical and biological hazards and quickly return to the fight. Efforts include development of FDA approved medical countermeasures (MCMs) to protect the lives and maintain the battle readiness of the Warfighter. Efforts also provide safe, effective MCMs to enable Warfighter recovery and return to duty after exposure to chemical threat agents, and reduce logistics needs of decontamination methods with operationally-relevant test methods and allows personnel to reduce MOPP levels as rapidly as possible. Activities in this project realize considerable efficiencies through cost sharing agreements.

Efforts included in this Project are:

- (1) Alternative Autoinjector Manufacturer Capability (AUTOINJ),
- (2) Antiviral Therapeutics Program (AV TX),
- (3) Countering Emerging Threats Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR),
- (4) Countering Emerging Threats Rapid Acquisition and Investigation of Drugs for Repurposing-Enhanced Biodefense (CET RAIDR-ENBD),
- (5) Decontamination Family of Systems Contamination Indicator Decontamination Assurance System (DFoS CIDAS BLISTER),
- (6) Forward Area Mobility Spray - System (FAMS-S),
- (7) Improved Nerve Agent Treatment System Centrally Acting (INATS CA), and
- (8) Services Equipment Decontamination System (SEDS)

The AUTOINJ program provides for FDA approved alternative source(s) for autoinjectors that deliver DoD nerve agent antidote and treatment capabilities to the warfighter; thereby mitigating capability fielding and operational readiness risks. This program augments legacy autoinjectors, ATNAA, 2-PAM, and Convulsant Antidote for Nerve Agents (CANA) by providing alternative commercial sources which includes Dual Drug Delivery Device (D4), the Atropine Auto-Injector, and an anticonvulsant autoinjector. In FY23, AUTOINJ will submit to the FDA an Emergency Use Authorization package for D4, submit New Drug Application packages to the FDA for D4 and Alternative-Diazepam, initiate activities for a wet-dry atropine autoinjector that provides an extended shelf-life compared to the fielded FDA approved Atropine Auto-Injector, and initiate activities for an Alternative-Midazolam (anticonvulsant) autoinjector.

The AV TX program will develop and deliver FDA approved antiviral therapeutics for the warfighter. Based on the current gap in defense to the warfighter, the initial therapeutic candidate is now for a treatment against the Marburg virus in lieu of Ebola Zaire to follow for approval of a PanFilo therapeutic. Other pathogens on the biological warfare threat lists, including viruses of interest from Filoviridae, Arenaviridae, Bunyaviridae, and Flaviviridae, are targets of future interest. Developed broad spectrum antiviral therapeutics will be employed after suspected or confirmed exposure to the relevant threat agents and AVTX Medical Countermeasures (MCMs)

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>
<p>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. FY23 funding is required for completion of efficacy studies and to prepare Food and Drug Administration (FDA) approval package.</p> <p>The CET RAIDR program will develop repurposed drugs as medical countermeasures towards known, potential, and unknown and emerging threats, bridging the gap from when a threat is identified until targeted countermeasures such as vaccines are available. CET RAIDR will leverage lessons learned in Coronavirus Aid, Relief, and Economic Security (CARES) Act funded efforts under Coronavirus Disease (COVID) Repurposed Therapeutics (CR TX) and address advanced development portion of Science and Technology (S&T) efforts from Development of Medical Countermeasures Against Novel Entities (DOMANE) program for new and emerging threats. FY23 CET RAIDR funding is required to ensure development of up to two FDA-approved or late-stage products for repurposing against chemical and biological medical indications. The FY23 CET RAIDR-ENBD funding enables the development of at least two FDA-approved or late stage products for repurposing against chemical and biological medical indications.</p> <p>The DfOS CIDAS Blister program addresses traditional blister agents, two separate threat scenarios that require different materiel solutions, modernizing a key capability to help build a more lethal force, as outlined in the National Defense Strategy. In FY23, Program will award contract option with prime contractor to acquire 200 SSA Blister Kits and 45 LSA Blister Kits to complete DT, conduct System Verification Review (SVR), Production Readiness Review (PRR), Functional Configuration Audit (FCA) and Logistics Demonstration, as well as award Low-Rate Initial Production (LRIP) option for production representative kits for 25 SSA-B kits and 30 LSKB kits in support of Operational Test planned for 4QFY23.</p> <p>The FAMS-S will provide Special Operations Forces (SOF) and SOF Task Forces (SOTFs) with transportable, rapidly-deployable decontamination systems in three variants: man-portable, small vehicle-mounted, and large vehicle-mounted systems to rapidly decontaminate chemical and biological (CB) agents from the exterior of vehicles and support equipment to a level that is clean enough for re-use during missions without the need for donning CB personal protective equipment. This will maximize tactical flexibility and fighting strength while minimizing the logistical burden and the cost of conducting Countering Weapons of Mass Destruction (CWMD) and CB operations. The FAMS-S will be developed using a Middle Tier Acquisition (MTA) approach. In FY23, FAMS-S completes prototype refinement and the developmental and operational testing phase.</p> <p>The INATS CA program will develop the centrally-acting anticholinergic, scopolamine, to increase survivability and decrease morbidity following exposure to toxic nerve agents. When added to currently fielded nerve agent treatments, scopolamine will improve overall medical outcomes and will be available in both a vial for use at definitive care, and in an autoinjector for use in the field. INATS CA includes modernization of Soman Nerve Agent Pretreatment Pyridostigmine (SNAPP; pyridostigmine bromide [PB] tablets). In FY23, INATS CA will complete nonclinical work to refine the efficacious dose, complete functional and environmental testing for the autoinjector, and begin manufacture of cGMP registration lots. Interaction with the FDA under PL115-92 will occur during nonclinical testing and autoinjector development.</p> <p>The SEDS program will develop reliable and modular hardware intended to decontaminate military equipment in operational environments including personal effects, and weapons to pre-contamination conditions. This capability is needed to sustain the Joint Force military by reducing logistical burden to increase tactical agility and sustain a resilient force posture, and align with the National Defense Strategy. SEDS will provide contamination mitigation capabilities for critical equipment that have been exposed to chemical and biological contamination and achieve efficacy levels that allow unprotected post-decontamination exposures for long periods with less</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022	
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than negligible severity effects. In FY23, the Program will conduct MS B activities for Special Operation Forces (SOF) and Other Services, award contract to conduct EMD testing, conduct Preliminary Design Review (PDR) for SOF and prepare for Operational Assessment for SOF and EDT for Other Services.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Title: 1) CET RAIDR Description: Pandemic Preparedness FY 2023 Plans: Continue advanced development of up to two (2) FDA-approved and late-stage products for repurposing against CBRN indications. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.000 Million) remains in MB5.		-	-	7.871
Title: 2) CET RAIDR - Enhanced Biodefense (ENBD) Description: This effort will focus on Advanced Development Host Response Study FY 2023 Plans: Initiate nonclinical studies to evaluate FDA-approved and/or late-stage products to repurpose as a CBRN Medical Countermeasure. Studies will generate safety and efficacy data to support the use of the tested product against a new CBRN threat. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.		-	-	8.500
Title: 3) AUTOINJ Description: FDA Coordination FY 2023 Plans: Submit FDA application for D4 and ALT- Diazepam. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.000 Million) remains in MC5.		-	-	0.656
Title: 4) AUTOINJ Description: Wet/Dry Development FY 2023 Plans:		-	-	3.766

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Initiate development of a Wet/Dry atropine autoinjector.					
FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to change in program/project schedule. The Wet/Dry Atropine activity starts in FY23.					
Title: 5) AUTOINJ Description: Alt Midazolam Development FY 2023 Plans: Initiate development of a Alt Midazolam autoinjector. FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to change in program/project schedule. The Alt Midazolam activity of AUTOINJ starts in FY23.			-	-	10.304
Title: 6) DFoS CIDAS BLISTER Description: Blister Indicator Kits and Large Scale Applicators FY 2023 Plans: Award contract option with prime contractor to acquire 200 SSA Blister Kits and 45 LSA Blister Kits to complete DT. Conduct System Verification Review (SVR), Production Readiness Review (PRR), Functional Configuration Audit (FCA) and Logistics Demonstration. Award Low-Rate Initial Production (LRIP) option for production representative kits for 25 SSA-B kits and 30 LSKB kits in support of Operational Test planned for 4QFY23. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$2.840 Million) remains in DE5.			-	-	3.681
Title: 7) Forward Area Mobility Spray - System Description: Prototype Development FY 2023 Plans: Complete engineering and manufacturability development for the man-portable FAMS-S variant; complete developmental and operational testing for the vehicle-mounted prototypes to include chemical and biological decontamination level assessment, systems engineering and integration with vehicle platforms, and operational suitability and safety testing. FY 2022 to FY 2023 Increase/Decrease Statement:			-	-	2.967

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$2.743 Million) remains in DE5. Increase due to change in program/project technical parameters. Program completing prototype refinement and completing developmental and operational testing phase in FY23.					
Title: 8) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Clinical FY 2023 Plans: Complete drug/drug interaction clinical safety study. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY22 funding remains in MC5. Phase 2 study initiates in FY22.			-	-	5.101
Title: 9) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Manufacturing/Auto-Injector FY 2023 Plans: Continue Auto-Injector Development and manufacturing activities of the drug product and autoinjector device. Initiate manufacture of GMP registration lots. Initiate stability studies. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$5.423 Million) remains in MC5.			-	-	14.815
Title: 10) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Non-Clinical FY 2023 Plans: Complete Non-Clinical Animal Studies. Complete Pivotal Animal Efficacy Studies. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$20.142 Million) remains in MC5. Decrease due to completion of Animal Studies and Efficacy Studies.			-	-	3.063
Title: 11) Service Equipment Decontamination System (SEDS)			-	-	2.995

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B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
Description: Engineering, Manufacturing and Development (EMD) activities and Product Development												
FY 2023 Plans: Conduct MS B activities for Special Operation Forces (SOF) and Other Services. Award contract to conduct EMD testing. Conduct Preliminary Design Review (PDR) for SOF. Prepare for Operational Assessment for SOF and EDT for Other Services.												
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Engineering and Manufacturing Development Phase. FY23 is the first year of budget activity 5 funding.												
Title: 12) Antiviral Therapeutics Program (AV TX)												
Description: Enabling Technologies												
FY 2023 Plans: Complete efficacy studies and prepare Food and Drug Administration (FDA) approval package.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$14.476 Million) remains in MB5. Decrease in costs of efficacy studies.												
Accomplishments/Planned Programs Subtotals										-	-	10.506

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PHM007: <i>SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)</i>	0.000	0.000	0.000	-	0.000	5.451	6.483	8.483	10.931	Continuing	Continuing
• PHM025: <i>FORWARD AIR MOBILITY SPRAY SYSTEM (FAMS-S)</i>	0.000	0.000	4.607	-	4.607	4.824	4.724	4.724	4.724	Continuing	Continuing
• PHM040: <i>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	31.888	33.051	Continuing	Continuing

Remarks

D. Acquisition Strategy

COUNTERING EMERGING THREATS RAPID ACQUISITION AND INVESTIGATION OF DRUGS FOR REPURPOSING (CET RAIDR)

The Countering Emerging Threats - Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR) program will leverage lessons learned from the COVID-19 response to conduct nonclinical studies and/or clinical trials to evaluate FDA-approved and late-stage development products against CBRN threats. Data generated from these efforts will be used to support a future interim capability, such as repurposing reports to inform Clinical Practice Guidelines (CPGs), pre-Emergency Use Authorizations (pre-EUAs) to stage products in preparation for emergencies, EUAs to rapidly treat warfighters once an emergency is declared, and data for potential new approved FDA indications. This program is funded under both CET RAIDR and CET RAIDR-ENBD.

ALTERNATE AUTOINJECTOR MANUFACTURER CAPABILITY (AUTOINJ)

The Alternative Autoinjector Manufacturer Capability (AUTOINJ) will identify an alternative source(s) to develop and provide required FDA-approved autoinjector-delivered nerve agent antidote and treatment capabilities to the DoD. The AUTOINJ effort leverages novel technologies and industrial base expansion in order to develop the autoinjector products. AUTOINJ uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting development and testing activities consistent with current Food and Drug Administration (FDA) regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, purchases for product sustainment will be made by the Defense Logistics Agency.

DFoS CONTAMINATION INDICATOR DECON ASSURANCE SPRAY BLISTER (DFoS CIDAS BLISTER)

The DFoS CIDAS Blister program will follow an evolutionary acquisition strategy. The program office coordinated with Science and Technology efforts to identify blister technologies that met Service requirements. After further development, in 4QFY19 a sole-source performance based indefinite delivery indefinite quantity contract was

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<p>awarded to develop blister indicator and small scale applicator systems with options for production. The program will leverage the contract to procure blister indicator kits and conduct test and evaluation events for the EMD phase in preparation of MS C/FRP.</p> <p>FORWARD AREA MOBILITY SPRAY SYSTEM (FAMS-S)</p> <p>The FAMS-S will be developed using Middle Tier Acquisition (MTA) to advance decontamination technology and capability for Special Operations Forces (SOF) and Special Operations Task Forces (SOTF) application to tactical and strategic platforms in accordance with MTA authorities and regulations and the Capability Development Document (CDD). FAMS-S will reduce technological risk by reviewing existing materials and technologies as well as designs, configurations, and test data from mature legacy and commercial decontamination systems. The program will utilize the CWMD Other Transaction Authority (OTA) agreement to competitively award projects to three vendors for the man-portable and three vendors for the vehicle-mounted variants followed by a prototype down-select. The program will perform technical evaluations, undergo developmental and operational testing, and early user assessments to inform the final prototype design across each variant in preparation for the man-portable variant production decision in FY23.</p> <p>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</p> <p>In the Technology Maturation and Risk Reduction (TM&RR) phase, close collaborations will occur with the science and technology (S&T) 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 centrally acting formulation development efforts, nonclinical toxicology and efficacy studies and clinical safety studies. In the Engineering and Manufacturing Development (EMD) phase, the Government will engage with commercial partner(s) to ensure that development and manufacture is in accordance with Food and Drug Administration (FDA) regulations.</p> <p>For scopolamine autoinjector development INATS CA uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting development and testing activities consistent with current FDA regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, a follow-on procurement agreement will be used to procure initial operational capability (IOC) / full operational capability (FOC).</p> <p>The Soman Nerve Agent Pre-Treatment Pyridostigmine (SNAPP) effort under INATS CA is a modernization effort for pyridostigmine bromide (PB) tablet requirements from the joint service users for the FDA approved SNAPP product. The effort uses OTAs for conducting development and testing activities consistent with current FDA regulations.</p> <p>SERVICE EQUIPMENT DECONTAMINATION SYSTEM (SEDS)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>The SEDS program will utilize the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) to design and develop state of the art equipment using competitive and iterative prototyping. The program will test prototypes against live chemical warfare agents and biological warfare agents, conduct reliability, availability, and maintainability testing, conduct regular user evaluations to identify human system integration issues, and will conduct testing to ensure the system meets military standards. The program achieved a Milestone A decision in 4QFY21. The OTA vehicle will be used to request prototype development. Completed Request for Prototype Proposals (RPP) followed by award of Prototype Agreement. Started Developmental Testing (DT), and have a planned Milestone B approval in FY23 for the United States Special Operations Command (SOCOM) and Joint Service variant.</p> <p>ANTI-VIRAL THERAPEUTICS (AV TX)</p> <p>The Anti-viral Therapeutics (AVTX) program acquisition strategy supports the development of therapeutics through the Engineering, Manufacturing and Development (EMD) phase against the Ebola (Zaire), Marburg and Sudan bio warfare threats. The initial therapeutic candidate is now for a treatment against the Marburg virus in lieu of Ebola Zaire based on the current gap in defense to the warfighter. The overall regulatory approach of the program remains to pursue development of products to Food and Drug Administration (FDA) approval under the Animal Rule that was approved as the path, by the FDA in 1QFY19. The program completed a dose ranging study for the Ebola Zaire indication and initiated a Natural History Study for Marburg that is part of the holistic FDA regulatory approach for a final indication of a broad spectrum antiviral pan filo drug product. A natural history study for Marburg and Sudan and 3 pivotal animal studies per indication are required as part of the animal rule requirements for the FDA) approved plan. The acquisition strategy for Marburg and Sudan indications will have the performer submitting amended New Drug applications for the therapeutics during the EMD phase.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MT5 / Mitigate (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CET RAIDR-ENBD - Nonclinical Studies	Various	Various : Various	0.000	0.000		0.000		7.268	Dec 2022	0.000		7.268	Continuing	Continuing	0.000
AUTOINJ - Midazolam Autoinjector	Various	TBD : N/A	0.000	0.000		0.000		7.994	Jan 2023	0.000		7.994	Continuing	Continuing	0.000
AUTOINJ - Wet/Dry Atropine Autoinjector	Various	TBD : N/A	0.000	0.000		0.000		2.362	Jan 2023	0.000		2.362	Continuing	Continuing	0.000
AUTOINJ - AUTOINJ Product Development	Various	Various : Various	0.000	0.000		0.000		1.405	Dec 2022	0.000		1.405	Continuing	Continuing	0.000
DFoS CIDAS BLISTER - HW S - Small and Large Scale Applicators/Kits	SS/FPIF	FLIR Systems : Inc., Stillwater, OK	0.000	0.000		0.000		0.992	Dec 2022	0.000		0.992	Continuing	Continuing	0.000
FAMS-S - HW S - System Development and Prototype Refinement	C/CPIF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.000		0.000		1.500	May 2023	0.000		1.500	Continuing	Continuing	0.000
INATS CA - INATS CA Product Development	Various	Various : Various	0.000	0.000		0.000		1.329	Dec 2022	0.000		1.329	Continuing	Continuing	0.000
INATS CA - HW C - Clinical	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		2.143	Dec 2022	0.000		2.143	Continuing	Continuing	0.000
INATS CA - HW C - Manufacturing	C/FFP	Aktivax : Boulder, CO	0.000	0.000		0.000		11.008	Dec 2022	0.000		11.008	Continuing	Continuing	0.000
INATS CA - HW C - Non-Clinical	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		3.904	Nov 2022	0.000		3.904	Continuing	Continuing	0.000
SEDS - HW C - SEDS Prototypes	C/FFP	TBD : N/A	0.000	0.000		0.000		1.450	May 2023	0.000		1.450	Continuing	Continuing	0.000
AV TX - Nonclinical Trials - OTA	C/FP	Gilead Sciences : San Francisco, CA	0.000	0.000		0.000		10.506	Dec 2022	0.000		10.506	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		51.861		0.000		51.861	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS BLISTER - TD/D S - IPT and Technical Support	MIPR	Various : Various	0.000	0.000		0.000		0.656	Dec 2022	0.000		0.656	Continuing	Continuing	0.000
FAMS-S - ES S - Systems Engineer/Technical SME Support	MIPR	Various : Various	0.000	0.000		0.000		0.750	Dec 2022	0.000		0.750	Continuing	Continuing	0.000
SEDS - ES SB - Logistics, Engineering and IPT Support	MIPR	Various : Various	0.000	0.000		0.000		0.900	Mar 2023	0.000		0.900	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		2.306		0.000		2.306	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CET RAIDR - DTE C - Non-Clinical and Clinical Studies	Various	Various : Various	0.000	0.000		0.000		6.964	Dec 2022	0.000		6.964	Continuing	Continuing	0.000
DFoS CIDAS BLISTER - DFoS CIDAS BLISTER - OTHT S - DT/OT	MIPR	Various : Various	0.000	0.000		0.000		1.750	Dec 2022	0.000		1.750	Continuing	Continuing	0.000
FAMS-S - DTE SB - Decon Solution Analysis	Various	TBD : N/A	0.000	0.000		0.000		0.288	Jan 2023	0.000		0.288	Continuing	Continuing	0.000
SEDS - DTE C - SEDS - OTHT S - SEDS T&E IPR Test Planning	MIPR	Various : Various	0.000	0.000		0.000		0.425	Mar 2023	0.000		0.425	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		9.427		0.000		9.427	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CET RAIDR - PM/MS SB - Program Management	Various	Various : Various	0.000	0.000		0.000		0.907	Dec 2022	0.000		0.907	Continuing	Continuing	0.000
CET RAIDR-ENBD - PM - Program Management	Various	Various : Various	0.000	0.000		0.000		1.232	Dec 2022	0.000		1.232	Continuing	Continuing	0.000
AUTOINJ - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.000		2.965	Dec 2022	0.000		2.965	Continuing	Continuing	0.000
DFoS CIDAS BLISTER - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.283	Dec 2022	0.000		0.283	Continuing	Continuing	0.000
FAMS-S - PM/MS S - Indirect Program Management	MIPR	Various : Various	0.000	0.000		0.000		0.429	Dec 2022	0.000		0.429	Continuing	Continuing	0.000
INATS CA - JPM/JPEO Management Services	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.000		4.595	Dec 2022	0.000		4.595	Continuing	Continuing	0.000
SEDS - PM/MS C - SEDS - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.220	Mar 2023	0.000		0.220	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		10.631		0.000		10.631	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		74.225		0.000		74.225	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CET RAIDR - Advance Development Efforts to Repurpose FDA Approved Products																												
CET RAIDR-ENBD - Advance Development Efforts to Repurpose FDA Approved Products																												
AUTOINJ - Development																												
AUTOINJ - Manufacturing																												
AUTOINJ - Prototyping and Testing																												
AUTOINJ - FDA Coordination																												
AUTOINJ - Government Testing																												
AUTOINJ - Alt Midazolam Development																												
AUTOINJ - Wet/Dry Atropine Development																												
DFoS CIDAS BLISTER - Sustainment Cost Reduction Plan (SCRP)																												
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 1																												
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 2																												
DFoS CIDAS BLISTER - System Verification Review (SVR)/Production Readiness Review																												
DFoS CIDAS BLISTER - Functional Configuration Audit (FCA)																												
DFoS CIDAS BLISTER - CIDAS Blister Operational Testing (OT)																												
DFoS CIDAS BLISTER - Manufacturing Readiness Assessment																												
DFoS CIDAS BLISTER - Physical Configuration Audit																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																		Date: April 2022										
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								MT5 / Mitigate (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DFoS CIDAS BLISTER - Milestone C																												
DFoS CIDAS BLISTER - Full Rate Production (FRP)																												
DFoS CIDAS BLISTER - Initial Operational Capability (IOC)																												
FAMS-S - System Development and Prototype Refinement																												
FAMS-S - DT/OT																												
FAMS-S - MS C																												
FAMS-S - Low Rate Initial Production																												
FAMS-S - Full Rate Production																												
FAMS-S - IOC																												
INATS CA - MS B																												
INATS CA - Clinical Trials																												
INATS CA - Manufacturing/Auto-Injector																												
INATS CA - Non-Clinical Studies																												
INATS CA - NDA Submission Activities																												
INATS CA - FDA Approval																												
SEDS - MS A Preparation (SOF)																												
SEDS - MS A (SOF)																												
SEDS - Acquisition Decision Memorandum(ADM) (SOF)																												
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)																												
SEDS - Prototype Agreement Award (SOF and Other Services)																												
SEDS - Developmental Testing (SOF)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SEDS - Early Developmental Testing (Other Services)																												
SEDS - Capability Development Document (CDD) (Other Services)																												
SEDS - MS B (SOF)																												
SEDS - MS B (Other Services)																												
SEDS - Developmental Testing (DT) (Other Services)																												
SEDS - MS C/Full Rate Production (SOF)																												
SEDS - Initial Operational Capability (SOF)																												
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)																												
SEDS - Full Rate Production (Other Services)																												
AV TX - Natural History Study (Marburg)																												
AV TX - Animal Efficacy Studies (Marburg)																												
AV TX - sNDA (Marburg)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CET RAIDR - Advance Development Efforts to Repurpose FDA Approved Products	1	2022	4	2027
CET RAIDR-ENBD - Advance Development Efforts to Repurpose FDA Approved Products	1	2023	4	2027
AUTOINJ - Development	1	2021	1	2022
AUTOINJ - Manufacturing	1	2021	4	2022
AUTOINJ - Prototyping and Testing	1	2021	2	2023
AUTOINJ - FDA Coordination	1	2021	3	2023
AUTOINJ - Government Testing	1	2021	2	2022
AUTOINJ - Alt Midazolam Development	1	2023	4	2026
AUTOINJ - Wet/Dry Atropine Development	1	2023	4	2027
DFoS CIDAS BLISTER - Sustainment Cost Reduction Plan (SCRP)	1	2021	3	2022
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 1	2	2021	3	2021
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 2	4	2022	4	2023
DFoS CIDAS BLISTER - System Verification Review (SVR)/Production Readiness Review	2	2023	2	2023
DFoS CIDAS BLISTER - Functional Configuration Audit (FCA)	3	2023	3	2023
DFoS CIDAS BLISTER - CIDAS Blister Operational Testing (OT)	4	2023	4	2023
DFoS CIDAS BLISTER - Manufacturing Readiness Assessment	1	2024	1	2024
DFoS CIDAS BLISTER - Physical Configuration Audit	2	2024	2	2024
DFoS CIDAS BLISTER - Milestone C	3	2024	3	2024
DFoS CIDAS BLISTER - Full Rate Production (FRP)	3	2024	4	2027
DFoS CIDAS BLISTER - Initial Operational Capability (IOC)	2	2027	2	2027
FAMS-S - System Development and Prototype Refinement	4	2021	1	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FAMS-S - DT/OT	2	2022	2	2024
FAMS-S - MS C	3	2023	2	2024
FAMS-S - Low Rate Initial Production	3	2023	1	2024
FAMS-S - Full Rate Production	2	2024	4	2027
FAMS-S - IOC	4	2024	4	2024
INATS CA - MS B	4	2021	2	2022
INATS CA - Clinical Trials	1	2021	4	2023
INATS CA - Manufacturing/Auto-Injector	1	2021	2	2025
INATS CA - Non-Clinical Studies	1	2021	4	2023
INATS CA - NDA Submission Activities	4	2024	3	2026
INATS CA - FDA Approval	3	2026	3	2026
SEDS - MS A Preparation (SOF)	1	2021	3	2021
SEDS - MS A (SOF)	4	2021	4	2021
SEDS - Acquisition Decision Memorandum(ADM) (SOF)	4	2021	4	2021
SEDS - Request For Prototype Proposal (RPP) (SOF and Other Services)	1	2022	1	2022
SEDS - Prototype Agreement Award (SOF and Other Services)	3	2022	3	2022
SEDS - Developmental Testing (SOF)	3	2022	1	2023
SEDS - Early Developmental Testing (Other Services)	3	2022	3	2023
SEDS - Capability Development Document (CDD) (Other Services)	2	2023	2	2023
SEDS - MS B (SOF)	2	2023	2	2023
SEDS - MS B (Other Services)	4	2023	4	2023
SEDS - Developmental Testing (DT) (Other Services)	2	2024	4	2025
SEDS - MS C/Full Rate Production (SOF)	4	2024	4	2024
SEDS - Initial Operational Capability (SOF)	4	2025	4	2025
SEDS - MS C/ Low Rate Initial Production Decision (Other Services)	3	2026	3	2026

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MT5 / <i>Mitigate (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
SEDS - Full Rate Production (Other Services)	4	2027	4	2027
AV TX - Natural History Study (Marburg)	1	2021	1	2022
AV TX - Animal Efficacy Studies (Marburg)	4	2021	4	2023
AV TX - sNDA (Marburg)	4	2023	4	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) PT5 / Protect (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PT5: Protect (SDD)	-	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Protect System Development & Demonstration (SDD) Project enhances mission performance and provides effective protection against current and emerging threats by rapidly developing and fielding modernized protection capabilities. Developmental efforts focus on advances in materials and systems engineering to enhance protective properties against a broader array of hazards, while reducing CWMD operational challenges and logistical burdens. Developmental efforts focus on advanced medical countermeasures that provide safe and effective medical defenses against biological agents (bacteria, toxins, and viruses), emerging infectious diseases, and chemical agents.

Efforts included in this Project are:

- (1) Botulinum Monoclonal Antibodies (BOT MAB),
- (2) Uniform Integrated Protection Ensemble Family of Systems Air (UIPE FOS AIR),
- (3) UIPE FOS General Purpose (UIPE FOS GP),
- (4) UIPE FOS Gloves (UIPE FOS GLOVES),
- (5) Special Immunizations Program (VAC SIP) ,
- (6) Advanced System for Protection and Integrated Reduction of Encumbrances-Enhanced Biodefense (ASPIRE-ENBD) ,
- (7) Collective Protection Conex-Enhanced Biodefense (COL PRO CONEX-ENBD), and
- (8) Portable Biocontainment Patient Transport System-Enhanced Biodefense (PPTS-ENBD)

The BOT MAB program was initiated by the Medical Countermeasure Platform Technologies (MCMPT). The goal of BOT MAB advanced development effort is to counter exposure to BOT A & B toxins. The program is leveraging the advanced platform technology developed within the DoD's Advanced Development Manufacturing (ADM) facility that was initiated by the MCMPT. The BOT MAB will be a monoclonal antibody cocktail that protects the warfighter against exposure to BOT A&B serotypes. FY23 funding is required to ensure large scale Good Manufacturing Practices (GMP) and execution product/process characterization /validation meets schedule.

The UIPE FoS Air program will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional Chemical, Biological, Radiological, Nuclear (CBRN) threats. UIPE FoS Air will improve aircrew performance and survivability under CBRN conditions by reducing thermal burden and bulk, while increasing mobility and resulting in an increase operational effectiveness. The UIPE FoS Air is composed of two variants. The UIPE FoS Air Chemical, Biological, Radiological Layer (CBRL) to address the specific requirements of the United States Air Force (USAF) tactical/ejection fixed wing platforms and the Two Piece Undergarment (2PUG) to address the remaining USAF and United States Navy / United States Marine Corps tactical/ejection seat (rotary wing) and non-ejection

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>
<p>(fixed wing) platforms. In FY23, UIPE FoS Air will finalize EMD testing and conduct integration testing on 40+ USAF, USN, and USMC platforms for airworthiness, safe to fly and final flight clearance.</p> <p>UIPE FoS GP is part of a family of systems that will give the Warfighter percutaneous protection from operationally relevant traditional, non-traditional, and advanced CBRN/Toxic Industrial Material (TIM) threats likely to be encountered during joint force operations. The legacy chemical biological garment is nearing the end of its service life and does not meet updated requirements such as emerging threats, aerosol protection, and flame resistance. The UIPE FoS GP is a two-piece lightweight (compared to the legacy system) duty uniform replacement that has an aerosol liner, is flame resistant, and does not reduce Warfighter effectiveness in the areas of mobility and thermal burden. In FY23, UIPE FoS GP will conduct System Verification Review, complete MOT&E, award production contract, and conduct Production Verification Testing (PVT). In FY23, UIPE FoS GP program will obtain a MS C Low Rate Initial Production decision and conduct a Multi-Service Operational Test and Evaluation.</p> <p>UIPE FoS Gloves provides percutaneous protection to the hand and wrist interface of the warfighter against traditional and non-traditional CBRN threats. UIPE FoS Gloves will provide improved comfort, tactility and dexterity and for certain mission profiles enhanced touch screen and flame resistant capability. The UIPE FoS Gloves will be developed using a Middle Tier Acquisition (MTA) approach. In FY23 the UIPE FoS Gloves program will continue to conduct prototype development on multiple prototypes for multiple mission profiles (General Purpose, Aviation Heavy and Aviation Light).</p> <p>The SIP continually manages, updates, and executes the Investigational New Drugs (INDs) of selected prophylaxis, treatments and diagnostics development products which provide additional protection to individuals that are at high risk of exposure to CBRN agents. These vaccines will be used to provide additional levels of protection to laboratory workers conducting research. DoD has the mission to maintain IND vaccines in Good Manufacturing Practice (GMP) storage and to conduct the periodic potency and stability testing of these materials to support submissions to the FDA. In FY23 SIP continues storage, distribution, potency testing, and biosurety compliance activities.</p> <p>ASPIRE-ENBD, a new start program in FY23, supports unencumbering warfighters and revolutionizing respiratory and ocular protection against CBRN threats, including protection from biological, toxic industrial chemicals, and other emerging threats. ASPIRE provides a revolutionary new capability to address interface issues with new and emerging equipment. ASPIRE will unencumber the warfighter while still providing respiratory and ocular protection against CBRN agents, provide durable and extended wear capability, and incorporate anti-microbial materials to develop a reusable respirator. The solution will be optimized to minimize impact on the wearer's performance to continue lethality in CB environment by reducing burden, improving filtration capability, utilizing powered and supplied air systems as required, and integrate with existing and future equipment that cannot be integrated with current mask systems. ASPIRE will provide a revolutionized capability to the Services for the next generation of respiratory and ocular protection. The ASPIRE Enhanced Biodefense effort will develop half masks / bio-masks that are low-burden, provide protection against bio threats, and are designed as a reusable system with modularity and/or scalability for additional ocular protection.</p> <p>COL PRO CONEX-ENBD, a new start program in FY23, will provide rest and relief for aircrew in a Chemical, Biological, Radiological, and Nuclear (CBRN) environment. The CPC CBRN defense system provides an isolation area to treat infectious personnel and protecting embarked crew from infection. It is a modified container/Conex box that can be transported to host platform with minimal setup.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) PT5 / Protect (SDD)			
The PPTS-ENBD, a new start program in FY23, is a patient transport system that enables safe transport of asymptomatic, symptomatic, or infected patients while ensuring that the medical attending personnel and platform crew members are protected from exposure.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) ASPIRE - Enhanced Biodefense (ENBD) Description: This effort will focus on Low Burden Half Mask FY 2023 Plans: Award CWMD OTA task for development of biodefense half-masks and start first round of prototype evaluations. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	1.600
Title: 2) COL PRO CONEX - Enhanced Biodefense (ENBD) Description: This effort will focus on Collective Protection CONEX (CPC) which is a Chemical, Biological, Radiological, and Nuclear (CBRN) defense system that provides an isolation area to treat infectious personnel and protecting embarked crew from infection. It is a modified container/Conex box that can be transported to host platform with minimal setup. FY 2023 Plans: Complete concept design, system planning and conduct an initial concept demonstration. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	1.900
Title: 3) PPTS - Enhanced Biodefense (ENBD) Description: This effort will focus on Portable Biocontainment Patient Transport System (PPTS) which is a patient transport system that enables safe transport of asymptomatic, symptomatic, or infected patients while ensuring that the medical attending personnel and platform crew members are protected from exposure. FY 2023 Plans: Complete concept design and test strategy development. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	4.200
Title: 4) Botulinum Monoclonal Antibodies (BOT MAB) Description: Manufacturing			-	-	37.741

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) PT5 / <i>Protect (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<i>FY 2023 Plans:</i> Continue large scale Good Manufacturing Practices (GMP) and execute product/process characterization and validation required.					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred from another Project due to budget restructure. FY22 funding (\$33.000 Million) remains in MB5. Increase is due to cost increase in the production of manufacturing runs.					
<i>Title:</i> 5) Botulinum Monoclonal Antibodies (BOT MAB) <i>Description:</i> Clinical and Nonclinical Studies <i>FY 2023 Plans:</i> Obtain results from the Phase 2 clinical trial and along with the pivotal animal studies and initiate Phase 3 clinical study, and continue manufacturing for PPQ lots to support clinical study and IOC. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred from another Project due to budget restructure. FY22 funding (\$27.723 Million) remains in MB5.			-	-	27.000
<i>Title:</i> 6) UIPE FoS General Purpose (GP) <i>Description:</i> Development of the next generation protective ensembles. <i>FY 2023 Plans:</i> Conduct System Verification Review, complete MOT&E, award production contract, and conduct Production Verification Testing (PVT). <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Funding transferred from another Project due to budget restructure. FY22 funding (\$8.167M) remains in IP5. Increase due to funding needed for Multi-Service Operational Test and Evaluation.			-	-	9.640
<i>Title:</i> 7) UIPE FoS Air <i>Description:</i> Design, Test, and Integration of the 2PUG <i>FY 2023 Plans:</i> Finalize EMD testing and conduct integration testing on 40+ USAF, USN, and USMC platforms for airworthiness, safe to fly and final flight clearance. <i>FY 2022 to FY 2023 Increase/Decrease Statement:</i>			-	-	5.132

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022			
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) PT5 / Protect (SDD)				
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023	
Funding transferred from another Project due to budget restructure. FY22 funding (\$3.858 Million) remains in IP5. Increase due to expansion of integration, flight clearance, and airworthiness testing.												
Title: 8) UIPE FoS Gloves									-	-	2.699	
Description: Development of the Next Generation Protective Glove												
FY 2023 Plans: Continue to conduct prototype development on multiple prototypes for multiple mission profiles (General Purpose, Aviation Heavy and Aviation Light). Conduct testing such as tactility, dexterity, chemical protection, flame resistance, wear trials, and interoperability will be conducted as well as analytical framework analysis and down-selects.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.182M) remains in IP5. Program/project transitioned to Engineering and Manufacturing Development Phase.												
Title: 9) VAC SIP									-	-	6.948	
Description: Storage, Distribution, Potency Testing												
FY 2023 Plans: Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$6.631 Million) remains in MB5. Increase due to change in program/project technical parameters.												
Accomplishments/Planned Programs Subtotals									-	-	96.860	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• IP4: Individual Protection (ACD&P)	3.448	3.968	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.416	
• PT4: Protect (ACD&P)	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing	
• IP5: Individual Protection (SDD)	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070	
• MB5: Medical Biological Defense (SDD)	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PHM032: <i>UNIFORM INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)</i>	0.000	0.000	0.000	-	0.000	7.478	7.974	7.974	8.328	Continuing	Continuing
• PHM033: <i>UNIFORM INTEGRATED PROTECTIVE ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)</i>	0.000	17.686	51.130	-	51.130	101.486	174.124	194.691	264.433	Continuing	Continuing
• PHM034: <i>UNIFORM INTEGRATED PROTECTION ENSEMBLE FOS AIR (UIPE FOS AIR)</i>	4.786	34.568	23.407	-	23.407	25.794	26.195	26.403	17.586	Continuing	Continuing
• PHM039: <i>BOTULINUM MONOCLONAL ANTIBODIES (BOT MAB)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	20.157	21.299	Continuing	Continuing

Remarks

D. Acquisition Strategy

ADVANCED SYSTEM FOR PROTECTION AND INTEGRATED REDUCTION OF ENCUMBRANCES-ENHANCED BIODEFENSE (ASPIRE-ENBD)

Efforts will be accomplished by awarding an agreement through the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) to develop multiple prototypes for further development and evaluation to select down to a final solution.

COLLECTIVE PROTECTION CONEX-ENHANCED BIODEFENSE (COL PRO CONEX-ENBD)

Resource prototype system design and development through the CWMD OTA contract.

PORTABLE PATIENT TRANSPORT SYSTEM-ENHANCED BIODEFENSE (PPTS-ENBD)

Resource prototype system design and development through the Countering Weapons of Mass Destruction (CWMD) Other Transactional Authority (OTA) contract. Leverage lessons learned from previous efforts to optimize performance and minimize total ownership cost.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>
<p>BOTULINUM MONOCLONAL ANTIBODIES (BOT MAB)</p> <p>The BOT MAB program was initiated by the Medical Countermeasure Platform Technologies (MCMPT). The regulatory approach of the program is to pursue development of products for FDA approval. The program will conduct clinical and non-clinical studies to confirm duration of protection and on-set of protection. The performer will complete small model development and procure long lead items during the Technology Maturation and Risk Reduction (TMRR) phase in order to mitigate risk and accelerate the schedule activities for BLA submission during the Product & Development (P&D) phase. The performer will continue large scale manufacturing during the Engineering and Manufacturing Development (EMD) phase in order to accelerate the schedule activities for the prophylactic indication.</p> <p>UNIFORM INTEGRATED PROTECTIVE ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)</p> <p>UIPE FoS GP used an Other Transaction Authority (OTA) and Government designed prototypes produced in conjunction with an Industry Partner to acquire prototypes for early user testing. Warfighter feedback, trade space analysis, and chemical testing resulted in three government designed candidates being down selected in 3QFY20. These three candidates are designed to minimize operational burden and provide improved form, fit, function, and integration with the current Warfighter kits compared to legacy systems. Additional testing, review of the results, stakeholder guidance, and a risk analysis led to the selection of one candidate in FY21 - the Integrated Chemical Biological Lightweight Improved Thermal Ensemble Flame Resistant (ICBLITE FR). UIPE FoS GP will be executing multiple awards in the next 3 years, where production occurring before the milestone to allow for completion of UIPE evaluation (effectiveness, suitability and survivability) prior to award of a high ceiling production contract. This will allow the vendor to better estimate pricing (labor and material) with an initial production ramp up; and Mitigates schedule risk for award of a high ceiling production contract.</p> <p>UNIFORM INTEGRATED PROTECTION ENSEMBLE FOS AIR (UIPE FOS AIR)</p> <p>The UIPE FoS Air utilizes a streamlined acquisition strategy that identifies mature technology and capitalizes on work accomplished by the USAF IAE and UIPE FoS General Purpose programs. The UIPE FoS Air will utilize an Milestone A-C acquisition strategy that will accelerate fielding to the Warfighter. The contract strategy leverages the USAF Integrated Aircrew Ensemble (IAE) SBIR Phase III contract to procure UIPE Air CBRL. The UIPE FoS Air 2PUG will be procured utilizing a Government design on a separate contract.</p> <p>UNIFORM INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)</p> <p>The UIPE FoS Glove program conducted market research through both Requests For Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. Eight white papers were deemed acceptable and will be pursued through a Mid-Tier Acquisition Rapid Prototyping strategy. Candidate technologies will undergo Early User Tests/Wear events and material and system level testing to identify available capabilities as well as Analytical framework analyses to determine the most suitable solution(s) per mission profile.</p> <p>SPECIAL IMMUNIZATION PROGRAM (VAC SIP)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>
<p>The SIP effort continually manages, updates, and executes the Investigational New Drugs (INDs) of selected prophylaxis, treatments and diagnostics development products which provide additional protection to individuals that are at high risk of exposure to CBRN agents. Efforts span Good Manufacturing Practices (GMP), Good Laboratory Practices guidelines necessary to conduct storage and periodic potency testing, as well as clinical administration of products in accordance with the FDA regulated Investigational New Drug requirements. This Department of Defense program supports the Federal interagency with this effort, as well as academic and industry partners.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) PT5 / Protect (SDD)
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ASPIRE-ENBD - HW C - Bio half-mask Prototype Development	Various	Various : Various	0.000	0.000		0.000		1.127	Dec 2022	0.000		1.127	Continuing	Continuing	0.000
COL PRO CONEX-ENBD - HW S - Concept Design	Various	TBD : N/A	0.000	0.000		0.000		0.761	Dec 2022	0.000		0.761	Continuing	Continuing	0.000
PPTS-ENBD - HW S - Prototyping Contract	Various	TBD : N/A	0.000	0.000		0.000		2.048	Dec 2022	0.000		2.048	Continuing	Continuing	0.000
UIPE FOS GP - HW C - Prototype Development	MIPR	TBD : N/A	0.000	0.000		0.000		0.839	Nov 2022	0.000		0.839	Continuing	Continuing	0.000
UIPE FOS AIR - HW C - Prototype Development (2PUG)	Various	Various : Various	0.000	0.000		0.000		0.330	Nov 2022	0.000		0.330	Continuing	Continuing	0.000
UIPE FOS GLOVES - HW C - Prototype Manufacturing, Demonstration and Down-select	MIPR	Various : Various	0.000	0.000		0.000		0.562	Nov 2022	0.000		0.562	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		5.667		0.000		5.667	Continuing	Continuing	N/A

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ASPIRE-ENBD - ES S - Engineering and Technical Support	Various	Various : Various	0.000	0.000		0.000		0.286	Dec 2022	0.000		0.286	Continuing	Continuing	0.000
COL PRO CONEX-ENBD - ES S - Engineering, Logistics, Technical, IPT Support	MIPR	Various : Various	0.000	0.000		0.000		0.745	Dec 2022	0.000		0.745	Continuing	Continuing	0.000
PPTS-ENBD - ES S - Engineering, Logistics, Technical, IPT Support	MIPR	Various : Various	0.000	0.000		0.000		1.504	Dec 2022	0.000		1.504	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) PT5 / Protect (SDD)					
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - ES C - Engineering & Technical IPT Support / SME Support	Various	Various : Various	0.000	0.000		0.000		2.477	Nov 2022	0.000		2.477	Continuing	Continuing	0.000
UIPE FOS GP - ILS S - Integrated Log Support-System	Various	Various : Various	0.000	0.000		0.000		0.608	Nov 2022	0.000		0.608	Continuing	Continuing	0.000
UIPE FOS AIR - ES C - Engineering and IPT Support	Various	Various : Various	0.000	0.000		0.000		1.821	Nov 2022	0.000		1.821	Continuing	Continuing	0.000
UIPE FOS GLOVES - ES C - Engineering, Logistics, Technical, IPT Support	MIPR	Various : Various	0.000	0.000		0.000		0.812	Nov 2022	0.000		0.812	Continuing	Continuing	0.000
VAC SIP - Storage and Distribution of Vaccines	SS/FP	Fisher BioServices : Rockville, MD	0.000	0.000		0.000		1.365	Mar 2023	0.000		1.365	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		9.618		0.000		9.618	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ASPIRE-ENBD - OTH T C - Prototype Evaluation	Various	Various : Various	0.000	0.000		0.000		0.075	Dec 2022	0.000		0.075	Continuing	Continuing	0.000
COL PRO CONEX-ENBD - DTE C - T&E Support	MIPR	Various : Various	0.000	0.000		0.000		0.271	Dec 2022	0.000		0.271	Continuing	Continuing	0.000
PPTS-ENBD - DTE S - T&E Support	MIPR	Various : Various	0.000	0.000		0.000		0.376	Dec 2022	0.000		0.376	Continuing	Continuing	0.000
BOT MAB - DTE C - BOT MONO	C/CPFF	Ology Bioservices : Inc., Alachua, FL	0.000	0.000		0.000		59.164	Dec 2022	0.000		59.164	Continuing	Continuing	0.000
UIPE FOS GP - DTE C - DT/OT	Various	Various : Various	0.000	0.000		0.000		5.022	Nov 2022	0.000		5.022	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) PT5 / Protect (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS AIR - DTE C - System Level Testing	Various	Various : Various	0.000	0.000		0.000		2.587	Nov 2022	0.000		2.587	Continuing	Continuing	0.000
UIPE FOS GLOVES - DTE C - Early User Testing, Developmental Testing	MIPR	Various : Various	0.000	0.000		0.000		1.153	Nov 2022	0.000		1.153	Continuing	Continuing	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		1.642	Jan 2023	0.000		1.642	Continuing	Continuing	0.000
VAC SIP - OTHT C - BOT & PLG Stability	C/CPFF	TBD : N/A	0.000	0.000		0.000		2.080	Jan 2023	0.000		2.080	Continuing	Continuing	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines #2	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	0.000		0.000		1.196	Mar 2023	0.000		1.196	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		73.566		0.000		73.566	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ASPIRE-ENBD - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.112	Dec 2022	0.000		0.112	Continuing	Continuing	0.000
COL PRO CONEX-ENBD - PM/MS S - Program Management	MIPR	Various : Various	0.000	0.000		0.000		0.123	Dec 2022	0.000		0.123	Continuing	Continuing	0.000
PPTS-ENBD - PM/MS S - Program Management	MIPR	Various : Various	0.000	0.000		0.000		0.272	Dec 2022	0.000		0.272	Continuing	Continuing	0.000
BOT MAB - PM/MS C - BOT MONO	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.000		5.577	Dec 2022	0.000		5.577	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) PT5 / Protect (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS GP - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.694	Nov 2022	0.000		0.694	Continuing	Continuing	0.000
UIPE FOS AIR - PM/MS C - Program Management Services	MIPR	Various : Various	0.000	0.000		0.000		0.394	Nov 2022	0.000		0.394	Continuing	Continuing	0.000
UIPE FOS GLOVES - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.172	Dec 2022	0.000		0.172	Continuing	Continuing	0.000
VAC SIP - PM Support	Various	JPL CBRN EB : Frederick, MD	0.000	0.000		0.000		0.665	Jan 2023	0.000		0.665	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		8.009		0.000		8.009	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		96.860		0.000		96.860	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>					Project (Number/Name) PT5 / <i>Protect (SDD)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ASPIRE-ENBD - Prototype Development																												
ASPIRE-ENBD - Prototype Testing and Evaluation																												
COL PRO CONEX-ENBD - Concept Design and System Planning																												
COL PRO CONEX-ENBD - Initial Concept Demonstration																												
COL PRO CONEX-ENBD - Iterative Prototyping																												
COL PRO CONEX-ENBD - ILS Development																												
COL PRO CONEX-ENBD - Training Development																												
PPTS-ENBD - Concept Development and System Planning																												
PPTS-ENBD - CWMD OTA Contract Award																												
PPTS-ENBD - MOT&E																												
PPTS-ENBD - User Demonstrations																												
PPTS-ENBD - Logistics Demonstration																												
PPTS-ENBD - Technical Design Package Complete																												
PPTS-ENBD - Logistics/Sustainment Package Complete																												
PPTS-ENBD - Final Prototype Purchase Contract																												
BOT MAB - Clinical and Nonclinical																												
BOT MAB - Platform Development																												
BOT MAB - Manufacturing																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																	Date: April 2022											
Appropriation/Budget Activity									R-1 Program Element (Number/Name)								Project (Number/Name)											
0400 / 5									PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								PT5 / Protect (SDD)											
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
BOT MAB - MS B																												
BOT MAB - MS C																												
BOT MAB - BLA Submission																												
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment																												
UIPE FOS GP - Capability Development Document (CDD)																												
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update																												
UIPE FOS GP - Milestone B																												
UIPE FOS GP - DT/OT																												
UIPE FOS GP - Critical Design Review (CDR)																												
UIPE FOS GP - Operational Assessment																												
UIPE FOS GP - Production Initiation Contract																												
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)																												
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)																												
UIPE FOS GP - Capability Development Document (CDD) Update																												
UIPE FOS GP - Milestone C LRIP																												
UIPE FOS GP - Production Contract Award																												
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)																												
UIPE FOS GP - MS C FRP																												
UIPE FOS AIR - Prototype Development (2PUG)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								PT5 / Protect (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE FOS AIR - Swatch and System Level Testing																												
UIPE FOS AIR - Aircraft Integration Testing																												
UIPE FOS AIR - Human Factors Testing																												
UIPE FOS AIR - Fixed Wing Ejection Aircraft Integration Testing																												
UIPE FOS AIR - Fixed Wing Non-Ejection Aircraft Testing																												
UIPE FOS AIR - Rotary Wing Aircraft Integration Testing																												
UIPE FOS AIR - Developmental/Operational Testing (DT/OT)																												
UIPE FOS AIR - Safe-to-Fly and Airworthiness Testing																												
UIPE FOS AIR - 2PUG Full Rate Production (FRP)																												
UIPE FOS AIR - Capability Development Document (CDD) Update																												
UIPE FOS AIR - Safe to Fly Certification																												
UIPE FOS AIR - 2 PUG Initial Operational Capability (IOC)																												
UIPE FOS GLOVES - Early User, material and system level testing																												
UIPE FOS GLOVES - Draft CDD																												
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation																												
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE FOS GLOVES - Trade Space Analysis Decision																												
UIPE FOS GLOVES - Mid-Tier Acquisition IPR																												
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point																												
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C																												
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) PT5 / <i>Protect (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ASPIRE-ENBD - Prototype Development	1	2023	3	2025
ASPIRE-ENBD - Prototype Testing and Evaluation	4	2023	4	2025
COL PRO CONEX-ENBD - Concept Design and System Planning	1	2023	3	2023
COL PRO CONEX-ENBD - Initial Concept Demonstration	4	2023	4	2023
COL PRO CONEX-ENBD - Iterative Prototyping	4	2023	3	2025
COL PRO CONEX-ENBD - ILS Development	3	2024	4	2025
COL PRO CONEX-ENBD - Training Development	4	2024	3	2025
PPTS-ENBD - Concept Development and System Planning	1	2023	4	2023
PPTS-ENBD - CWMD OTA Contract Award	4	2023	4	2023
PPTS-ENBD - MOT&E	4	2025	4	2025
PPTS-ENBD - User Demonstrations	3	2024	4	2024
PPTS-ENBD - Logistics Demonstration	4	2025	4	2025
PPTS-ENBD - Technical Design Package Complete	3	2026	3	2026
PPTS-ENBD - Logistics/Sustainment Package Complete	3	2026	4	2026
PPTS-ENBD - Final Prototype Purchase Contract	4	2026	4	2026
BOT MAB - Clinical and Nonclinical	1	2021	4	2024
BOT MAB - Platform Development	1	2021	4	2025
BOT MAB - Manufacturing	3	2021	4	2025
BOT MAB - MS B	2	2022	2	2022
BOT MAB - MS C	3	2023	3	2023
BOT MAB - BLA Submission	4	2025	4	2025
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment	1	2021	1	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program				Date: April 2022	
Appropriation/Budget Activity		R-1 Program Element (Number/Name)		Project (Number/Name)	
0400 / 5		PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)		PT5 / Protect (SDD)	
		Start		End	
Events	Quarter	Year	Quarter	Year	
UIPE FOS GP - Capability Development Document (CDD)	1	2021	1	2021	
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update	3	2021	3	2021	
UIPE FOS GP - Milestone B	3	2021	3	2021	
UIPE FOS GP - DT/OT	1	2022	3	2023	
UIPE FOS GP - Critical Design Review (CDR)	3	2022	3	2022	
UIPE FOS GP - Operational Assessment	4	2022	1	2023	
UIPE FOS GP - Production Initiation Contract	4	2022	4	2022	
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)	3	2023	3	2023	
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)	4	2023	4	2023	
UIPE FOS GP - Capability Development Document (CDD) Update	4	2023	4	2023	
UIPE FOS GP - Milestone C LRIP	4	2023	4	2023	
UIPE FOS GP - Production Contract Award	1	2024	1	2024	
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)	2	2024	2	2024	
UIPE FOS GP - MS C FRP	1	2025	1	2025	
UIPE FOS AIR - Prototype Development (2PUG)	1	2021	3	2022	
UIPE FOS AIR - Swatch and System Level Testing	2	2021	3	2022	
UIPE FOS AIR - Aircraft Integration Testing	3	2021	3	2022	
UIPE FOS AIR - Human Factors Testing	3	2021	3	2022	
UIPE FOS AIR - Fixed Wing Ejection Aircraft Integration Testing	3	2021	3	2023	
UIPE FOS AIR - Fixed Wing Non-Ejection Aircraft Testing	3	2021	3	2023	
UIPE FOS AIR - Rotary Wing Aircraft Integration Testing	3	2021	3	2023	
UIPE FOS AIR - Developmental/Operational Testing (DT/OT)	1	2022	3	2022	
UIPE FOS AIR - Safe-to-Fly and Airworthiness Testing	1	2022	3	2023	
UIPE FOS AIR - 2PUG Full Rate Production (FRP)	4	2022	4	2022	
UIPE FOS AIR - Capability Development Document (CDD) Update	4	2022	4	2022	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program				Date: April 2022	
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) PT5 / <i>Protect (SDD)</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
UIPE FOS AIR - Safe to Fly Certification	4	2023	4	2023	
UIPE FOS AIR - 2 PUG Initial Operational Capability (IOC)	2	2024	2	2024	
UIPE FOS GLOVES - Early User, material and system level testing	2	2021	2	2024	
UIPE FOS GLOVES - Draft CDD	3	2021	3	2021	
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation	4	2021	1	2022	
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT	2	2022	3	2023	
UIPE FOS GLOVES - Trade Space Analysis Decision	3	2022	3	2022	
UIPE FOS GLOVES - Mid-Tier Acquisition IPR	2	2023	2	2023	
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point	2	2024	2	2024	
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C	3	2024	3	2024	
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities	1	2021	4	2026	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) UN5 / <i>Understand (SDD)</i>			
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
UN5: <i>Understand (SDD)</i>	-	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Understand System Development & Demonstration (SDD) Project provides the Joint Force the ability to continually receive information about the CBRN situation at a desired time and place by detecting, identifying, and quantifying CBRN hazards in air, water, or on land, and on personnel, equipment or facilities. These efforts support the ability to conduct early warning (informing protective posture) and employment of rapid detection, identification, and analysis tools needed to address emerging biological threats. Efforts also keep the Joint Force ahead of emerging chemical threats with portable, reduced size, weight, and power, cost detectors to protect general and specialized forces and to enhance operations on the battlefield by providing early warning and field analytics. Medical diagnostic activities develop FDA approved products for the Warfighter at the point of care to inform far-forward medical and protection decisions.

Efforts included in this Project are:

- (1) Advanced Emerging Threat Defense (AET DEFENSE),
- (2) Aerosol & Vapor Chemical Agent Detector (AVCAD),
- (3) Compact Vapor Chemical Agent Detector (CVCAD),
- (4) Multi-Phase Chemical Agent Detector (MPCAD),
- (5) Chemical Biological Radiological and Nuclear (CBRN) Sensor Integration on Robotics Platforms (CSIRP), **Progressed from CA5 in FY2022**
- (6) Defense Biological Products Assurance Program (DBPAP),
- (7) Defense Biological Products Assurance Program-Enhanced Biodefense (DBPAP-ENBD),
- (8) Joint Biological Tactical Detection System (JBTDs),
- (9) Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU),
- (10) Next Generation Diagnostic System Increment 2 Chemical Diagnostic (NGDS 2 CHEMDX),
- (11) NGDS 2 Man Portable Diagnostic System (NGDS 2 MPDS),
- (12) Special Purpose Unit Rapid Capability Development and Deployment (SPU RCDD),
- (13) Surveillance and Pathogen Characterization - Enhanced BioDefense (SPCHAR-ENBD), and
- (14) Chemical and Biological Wearables - Enhanced Biodefense (CB Wearables - ENBD)

The AET DEFENSE program continues to address the highest priority CBRN gaps and supports the Chemical Biological Defense Program (CBDP) Strategic Line of Effort to meet current and emerging threats by anticipating CB hazards and developing capabilities to counter emerging and future threats. The AET Defense program collaborates with the Joint Services, interagency, and international partners to align RDT&E resources to determine readiness against emerging threats, to include NTAs, such as Novichoks and Pharmaceutical-Based Agents (PBA) (e.g. synthetic opioids), emerging biological threats, and other advanced and emerging threats as

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>they are identified across the entire CBDP enterprise portfolio. In FY23, AET Defense continues to broaden data set for emerging biological threats and PBAs to better assess detection and decontamination capabilities.</p> <p>The AVCAD is a man portable system to detect aerosol and vapor chemical agents. AVCAD fills critical gaps in current Joint Force chemical sensor capabilities, in the areas of liquid, solid and dusty aerosol Chemical Warfare Agent detection, and detection of specific advanced threats/Non-Traditional Agents. The AVCAD will also detect low-level off-gassing, or residual vapors, to prevent/mitigate health effects associated with low concentration exposures, and perform remote alarm warning and reporting. AVCAD will support chemical and biological defense missions, including monitoring, collective protection, base defense, decontamination, unmasking, reconnaissance, and shipboard and aviation platform chemical detection. In FY23, AVCAD will award the LRIP option and start P&D Testing.</p> <p>CVCAD is designed to be an unobtrusive, low-profile chemical detection capability that will continuously, and autonomously, monitor and alert general and specialized units to an unsafe environment without further burdening the warfighters payload or interfering with the primary mission. The small form factor (less than 2 lbs) is amenable to both man-worn and unmanned aerial or ground system operations to enable timely personnel protective action and other force protection decisions. In FY23 the four competing prototypes will undergo down selects based on performance. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA).</p> <p>The MPCAD is a two-man portable system that will conduct near real-time, near-laboratory grade analysis of solid, liquid, and vapor samples collected by the operator in a presumptively contaminated area. The MPCAD results will support the Commander's tactical and operational decisions regarding maneuver, protection, decontamination, and treatment measures. The Army and Marine Corps will employ MPCAD in Dismounted Reconnaissance and Site Assessment missions to substantiate presumptive detector results. The Air Force will employ the MPCAD to support Post-Event Reconnaissance in support of Reconnaissance and Surveillance missions by monitoring the environment at airbases after a chemical release. The Air Force will continuously monitor contaminated areas for chronic health effects levels through analysis of samples from collectors deployed at the contamination site and brought back to the analyzer for identification and quantification. This information will support commander decisions to determine Mission Oriented Protective Posture (MOPP) levels and eventual termination of cordon restrictions. In FY23, MPCAD will complete the LRIP contracts, systems engineering support, and complete operational testing.</p> <p>CSIRP is a prototyping and fielding effort that will focus on repackaging and integrating modular CBRN sensor solutions to enhance Unmanned Aircraft Systems (UAS) and Unmanned Ground Vehicles (UGV) to provide situational awareness across the echelons of command in order to enable freedom of maneuver and action on the battlefield. An integrated CSIRP capability will exploit advances in artificial intelligence, machine learning and autonomy, sensing and communication capabilities that enable timely and accurate detection, warning and reporting of CBRN hazards. This reduces risk at tactical and operational echelons in mounted and dismounted configurations. CSIRP gives the Joint Force an opportunity to enhance capabilities and maintain operational advantage in a lethal and sophisticated operating environment. In FY23, CSIRP will integrate a chemical sensor on a UAS to support NBCRV SSU program and continue user evaluation for other robotic platforms.</p> <p>The DBPAP program facilitates new technology transition to advanced development, efficient production, and timely distribution. The DBPAP serves as the principal resource for critical biological assays and reagents. The DBPAP also resources the Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC), which generates data on biodefense pathogens to inform product development. The DBPAP 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</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>
<p>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 TARMAC initiative, the DBPAP will use a systematic approach to the introduction of new materials and information into medical countermeasure development. This includes advanced platform technologies within the DoD's Advanced Development and manufacturing facility. In FY23 the DBPAP continues development/expansion of biological threat agent reference materials to known and emerging threats. The DBPAP Enhanced Biodefense effort will increase capabilities supporting biothreat identification and data information collection and management. The rapid detection and assessment of environmental biothreats and indicators of population-level exposure to enable and enhance force protection decisions and maintain lethality and Force operations tempo (OPTEMPO).</p> <p>The JBTDS is the first tactical lightweight, low-cost biological surveillance system to detect, collect, and identify Biological Warfare Agent (BWA) aerosols. JBTDS components are man-portable, battery operable and easy to employ by any military user. JBTDS provides notification of a hazard and enhances battle-space awareness to protect and preserve the forces and can archive a sample for follow up analysis. 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 which interfaces with the JBTDS identifier to support sensitive site exploitation missions. In FY23, JBTDS will conduct LRIP T&E.</p> <p>The NBCRV SSU provides maneuver formations with the ability to conduct mounted reconnaissance and surveillance missions of CBRN named areas of interest (NAIs). The NBCRV SSU will answer the commanders' priority intelligence requirements (PIR) and facilitate proactive risk-based decisions to ensure freedom of action and survivability. A modern and capable NBCRV SSU is a critical component for Joint Force success when operating in the complex CBRN environment. Operating with combat vehicles fighting against increasingly capable and determined enemies requires like capability in protection, mobility, and lethality. The NBCRV SSU will accomplish this by integrating the capability for command and control of unmanned systems with CBRN payload. The NBCRV SSU will provide a CBRN detection, tipping and queuing system to accomplish desired standoff distances to keep the warfighter out of harm's way and reduce sustainment costs over the current system. In FY23 the NBCRV SSU will complete Government Developmental and Operational Test to support a future Materiel Release decision.</p> <p>The NGDS 2 ChemDx program will provide a rapid, hand-held, point-of-care device, for the quantitative detection of acetyl cholinesterase (AChE) activity in finger stick and venous whole blood samples of individuals suspected of being exposed to cholinesterase inhibiting substances, such as chemical nerve agents. NGDS 2 ChemDx will be employed by the Army, Air Force, Navy, Marines and SOCOM at multiple echelons of healthcare. NGDS 2 ChemDx test results are to be used to aid in the diagnosis and treatment of individuals suspected of having exposure to chemical nerve agents. In FY23, NGDS 2 ChemDx continues Engineering & Manufacturing Development.</p> <p>The NGDS 2 MPDS program will provide a simple-to-use, portable diagnostic device capability that can be used in austere battlefield environments to assist in the diagnosis of infectious diseases and biological warfare agents. The MPDS will enable earlier patient diagnosis improve decision support for treatment, evacuation and command situational awareness, and mitigate the effects of exposure to unknown infectious disease and biological agents. In FY23, NGDS 2 MPDS concludes hardware, software, assay design, including planning for Initial Operational Test and Evaluation (IOT&E) and completion of two clinical trials, for the device and two assay panels, and continues development of third assay panel.</p> <p>SPU RCDD facilitates Joint Special Operations Command (JSOC) rapid response requirements to near-term and emergent chemical-biological defensive capabilities. This includes select elements from across the Special Operations Force (SOF) Enterprise such as Combatant Commanders Response Forces (CRFs) and other Joint</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) UN5 / Understand (SDD)		
<p>Force enabling units such as the 20th Chemical, Biological, Radiological, Nuclear and Explosives Command. SPU RCDD mitigates risk across the Chemical Biological Defense Program (CBDP) by creating a portfolio of operationally-relevant CB capabilities that can be quickly transitioned in response to the articulated, emergent capability needs of the geographic combatant commanders. These objectives are met by the early transitioning of promising science and technologies (S&T); the focused conduct of combat evaluations and mission-oriented operational assessments to assess technological and mission suitability; and the active leveraging of existing Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) products along with novel redesign approaches to optimize existing solutions to new challenges supported by "buy-try-decide-acquire" acquisition strategies. SPU RCDD initiates efforts such as respiratory breathing systems, biological identification, unmanned aerial and ground platform sensor integration, development of enhanced and augmented reality systems, and modernization of protective Chemical and Biological ensembles that have gone through requirements validation, and continues product enhancement development and technology upgrades on currently fielded SOF equipment to counter emerging threats, conduct limited user evaluations and operational assessment.</p> <p>The SPCHAR-ENBD (contact tracing) integrates innovative and emerging contact tracing capabilities into the pre-symptomatic exposure wearable system outlined in CB WEARABLES-ENBD. This effort will leverage on-going COVID-19 investments in contact tracing stemming from the joint service response to Joint Emergent Operational Needs Statement (JEONS) JS-0003. It will include person-worn digital proximity tools for logging close contacts with the infected. SPCHAR-ENBD directly supports the strategic goals of the Chemical Biological Defense Program's (CBDP's) Enhanced Biodefense effort.</p> <p>CB Wearables - ENBD will develop an integrated physiological monitoring and surveillance capability that leverages Artificial Intelligence / Machine Learning (AI/ML) analytics to detect and alert anomalies that may indicate exposure to Biological Warfare Agents (BWA) or other emerging threats. Directly interface and integrate with existing Joint Force computing environments to provide surveillance, detection, and situational understanding, and response planning of potential emerging threat outbreaks within the force. CB WEARABLES-ENBD directly supports the strategic goals of the CBDP's Enhanced Biodefense effort.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
<p>Title: 1) Aerosol & Vapor Chemical Agent Detector (AVCAD)</p> <p>Description: Product Development/Testing</p> <p>FY 2023 Plans: Complete Low Rate Initial Production (LRIP) contract activities and Pharmaceutical Based Agents (PBA) algorithm development to support the Full Rate Production decision. Continue Systems Engineering and other IPTs for product development and materiel release. Complete Multi-Service Operational Test and Evaluation (MOT&E) in support of a Full Rate Production decision.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$17.878 Million) remains in CA5. Product Development and Testing bullets in CA5 were merged into one bullet under UN5. Funding decrease due to Program transitions to Production/Deployment Phase in FY23.</p>		-	-	12.972
<p>Title: 2) Aerosol & Vapor Chemical Agent Detector (AVCAD)</p> <p>Description: Support Costs/Program Management</p>		-	-	3.972

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) UN5 / Understand (SDD)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2023 Plans: Continue Program management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking. Continue OGA Support for logistics and test evaluation results in support of a Full Rate Production decision.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.691 Million) remains in CA5. Minor change due to routine program adjustments.					
Title: 3) Compact Vapor Chemical Agent Detector (CVCAD) Description: Product Development and Program Management Support FY 2023 Plans: Initiate award Phase III engineering and development tasks following Milestone decision and programmatic activities. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in Project Contamination Avoidance (CA). Budget Activity 4 (BA4) funding ends in FY22 and BA5 funding line begins in FY23 to initiate Milestone B or Middle Tier Acquisition activities.			-	-	3.606
Title: 4) Special Purpose Unit Rapid Capability Development & Deployment (SPU RCDD) Description: Development of specialized equipment for agent-specific threats. FY 2023 Plans: Continue developing, prototyping, and maturing CBRND technologies to rapidly equip users with capabilities in response to new and emerging threats and opportunities. Continue developing SOCOM-specific Unmanned Ground Vehicle (UGV) and Unmanned Aerial Vehicle (UAV) sensor integration and closing JSOC capability gaps. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.581 Million) remains in IP5. Increase is to address additional JSOC-validated requirements in FY23.			-	-	6.863
Title: 5) Multi-Phase Chemical Agent Detector (MPCAD) Description: Product Development, Testing & Program Management FY 2023 Plans:			-	-	2.103

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Complete two Low Rate Initial Procurement (LRIP) contracts, Government and contracted Integrated Product Development team, systems engineering and IPT Support. Complete operational testing, OGA support of development and testing of MPCAD systems including development of logistics products, test plans, and reports. No additional LRIP test articles will be items purchased in FY23. Complete program management efforts including Government system engineering, program/financial management, costing, personnel support and travel. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$10.754 Million) remains in CA5. Funding decrease due to Program/project transitioned to Production and Deployment Phase. Bullets under CA5 moved to one bullet under UN5.					
Title: 6) CBRN Sensor Integration onto Robotic Platforms (CSIRP) Description: Product Development, Program Management, Test and Evaluation and Support. FY 2023 Plans: Continue chemical sensor integration on an Unmanned Air Systems (UAS) to support the NBCRV SSU program, as part of Prototype Plan #2. Continue coordination of demonstrations and test events for additional Service end users. Continue program office management and administration processes to include, but not limited to, program oversight, resource justification, budgeting and programming, milestone and schedule tracking. Continue evaluation of capability and development of CONOPS. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$16.581 Million) remains in CA5. Decrease due to fact of life change in the program/project.			-	-	12.730
Title: 7) NGDS 2 Chemical Diagnostic (NGDS 2 CHEMDX) Description: Chemical Diagnostic System (CHEMDX) FY 2023 Plans: Continue engineering and manufacturing development, conduct developmental and operational testing, and initiate clinical trials. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$4.929 Million) remains in MB5. Minor change due to routine program adjustments.			-	-	5.288
Title: 8) JBTDS Description: Test & Evaluation			-	-	2.596

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2023 Plans: Conduct Low Rate Initial Production T&E activities.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in CA5. Program/project transitioned to Production and Deployment Phase. BA5 funding decreases in FY23 as program completes EMD and prepares for MS C.					
Title: 9) NGDS 2 MPDS Description: Product Development FY 2023 Plans: Concludes hardware, software, assay development, and completes two clinical trials; starts a third clinical trial; management of hardware and software configurations. Plans for production. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.308 Million) remains in MB5. Program/project transitioned to Production and Deployment Phase.			-	-	6.914
Title: 10) CB WEARABLES - Enhanced Biodefense (ENBD) Description: This effort will focus on Wearables to Monitor for Pre-Symptomatic Exposure FY 2023 Plans: Develops, tests, and evaluates a series of interfaces that connect a family of wearable devices to service-operated combat networks and architectures operating within all phases of multi-domain operations. Conducts advanced development on algorithmic tools used to monitor and predict joint Warfighter exposure to emerging threats and CBRN hazards. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	38.700
Title: 11) SPCHAR - Enhanced Biodefense (ENBD) Description: This effort will focus on Innovative Contact Tracing FY 2023 Plans: Integrates innovative and emerging contact tracing capabilities stemming from the JEONS JS-0003 response into the pre-symptomatic exposure wearable system outlined in CB WEARABLES-ENBD. FY 2022 to FY 2023 Increase/Decrease Statement:			-	-	3.000

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) UN5 / <i>Understand (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Additional investment in enhanced biodefense and pandemic preparedness.					
Title: 12) DBPAP Description: Development FY 2023 Plans: Continue development/expansion of biological threat agents reference materials to known and emerging threats. Continue development of assays and nucleic acid based genomic assays to support fielded and developmental systems. Continue QA/QC testing to encompass the transition and fielding of biological detection assays. 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. Continue development of prototypes/information for strains contained in Unified Culture Collection. Supports establishment of a Common Reference Repository - a single source for well-characterized, traceable test articles and vital information for biological defense, effective verification of proficiency testing, improved acquisition of emerging technologies, all at a decreased cost for the individual organizations. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.043 Million) remains in MB5. Minor change due to routine program adjustments.			-	-	8.163
Title: 13) DBPAP - Enhanced Biodefense (ENBD) Description: Development FY 2023 Plans: Expansion of site locations for increased sequencing capabilities to monitor critical assay performance that detect biothreats, and exchange critical data (sequence information) collected at these sites. (One Site Per Year through FY28). Expanding the repository of collected biothreat genomic information to a government access controlled, cloud-based information center in order to support analytics from the field. Enable exchange of data by creating data compression/decompression capabilities prior to storage and retrieval on GARDIC. Expansion of biorepository of targeted biothreats and toxins strategically against emerging diseases and potential pandemics. Maintain information storage capabilities on DoD Accredited sites FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.			-	-	2.600
Title: 14) NBCRV SSU			-	-	15.224

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
Description: CBRN Sensor Development and Integration FY 2023 Plans: Continue government strategic planning, systems engineering, logistics, training, test and evaluation, technical support, integration, and system level developmental testing. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$18.159 Million) remains in CA5. Decrease due to less effort required because of work already completed and baseline of the system established with the Conditional Materiel Release version of the system. In FY23 primary focus will be on developing sensors and to integrate sensor suite prototype development for the final system configuration (Full Materiel Release version).			
Title: 15) NBCRV SSU Description: Program Management Support FY 2023 Plans: Continue program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.182 Million) remains in CA5. Minor change due to routine program adjustments		-	1.692
Title: 16) Advanced Emerging Threat (AET) Defense Description: This effort will focus on Expand capabilities of Defense Biological Product Assurance Office. This effort includes Program Management, Product Development, Support, and Testing of technologies that have been demonstrated to be TRL 6 or higher in order to rapidly field solutions to combat emerging threats. FY 2023 Plans: Continue efforts to leverage expanded requirements to broaden data set for emerging biological threats and PBAs. Produce additional data to better assess detection and decontamination capabilities against new requirements and inform rapid fielding decisions. Conduct field exercises to support Joint Service and interagency tactics, techniques, and procedures (TTP) development and gap analysis for materiel solutions. Assess potential upgrades to systems in the Engineering and Manufacturing Development (EMD) phase of acquisitions to add emerging threat capability prior to or shortly after fielding. FY 2022 to FY 2023 Increase/Decrease Statement:		-	1.248

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred from another Project due to budget restructure. FY22 funding (\$2.626 Million) remains in CA5. Decrease due to change in program/project schedule.			
Accomplishments/Planned Programs Subtotals	-	-	127.671

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CA4: <i>Contamination Avoidance (ACD&P)</i>	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• MB4: <i>Medical Biological Defense (ACD&P)</i>	42.993	47.351	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.344
• UN4: <i>Understand (ACD&P)</i>	0.000	0.000	57.908	-	57.908	55.291	59.174	57.358	33.474	Continuing	Continuing
• CA5: <i>Contamination Avoidance (SDD)</i>	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209
• IP5: <i>Individual Protection (SDD)</i>	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
• MB5: <i>Medical Biological Defense (SDD)</i>	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505
• IP7: <i>Individual Protection (Op Sys Dev)</i>	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• UN7: <i>Understand (Op Sys Dev)</i>	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• JX0210: <i>DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)</i>	2.845	2.760	2.736	-	2.736	2.736	2.736	2.736	2.736	Continuing	Continuing
• MX0001: <i>JOINT BIO TACTICAL DETECTION SYSTEM (JBTDs)</i>	0.000	17.060	11.193	-	11.193	21.424	22.238	17.385	44.150	Continuing	Continuing
• PHM018: <i>SPU RAPID CAPABILITY DEVELOPMENT AND DEMO (SPU RCDD)</i>	8.808	6.946	13.739	-	13.739	5.973	5.974	5.980	5.980	Continuing	Continuing
• SA0005: <i>CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)</i>	0.503	3.461	2.099	-	2.099	2.626	3.014	3.753	4.563	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• SA0015: AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)	0.000	0.000	0.000	-	0.000	66.193	78.210	69.497	81.409	Continuing	Continuing
• SA0017: MULTIPHASE CHEMICAL AGENT DETECTOR (MPCAD)	0.000	9.302	11.912	-	11.912	21.826	21.852	36.758	39.520	Continuing	Continuing
• SA0024: COMPACT VAPOR CHEMICAL AGENT DETECTOR (CVCAD)	0.000	0.000	0.000	-	0.000	0.000	0.000	11.854	9.444	Continuing	Continuing
• SA0043: NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEM DX)	0.000	0.000	0.000	-	0.000	7.778	12.730	12.730	12.730	Continuing	Continuing
• SA0044: NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)	0.000	4.624	3.126	-	3.126	4.915	5.374	3.006	0.538	Continuing	Continuing

Remarks

D. Acquisition Strategy

AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)

Aerosol & Vapor Chemical Agent Detector (AVCAD) awarded two MS B Engineering and Manufacturing Development (EMD) contracts with production options. The AVCAD program is conducting full EMD DT Record Testing in support of the Milestone C decision. If supported by EMD Test Data and funding, the program may conduct P&D phase testing with LRIP units from both vendors to promote FRP price competition.

COMPACT VAPOR CHEMICAL AGENT DETECTOR (CVCAD)

The CVCAD program will use the Combating Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) contract vehicle to transition four technologies from Science & Technology (S&T) into the program of record. This streamlined acquisition approach is broken into four phases uses one contracting mechanism to award one contract with follow-on acquisition awards; Phase I S&T advanced development, Phase II technology transition maturation evaluation, Phase III competitive prototyping down select and Engineering decision. CVCAD will brief Acquisition Steering Panel (ASP) in 2QFY23 to inform milestone decision and prepare for next milestone, Milestone B or Middle Tier Acquisition (MTA). Phase IV will execute Production and Development for low rate initial production systems.

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<p>SPU RAPID CAPABILITY DEVELOPMENT AND DEPLOYMENT (SPU RCDD)</p> <p>The SPU RCDD overall acquisition strategy allows for rapid prototyping and testing of mission critical capabilities needed to enhance mission success, and will use technical and functional evaluations of currently-fielded items to introduce and incorporate operationally-relevant system developments. This will be accomplished through competitive contracting vehicles and by awarding agreements under the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) for the development of prototype test assets. The OTA consists of a consortium of all potential industry, research institutions, and non-traditional government that could be potential solvers for the program, and will be used to procure test prototypes and test articles of possible solutions. Procurement will be through either the OTAs, a Small Business Innovative Research contract, or a more traditional contracting vehicle.</p> <p>MULTI-PHASE CHEMICAL AGENT DETECTOR (MPCAD)</p> <p>The Multi-Phase Chemical Agent Detector (MPCAD) (formerly NGCD 3) is using a streamlined acquisition strategy. The MPCAD contract(s) are utilizing the Countering Weapons of Mass Destruction (CWMD) Other Transaction Authority (OTA) for EMD and LRIP items. The MPCAD will procure production items through a follow-on Federal Acquisition Regulation based contract. The program will develop and validate the systems during EMD and LRIP utilizing two contractors to increase competition and minimize production price.</p> <p>CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)</p> <p>CSIRP is a streamlined and tailored acquisition effort to rapidly prototype and field CBRN payload capabilities for unmanned platforms. CSIRP will provide and integrate unmanned CBRN payload prototypes in cyclic prototyping plan cycles based on service requirements. The prototyping plans will use a streamlined acquisition process in order to keep pace with industry and the rapid advancement of technologies. The CSIRP strategy is to utilize the rapid prototyping process enabled by the Other Transactional Agreements (OTA) contract vehicle. Upon award, the awardees will have two to three years to produce prototype sensors that are integrated onto service selected (air and/or ground) platforms. These prototypes will be demonstrated, evaluated and tested by the Services as well as laboratories and academia. Successful prototypes will be transitioned to the platforms and services for the next steps in acquisition, production and eventual fielding across the services. BA4 funding provided market research to support the refinement and the building of technologically mature prototypes. BA5 funding provides integration, demonstrations, testing and operational assessments of prototypes to support transition decisions for residual capabilities and final configurations to Program of Record (PoR) or sustained capability.</p> <p>NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEMDX)</p> <p>NGDS Increment 2 ChemDx is using an Other Transactions Authority (OTA) agreement to take advantage of nontraditional Defense contractor offerings. NGDS 2 ChemDx will use the agreement holder to conduct system development, clinical trials and pre-developmental testing (pre-DT) testing. ChemDx will use Department of Defense (DoD) test agencies to conduct Development Testing and operational user evaluations. Clinical trials will inform approval of the ChemDx system by the U.S. Food and Drug Administration for "Prescription Home Use."</p>		

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<p>JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)</p> <p>The JBTDS program awarded a full and open contract to Chemring Sensors and Electronic Systems (CSES) in the 3rd Quarter of FY15 for Engineering and Manufacturing Development (EMD) with options for Low Rate Initial Production (LRIP) and Full Rate Production (FRP). The JBTDS program uses an evolutionary acquisition strategy. Under this approach, capability is developed based on current technologies, recognizing up front the need for potential technology insertion as technology advances to provide better and more cost effective capabilities. Technology insertions will provide militarily useful and supportable operational capabilities that can be developed, produced, deployed, and sustained. Based on the results at Biological Point System Assessment (BPSA), JBTDS selected integration with the TacBio2 as the detector and Joint Handheld Biological Identifier (JHBI) as the identification capability. These technologies will offer significant production and O&S cost savings.</p> <p>NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)</p> <p>NGDS 2 MPDS is currently in engineering and manufacturing development (EMD). MPDS is using Other Transactions Authority (OTA) agreements to take advantage of nontraditional Defense contractor offerings. MPDS will use the agreement holder to conduct the clinical trials and pre-developmental testing (pre-DT) instrument testing. MPDS will be using DoD clinical trial sites to support the agreement holder. MPDS will be using Department of Defense (DoD) agencies to conduct DT, operational assessment (OA), and Initial Operational Test & Evaluation (IOT&E). For the Production/Deployment Phase, the NGDS 2 MPDS will be using a COVID established Indefinite Delivery/Indefinite Quantity (IDIQ) contract with the EMD performer to procure prime mission product, support, and assays.</p> <p>CHEMICAL AND BIOLOGICAL WEARABLES-ENHANCED BIODEFENSE (CB WEARABLES-ENBD)</p> <p>CB Wearables-ENBD Develops deployable software algorithms and integrated wearable capabilities that combine emerging threat exposure with additional tactical, readiness, and performance monitoring functions. The system will include a family of wearable devices, predictive algorithms, and network interfaces operating securely on existing Joint Force networks. The desired outcome is a person-worn multi-functional capability that provides integrated early warning and surveillance of potential exposure and infection at the tactical and operational level throughout the Joint Force.</p> <p>SURVEILLANCE AND PATHOGEN CHARACTERIZATION-ENHANCED BIODEFENSE (SPCHAR-ENBD)</p> <p>SPCHAR-ENBD develops secure interfaces between the joint service contact tracing solutions emerging from the JEONS JS-0003 response and the pre-symptomatic exposure wearable capabilities outlined in CB WEARABLES-ENBD. The integrated system will provide case management contact tracing and digital proximity tools that enable commanders to identify, notify, monitor, and case manage service members that test positive for an emerging threat. The result is a consolidated system that 1) predicts potential infection via pre-symptomatic exposure wearable capabilities, and 2) directly supports and manages response actions for infected individuals.</p> <p>Pathogenicity Studies will investigate pathogenesis, biomarkers, endpoints, or disease surrogates of selected CBRN threat agents and/or verify usefulness of pathogenicity models. Results from these studies will be utilized to: identify targets for potential MCMs and MCM development, test and evaluate MCMs, and identify groups of CBRN threat agents that can be treated by broad-spectrum MCMs.</p>		

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<p>DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)</p> <p>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) as well as detection and diagnostic assays for bio-threat 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. DBPAP provides a centralized management function for the establishment of a common repository of standardized biological materials to effectively support the Department of Defense (DoD)'s and the Department of Homeland Security's (DHS) mission of providing consistent capabilities and a capacity for customers to mitigate biological events.</p> <p>DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM-ENHANCED BIODEFENSE (DBPAP-ENBD)</p> <p>The DBPAP strategy supports biodefense efforts, in part, through its Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) initiative. The support is directed at modernization and acceleration of these on-going activities i.e. expansion of sites for targeted acquisition of reference materials and information. Data generated through the use of products and partnership coordinated through TARMAC is collected and curated into a database otherwise known as the Government Assay and Reagents for Defense Information Center (GARDIC). This data is available to other agencies within the DOD and across the U.S. government. The DBPAP will continue to coordinate with international and interagency partners to set the conditions to sequence strains of interest that characterize the virus at fixed and far forward locations. Additionally, DBPAP works with allies and partners to generate data on pathogens of interest and analyze the data to inform product development. The DBPAP uses internally developed as well as commercially acquired analytical tools to determine the efficacy of the government assays and supports development of appropriate countermeasures. DBPAP will supports rapid innovation of new biological technologies by facilitating transitions and coordinating their advanced development, efficient production, and timely distribution.</p> <p>NBCRV SSU (NBCRV SSU)</p> <p>The acquisition strategy for the Stryker NBCRV SSU is to integrate mature sensors into the Stryker NBCRV to support the Joint Modernization Focused Assessment and system level testing. The Joint Modernization Command Focused Assessment provided user feedback and operational data to support programmatic and technical decisions. Following the testing and demonstration, the hardware and software was fixed and updated for government developmental and operational testing. Materiel Release decision will be held after system testing is conducted, to approve a Production Decision and Modification Work Order for fielding the first increment at an accelerated pace, defined as Capability Set 2.1 (CS2.1). Additional capability will be added to the system and tested as part of Capability Set 2.2 (CS2.2) in FY23-25. The production and fielding of both Capability Sets are funded using Army funds.</p> <p>ADVANCED AND EMERGING THREAT DEFENSE (AET DEFENSE)</p> <p>The AET Defense program will use a variety of acquisition approaches to survey, develop, assess, and rapidly field technologies to inform and fill advanced and emerging threat gaps. The program will utilize an existing Multiple Award Indefinite Delivery Indefinite Quantify Task Order Contract to provide technical support</p>		

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<p>to studies and assessments of performance against emerging threats. For Program of Record (PoR) systems currently in development that will be assessed for performance against emerging threats, those PoR's existing contracts will be modified to incorporate development engineering and test support for emerging threat capability. The AET Defense program will utilize OTAs for system development and prototyping activities and Government Agencies and Federally Funded Research and Development Centers to provide development, testing and technical support.</p>		

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Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) UN5 / Understand (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - SW C - PBA Development	C/CPIF	TBD : N/A	0.000	0.000		0.000		0.600	Nov 2022	0.000		0.600	Continuing	Continuing	0.000
AVCAD - HW P&D - Government Product Development Team Labor	MIPR	Various : Various	0.000	0.000		0.000		2.200	Nov 2022	0.000		2.200	Continuing	Continuing	0.000
AVCAD - HW S - P&D Contract- Smiths Detection	C/CPIF	Smiths Detection : Edgewood, MD	0.000	0.000		0.000		6.019	Nov 2022	0.000		6.019	Continuing	Continuing	0.000
CVCAD - HW S - CWMD OTA Phase 3 Task Awards	MIPR	Advanced Technologies International : Summerville, SC	0.000	0.000		0.000		3.572	Jun 2023	0.000		3.572	Continuing	Continuing	0.000
SPU RCDD - HW C - Prototype Procurement	Various	Various : Various	0.000	0.000		0.000		4.802	Dec 2022	0.000		4.802	Continuing	Continuing	0.000
MPCAD - HW S - EMD Contract - FLIR	C/CPFF	FLIR Systems : Inc., West Lafayette, IN	0.000	0.000		0.000		0.750	Nov 2022	0.000		0.750	Continuing	Continuing	0.000
MPCAD - PM/MS S - Government Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.200	Nov 2022	0.000		0.200	Continuing	Continuing	0.000
MPCAD - HW S - EMD Contract - Sig Sci	C/CPFF	Signature Science : Austin, TX	0.000	0.000		0.000		0.639	Nov 2022	0.000		0.639	Continuing	Continuing	0.000
CSIRP - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.900	Nov 2022	0.000		1.900	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSIRP - SW C - UAS and Sensor Manufacturing and Design	C/CPFF	T2S Solutions (T2S : LLC), Belcamp, MD	0.000	0.000		0.000		1.468	Nov 2022	0.000		1.468	Continuing	Continuing	0.000
CSIRP - SW C - Sensor Integration	C/CPFF	Charles Stark Draper Laboratories : Inc., Cambridge, MA	0.000	0.000		0.000		1.000	Nov 2022	0.000		1.000	Continuing	Continuing	0.000
CSIRP - HW C - UAS Manufacturing and Design	MIPR	Various : Various	0.000	0.000		0.000		3.000	Nov 2022	0.000		3.000	Continuing	Continuing	0.000
CSIRP - HW C - Contractor Product Development Team Labor	C/FFP	Kalman & Company Inc. : Virginia Beach, VA	0.000	0.000		0.000		0.500	Feb 2023	0.000		0.500	Continuing	Continuing	0.000
CSIRP - HW C - Chem Sensor Design	Various	Various : Various	0.000	0.000		0.000		1.300	Nov 2022	0.000		1.300	Continuing	Continuing	0.000
NGDS 2 CHEMDX - HW C - Product Management	Various	Various : Various	0.000	0.000		0.000		1.904	Dec 2022	0.000		1.904	Continuing	Continuing	0.000
NGDS 2 CHEMDX - HW C - Product Development	C/CPFF	MRIGlobal : Palm Bay, FL	0.000	0.000		0.000		1.248	Dec 2022	0.000		1.248	Continuing	Continuing	0.000
NGDS 2 MPDS - HW C - Product Management	Various	Various : Various	0.000	0.000		0.000		0.988	Dec 2022	0.000		0.988	Continuing	Continuing	0.000
NGDS 2 MPDS - HW C - Man Portable Diagnostic System (MPDS)	C/CPFF	Cepheid : Sunnyvale, CA	0.000	0.000		0.000		4.175	Dec 2022	0.000		4.175	Continuing	Continuing	0.000
CB WEARABLES-ENBD - HW C - Wearables Platform Development	C/CPFF	Various : Various	0.000	0.000		0.000		19.816	Jan 2023	0.000		19.816	Continuing	Continuing	0.000
CB WEARABLES-ENBD - SW C - Wearables Software Interface Development	C/CPFF	Various : Various	0.000	0.000		0.000		10.460	Jan 2023	0.000		10.460	Continuing	Continuing	0.000
SPCHAR-ENBD - SW C - JEONS JS 0003 Integration	C/CPFF	Various : Various	0.000	0.000		0.000		2.600	Jan 2023	0.000		2.600	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DBPAP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : Various	0.000	0.000		0.000		3.618	Mar 2023	0.000		3.618	Continuing	Continuing	0.000
DBPAP-ENBD - HW C - Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) initiative	MIPR	Various : Various	0.000	0.000		0.000		2.600	Feb 2023	0.000		2.600	Continuing	Continuing	0.000
NBCRV SSU - SW C - Integration	C/FFP	FLIR Systems Inc. : Elkridge, MD	0.000	0.000		0.000		2.223	Nov 2022	0.000		2.223	Continuing	Continuing	0.000
NBCRV SSU - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		2.535	Nov 2022	0.000		2.535	Continuing	Continuing	0.000
NBCRV SSU - HW C - Virtual Trainer	Various	Various : Various	0.000	0.000		0.000		1.419	Nov 2022	0.000		1.419	Continuing	Continuing	0.000
NBCRV SSU - HW C - Contractor Team Labor	C/FFP	Various : Various	0.000	0.000		0.000		0.549	Feb 2023	0.000		0.549	Continuing	Continuing	0.000
AET DEFENSE - SW C - Prototyping and Modification	Various	Various : Various	0.000	0.000		0.000		0.197	Feb 2023	0.000		0.197	Continuing	Continuing	0.000
AET DEFENSE - HW S - System Prototyping and Modification	Various	Various : Various	0.000	0.000		0.000		0.197	Feb 2023	0.000		0.197	Continuing	Continuing	0.000
AET DEFENSE - HW S - Emerging threat detection/decontamination/protection capability engineering development	Various	Various : Various	0.000	0.000		0.000		0.197	Jan 2023	0.000		0.197	Continuing	Continuing	0.000

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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			0.000	0.000		0.000		82.676		0.000		82.676	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - ES C - OGAs	MIPR	Various : Various	0.000	0.000		0.000		3.017	Nov 2022	0.000		3.017	Continuing	Continuing	0.000
SPU RCDD - ES C - Engineering Support	Various	Various : Various	0.000	0.000		0.000		0.626	Dec 2022	0.000		0.626	Continuing	Continuing	0.000
CSIRP - ES C - Eng Support	Various	Various : Various	0.000	0.000		0.000		0.390	Nov 2022	0.000		0.390	Continuing	Continuing	0.000
CB WEARABLES-ENBD - ES S - Wearables Systems Engineering Support Services	MIPR	Various : Various	0.000	0.000		0.000		4.023	Jan 2023	0.000		4.023	Continuing	Continuing	0.000
DBPAP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : Various	0.000	0.000		0.000		1.683	Mar 2023	0.000		1.683	Continuing	Continuing	0.000
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		0.000		1.699	Mar 2023	0.000		1.699	Continuing	Continuing	0.000
NBCRV SSU - ES C - Contract and Product Support	Various	Various : Various	0.000	0.000		0.000		1.350	Nov 2022	0.000		1.350	Continuing	Continuing	0.000
NBCRV SSU - ES C - Stryker NBCRV Maintenance	C/FFP	General Dynamics Land Systems : Detroit, MI	0.000	0.000		0.000		4.043	Nov 2022	0.000		4.043	Continuing	Continuing	0.000
NBCRV SSU - ILS C - Logistic Support	C/FFP	TBD : N/A	0.000	0.000		0.000		0.250	Nov 2022	0.000		0.250	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		17.081		0.000		17.081	Continuing	Continuing	N/A

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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - OTE C - DT/OT Test Activities	MIPR	Various : Various	0.000	0.000		0.000		3.300	Nov 2022	0.000		3.300	Continuing	Continuing	0.000
SPU RCDD - DTE C - Testing and Evaluation	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.449	Dec 2022	0.000		0.449	Continuing	Continuing	0.000
MPCAD - DTE C - DT/OT Chemical Chamber Event	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.164	Nov 2022	0.000		0.164	Continuing	Continuing	0.000
MPCAD - DTE C - Program Management Evaluation for Solid/Liquid Vapor Testing	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		0.150	Nov 2022	0.000		0.150	Continuing	Continuing	0.000
CSIRP - DTE C CSIRP Testing and Evaluation	Various	Various : Various	0.000	0.000		0.000		1.500	Nov 2022	0.000		1.500	Continuing	Continuing	0.000
CSIRP - DTE C	MIPR	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.000		0.000		0.400	Nov 2022	0.000		0.400	Continuing	Continuing	0.000
NGDS 2 CHEMDX - DTE S - Testing	MIPR	Various : Various	0.000	0.000		0.000		1.116	Dec 2022	0.000		1.116	Continuing	Continuing	0.000
JBTDS - DTE SB - Identifier Live Agent Trials / Developmental Testing	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.126	Nov 2022	0.000		1.126	Continuing	Continuing	0.000
JBTDS - DTE - Testing	MIPR	Various : Various	0.000	0.000		0.000		0.321	Nov 2022	0.000		0.321	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) UN5 / Understand (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - DTE - ARCA Chamber and Record Test Support	C/FFP	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		0.395	Jan 2023	0.000		0.395	Continuing	Continuing	0.000
JBTDS - OT - Operational Assessment	MIPR	Various : Various	0.000	0.000		0.000		0.754	Nov 2022	0.000		0.754	Continuing	Continuing	0.000
NGDS 2 MPDS - OTHT S - BSL4 Testing	MIPR	US Army Medical Research and Development Command (USAMRDC) : Fort Detrick, MD	0.000	0.000		0.000		0.286	Dec 2022	0.000		0.286	Continuing	Continuing	0.000
NGDS 2 MPDS - DTE S - System Test & Evaluation	MIPR	Various : Various	0.000	0.000		0.000		0.131	Dec 2022	0.000		0.131	Continuing	Continuing	0.000
CB WEARABLES-ENBD - DTE S - Wearables System DT&E	MIPR	Various : Various	0.000	0.000		0.000		0.725	Jan 2023	0.000		0.725	Continuing	Continuing	0.000
NBCRV SSU - DTE C - Test and Evaluation	Various	TBD : N/A	0.000	0.000		0.000		2.855	Nov 2022	0.000		2.855	Continuing	Continuing	0.000
AET DEFENSE - OTHT C - Product Demonstration Events for Users	MIPR	Various : Various	0.000	0.000		0.000		0.284	Feb 2023	0.000		0.284	Continuing	Continuing	0.000
AET DEFENSE - DTE S - Technology Assessments	Various	Various : Various	0.000	0.000		0.000		0.284	Dec 2022	0.000		0.284	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		14.240		0.000		14.240	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - PM/MS S - Program Management	MIPR	Various : Various	0.000	0.000		0.000		1.808	Nov 2022	0.000		1.808	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) UN5 / Understand (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CVCAD - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.034	Dec 2022	0.000		0.034	Continuing	Continuing	0.000
SPU RCDD - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.986	Dec 2022	0.000		0.986	Continuing	Continuing	0.000
MPCAD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.200	Nov 2022	0.000		0.200	Continuing	Continuing	0.000
CSIRP - PM/MS S Program Management Support	Various	Various : Various	0.000	0.000		0.000		1.272	Jan 2023	0.000		1.272	Continuing	Continuing	0.000
NGDS 2 CHEMDX - PM/MS S - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.000		1.020	Dec 2022	0.000		1.020	Continuing	Continuing	0.000
NGDS 2 MPDS - PM/MS S - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.000		1.334	Dec 2022	0.000		1.334	Continuing	Continuing	0.000
CB WEARABLES-ENBD - PM/MS C - Program Management	MIPR	Various : Various	0.000	0.000		0.000		3.676	Jan 2023	0.000		3.676	Continuing	Continuing	0.000
SPCHAR-ENBD - PM/MS C - Program Management	MIPR	Various : Various	0.000	0.000		0.000		0.400	Jan 2023	0.000		0.400	Continuing	Continuing	0.000
DBPAP - PM/MS C - Product Management Contractor Support	SS/FFP	Various : Various	0.000	0.000		0.000		1.163	Mar 2023	0.000		1.163	Continuing	Continuing	0.000
NBCRV SSU - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		1.692	Jan 2023	0.000		1.692	Continuing	Continuing	0.000
AET DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO- CBRND)	0.000	0.000		0.000		0.089	Dec 2022	0.000		0.089	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		13.674		0.000		13.674	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program											Date: April 2022			
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) UN5 / Understand (SDD)				
		Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	0.000		0.000		127.671		0.000		127.671	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AVCAD - EMD Contract																												
AVCAD - MS C																												
AVCAD - LRIP																												
AVCAD - FRP Decision																												
AVCAD - IOC																												
CVCAD - CDD																												
CVCAD - Milestone B																												
CVCAD - Critical Design Review																												
CVCAD - CPD																												
CVCAD - Milestone C																												
SPU RCDD - Low Temperature Plasma Mass Spectrometer (LTPMS)																												
SPU RCDD - Development Efforts																												
SPU RCDD - SEDS Prototype																												
SPU RCDD - CBRN Hydration Resupply																												
SPU RCDD - Assault Respirator																												
SPU RCDD - USSOCOM-specific UGV_UAS Sensor Integration																												
MPCAD - EMD Contract																												
MPCAD - MS C																												
MPCAD - LRIP																												
MPCAD - FRP Decision																												
CSIRP - Transition Decision - Prototyping Plan #1																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																			Date: April 2022									
Appropriation/Budget Activity									R-1 Program Element (Number/Name)									Project (Number/Name)										
0400 / 5									PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)									UN5 / Understand (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CSIRP - Request for White Papers - Prototyping Plan #2																												
CSIRP - OTA Award and Execution for Prototyping Plan #2																												
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #2																												
CSIRP - Transition Decision - Prototyping Plan #2																												
CSIRP - Request for White Papers - Prototyping Plan #3																												
CSIRP - OTA Award and Execution for Prototyping Plan #3																												
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #3																												
NGDS 2 CHEMDX Increment 2 - MS B																												
NGDS 2 CHEMDX Increment 2 - EMD																												
NGDS 2 CHEMDX Increment 2 - MS C																												
JBTDS - Milestone C																												
JBTDS - LRIP Contract Award																												
JBTDS - LRIP Production																												
JBTDS - PVT																												
JBTDS - MOT&E																												
JBTDS - FRP Decision																												
JBTDS - FRP Award																												
JBTDS - IOC																												
NGDS 2 MPDS - EMD																												
NGDS 2 MPDS - MS C / LRIP																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								UN5 / Understand (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NGDS 2 MPDS - FRP																												
CB WEARABLES-ENBD - Wearables CDD																												
CB WEARABLES-ENBD - Software Development & Integration																												
SPCHAR-ENBD - Integration OTA Release (Wearables)																												
SPCHAR-ENBD - Contact Tracing Integration into CB Wearables - ENBD																												
DBPAP - Expand Select Biological Threat Agent Reference Material																												
DBPAP - Development and Implementation of Quality Initiatives																												
DBPAP - Optimization and Development of Nucleic Acid Assays																												
DBPAP - ISO Certification																												
DBPAP - PCR assay validation																												
DBPAP - Enabling early warning tools and information exchange																												
DBPAP - Surveillance capabilities																												
DBPAP-ENBD - Expansion of Site Locations for Sequencing Capabilities																												
DBPAP-ENBD - Expanding the Repository of Collected Biothreat Genomic Information																												
DBPAP-ENBD - Data Compression/Decompression Capabilities																												
DBPAP-ENBD - Expansion of Biorepository																												
DBPAP-ENBD - Maintain Information Storage Capabilities																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
NBCRV SSU - Component Test & System Level Test 1																												
NBCRV SSU - Modification Work Order IPR																												
NBCRV SSU - Design and Fabrication Phase 3 (CS2.2)																												
NBCRV SSU - Limited User Test (LUT)																												
AET DEFENSE - Technology Assessments																												
AET DEFENSE - Systems Engineering/ Program Management																												
AET DEFENSE - System Development and Prototyping																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AVCAD - EMD Contract	1	2021	2	2023
AVCAD - MS C	2	2023	2	2023
AVCAD - LRIP	2	2023	1	2025
AVCAD - FRP Decision	1	2025	1	2025
AVCAD - IOC	2	2027	2	2027
CVCAD - CDD	2	2023	2	2023
CVCAD - Milestone B	4	2023	4	2023
CVCAD - Critical Design Review	3	2024	3	2024
CVCAD - CPD	3	2025	3	2025
CVCAD - Milestone C	4	2025	4	2025
SPU RCDD - Low Temperature Plasma Mass Spectrometer (LTPMS)	2	2021	2	2023
SPU RCDD - Development Efforts	1	2021	4	2027
SPU RCDD - SEDS Prototype	1	2021	4	2021
SPU RCDD - CBRN Hydration Resupply	1	2021	4	2022
SPU RCDD - Assault Respirator	1	2021	4	2022
SPU RCDD - USSOCOM-specific UGV_UAS Sensor Integration	3	2021	4	2023
MPCAD - EMD Contract	1	2021	3	2022
MPCAD - MS C	4	2022	4	2022
MPCAD - LRIP	4	2022	3	2024
MPCAD - FRP Decision	4	2024	4	2024
CSIRP - Transition Decision - Prototyping Plan #1	3	2022	3	2022
CSIRP - Request for White Papers - Prototyping Plan #2	4	2021	1	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) UN5 / <i>Understand (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
CSIRP - OTA Award and Execution for Prototyping Plan #2	3	2022	3	2025
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #2	3	2023	3	2025
CSIRP - Transition Decision - Prototyping Plan #2	3	2025	3	2025
CSIRP - Request for White Papers - Prototyping Plan #3	4	2024	1	2025
CSIRP - OTA Award and Execution for Prototyping Plan #3	3	2025	4	2027
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #3	3	2026	4	2027
NGDS 2 CHEMDX Increment 2 - MS B	1	2022	1	2022
NGDS 2 CHEMDX Increment 2 - EMD	1	2022	3	2024
NGDS 2 CHEMDX Increment 2 - MS C	3	2024	3	2024
JBTDS - Milestone C	4	2022	4	2022
JBTDS - LRIP Contract Award	4	2022	4	2022
JBTDS - LRIP Production	4	2022	4	2023
JBTDS - PVT	1	2023	3	2023
JBTDS - MOT&E	1	2023	2	2023
JBTDS - FRP Decision	1	2024	1	2024
JBTDS - FRP Award	1	2024	1	2024
JBTDS - IOC	4	2027	4	2027
NGDS 2 MPDS - EMD	1	2021	1	2024
NGDS 2 MPDS - MS C / LRIP	2	2023	2	2023
NGDS 2 MPDS - FRP	2	2024	2	2024
CB WEARABLES-ENBD - Wearables CDD	2	2022	2	2023
CB WEARABLES-ENBD - Software Development & Integration	2	2023	1	2025
SPCHAR-ENBD - Integration OTA Release (Wearables)	1	2022	4	2022
SPCHAR-ENBD - Contact Tracing Integration into CB Wearables - ENBD	2	2023	4	2023
DBPAP - Expand Select Biological Threat Agent Reference Material	1	2021	4	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program				Date: April 2022	
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) UN5 / <i>Understand (SDD)</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
DBPAP - Development and Implementation of Quality Initiatives	1	2021	4	2027	
DBPAP - Optimization and Development of Nucleic Acid Assays	1	2021	4	2027	
DBPAP - ISO Certification	1	2021	4	2027	
DBPAP - PCR assay validation	1	2021	4	2027	
DBPAP - Enabling early warning tools and information exchange	1	2021	4	2027	
DBPAP - Surveillance capabilities	1	2021	4	2027	
DBPAP-ENBD - Expansion of Site Locations for Sequencing Capabilities	1	2023	4	2027	
DBPAP-ENBD - Expanding the Repository of Collected Biothreat Genomic Information	1	2023	4	2027	
DBPAP-ENBD - Data Compression/Decompression Capabilities	1	2023	4	2027	
DBPAP-ENBD - Expansion of Biorepository	1	2023	4	2027	
DBPAP-ENBD - Maintain Information Storage Capabilities	1	2023	4	2027	
NBCRV SSU - Component Test & System Level Test 1	4	2021	4	2023	
NBCRV SSU - Modification Work Order IPR	3	2023	4	2023	
NBCRV SSU - Design and Fabrication Phase 3 (CS2.2)	4	2023	4	2024	
NBCRV SSU - Limited User Test (LUT)	3	2023	4	2023	
AET DEFENSE - Technology Assessments	1	2022	4	2027	
AET DEFENSE - Systems Engineering/Program Management	1	2022	4	2027	
AET DEFENSE - System Development and Prototyping	1	2022	4	2027	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CA5: Contamination Avoidance (SDD)	-	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development (EMD) and Low Rate Initial Production (LRIP) of an array of reconnaissance, detection and identification equipment, and warning systems. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. CA5 efforts in FY2022 progress to the Understand (UN5) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Aerosol & Vapor Chemical Agent Detector (AVCAD) ****Progresses to UN5 in FY2023****,
- (2) Multi-Phase Chemical Agent Detector (MPCAD) ****Progresses to UN5 in FY2023****,
- (3) Chemical Biological Radiological and Nuclear (CBRN) Sensor Integration on Robotics Platforms (CSIRP) ****Progresses to UN5 in FY2023****,
- (4) Compact Vapor Chemical Agent Detector (CVCAD) ****Progresses to UN5 in FY2023****,
- (5) Joint Biological Tactical Detection System (JBTDs) ****Progresses to UN5 in FY2023****,
- (6) Joint Nuclear Biological Chemical Radiological System (JNBCRS) 1, renamed NBCRV SSU in FY22
- (7) Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU) ****Progresses to UN5 in FY2023****,
- (8) Mounted Enhanced Radiac Long Range Imaging Networkable (MERLIN),
- (9) Non-Traditional Agent Defense (NTA DEFENSE),
- (10) Advanced Emerging Threat Defense (AET DEFENSE) ****Progresses to UN5 in FY2023****, and
- (11) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA)

The AVCAD is a man portable system to detect aerosol and vapor chemical agents. AVCAD fills critical gaps in current Joint Force chemical sensor capabilities, in the areas of liquid, solid and dusty aerosol Chemical Warfare Agent detection, and detection of specific advanced threats/Non-Traditional Agents. The AVCAD will also detect low-level off-gassing, or residual vapors, to prevent/mitigate health effects associated with low concentration exposures, and perform remote alarm warning and reporting. AVCAD will support chemical and biological defense missions, including monitoring, collective protection, base defense, decontamination, unmasking, reconnaissance, and shipboard and aviation platform chemical detection. In FY23, AVCAD will award the LRIP option and start P&D Testing.

The MPCAD is a two-person portable system that will conduct near real-time, near-laboratory grade analysis of solid, liquid, and vapor samples collected by the operator in a presumptively contaminated area. The MPCAD results will support the Commander's tactical and operational decisions regarding maneuver, protection, decontamination, and treatment measures. The Army and Marine Corps will employ MPCAD in Dismounted Reconnaissance and Site Assessment missions to

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CA5 / <i>Contamination Avoidance (SDD)</i>
<p>substantiate presumptive detector results. The Air Force will employ the MPCAD to support Post-Event Reconnaissance in support of Reconnaissance and Surveillance missions by monitoring the environment at airbases after a chemical release. The Air Force will continuously monitor contaminated areas for chronic health effects levels through analysis of samples from collectors deployed at the contamination site and brought back to the analyzer for identification and quantification. This information will support commander decisions to determine Mission Oriented Protective Posture (MOPP) levels and eventual termination of cordon restrictions. In FY23, MPCAD will complete the LRIP contracts, systems engineering support, and complete operational testing.</p> <p>CSIRP is a prototyping and fielding effort that will focus on repackaging and integrating modular CBRN sensor solutions to enhance Unmanned Aircraft Systems (UAS) and Unmanned Ground Vehicles (UGV) to provide situational awareness across the echelons of command in order to enable freedom of maneuver and action on the battlefield. An integrated CSIRP capability will exploit advances in artificial intelligence, machine learning and autonomy, sensing and communication capabilities that enable timely and accurate detection, warning and reporting of CBRN hazards. This reduces risk at tactical and operational echelons in mounted and dismounted configurations. CSIRP gives the Joint Force an opportunity to enhance capabilities and maintain operational advantage in a lethal and sophisticated operating environment. In FY23, CSIRP will integrate a chemical sensor on a UAS to support NBCRV SSU program, initiate integration on USV to support USN/USMC, and continue user evaluation for other robotic platforms.</p> <p>The JBTDS is the first tactical lightweight, low-cost biological surveillance system to detect, collect, and identify Biological Warfare Agent (BWA) aerosols. JBTDS components are man-portable, battery operable and easy to employ by any military user. JBTDS provides notification of a hazard and enhances battle-space awareness to protect and preserve the forces and can archive a sample for follow up analysis. 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 which interfaces with the JBTDS identifier to support sensitive site exploitation missions. In FY23, JBTDS will conduct LRIP T&E.</p> <p>The JNBCRS 1, renamed NBCRV SSU in FY22, provides maneuver formations the ability to conduct mounted reconnaissance and surveillance missions of CBRN named areas of interest (NAIs). The NBCRV SSU will answer the commander's priority intelligence requirements (PIR), and facilitate proactive risk-based decisions to ensure freedom of action and survivability. A modern and capable NBCRV SSU is a critical component for Joint Force success when operating in the complex CBRN environment. Operating with combat vehicles fighting against increasingly capable and determined enemies requires like capability with regard to protection, mobility, and lethality. The NBCRV SSU will accomplish this by integrating the capability for command and control of unmanned systems with CBRN payload. The NBCRV SSU will provide a CBRN detection, tipping and queueing to accomplish desired standoff distances to keep the warfighter out of harm's way and reduce sustainment costs over the current system. In FY22 the NBCRV SSU will continue Government Developmental and Operational Test to support a future Materiel Release decision.</p> <p>MERLIN is a set of externally mounted sensors used in joint operations on the Stryker NBCRV Sensor Suite Upgrade with the potential for integration on other Army platforms within the formation. The system supports manned and unmanned platform-mounted reconnaissance and surveillance of radiological and nuclear hazards at standoff distances. It is the first and only standoff radiological and nuclear detection capability for the Army; all previously fielded detectors require platforms to travel dangerously close to hazardous areas to detect radiological threats, which puts manned platform crews at risk of radiation exposure and presents contamination issues for the vehicle (be it manned or unmanned). The MERLIN funding in FY21 supported integration of the MERLIN system designed for the NBCRV SSU.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / Contamination Avoidance (SDD)		
<p>The AET DEFENSE program, formerly known as the NTA DEFENSE program, continues to address the highest priority CBRN gaps and supports the Chemical Biological Defense Program (CBDP) Strategic Line of Effort to meet current and emerging threats by anticipating CB hazards and developing capabilities to counter emerging and future threats. The AET Defense program collaborates with the Joint Services, interagency, and international partners to align RDT&E resources to determine readiness against emerging threats, to include NTAs, such as Novichoks and Pharmaceutical-Based Agents (PBA) (e.g. synthetic opioids), emerging biological threats, and other advanced and emerging threats as they are identified across the entire CBDP enterprise portfolio. NTA DEFENSE efforts transition to the AET DEFENSE program in FY22 to better align with strategic guidance and expand to threats beyond those identified specifically as NTAs. In FY23, AET Defense continues to broaden data set for emerging biological threats and PBSs to better assess detection and decontamination capabilities.</p> <p>The ROSETTA is a modernization effort to provide a higher confidence chemical hazard detection tickets in the currently fielded M256A2 kit for the Warfighter to make timely decisions for the general forces. These decisions will reduce casualties and improve the combat effectiveness of troops engaged in conflicts involving the use of chemical threats. ROSETTA is based on colorimetric technologies and will be eye-readable and ease the Warfighter from current training and operational burden. In addition, the ROSETTA tickets will provide improved hazard detection performance with reduced false alarm rate, potential for increased number of chemicals detected, reduced detection time especially for compounds of interest (CWAs, PBAs, NTAs and TICs), and potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. In FY22, ROSETTA will transition to BA7 funding line to continue modernization efforts that include developmental and Testing for Vapor.</p> <p>CVCAD is designed to be an unobtrusive, low-profile chemical detection capability that will continuously, and autonomously, monitor and alert general and specialized units to an unsafe environment without further burdening the warfighters payload or interfering with the primary mission. The small form factor is amenable to both man-worn and unmanned aerial or ground system operations to enable timely personnel protective action and other force protection decisions. In FY23 the four competing prototypes will undergo down selects based on performance to prepare for Milestone B and EMD awards in FY23.</p>				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Title: 1) Aerosol & Vapor Chemical Agent Detector (AVCAD)		18.730	12.745	-
Description: Product Development				
FY 2022 Plans: Continue EMD Phase of development contracts in support of system reliability improvement data for MS C and LRIP decisions. Continue Systems Engineering and other IPTs for product development of AVCAD.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.				
Title: 2) Aerosol & Vapor Chemical Agent Detector (AVCAD)		5.805	5.133	-
Description: Test and Evaluation				
FY 2022 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CA5 / <i>Contamination Avoidance (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
Complete EMD chamber testing and Soldier Touch Point to collect system reliability improvement data for Operational Test Agency Milestone Assessment Report in support of Milestone C.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.			
Title: 3) Aerosol & Vapor Chemical Agent Detector (AVCAD) Description: Management Services FY 2022 Plans: Continue Program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.		3.603	3.441
Title: 4) Aerosol & Vapor Chemical Agent Detector (AVCAD) Description: Support Costs - OGA Support costs for logistics, test evaluation results and safety and reliability. FY 2022 Plans: Continue OGA Support for logistics and test evaluation results in support of MS C decision. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.		1.832	1.250
Title: 5) ROSETTA (M8) Description: Product Development & Technical Assessment of the M256A2 Kit. FY 2022 Plans: Continue program management and transition to TACOM including initial 6 month supply of ROSETTA M8 tickets. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. Rosetta efforts transition to Budget Activity BA7 starting in FY22 under Project CA7. FY23 funding transfers to new Project UN7. Engineering change proposal (ECP) to existing M256A2 kit.		6.566	1.037
Title: 6) Multi-Phase Chemical Agent Detector (MPCAD) Description: Product Development		18.800	6.271

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)		Project (Number/Name) CA5 / Contamination Avoidance (SDD)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
FY 2022 Plans: Continue both contracts, Government and contracted Integrated Product Development team, systems engineering and IPT Support. Conduct LRIP Liquid/Solid testing and operational testing. Continue EMD Vapor development and testing.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.					
Title: 7) Multi-Phase Chemical Agent Detector (MPCAD) Description: Testing			10.658	3.323	-
FY 2022 Plans: Complete LRIP Liquid/Solid testing and continue EMD vapor testing. Continue OGA support of development and testing of MPCAD systems including development of logistics products, test plans, and reports.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.					
Title: 8) Multi-Phase Chemical Agent Detector (MPCAD) Description: Program Management Support			3.321	1.160	-
FY 2022 Plans: Continue Program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.					
Title: 9) CBRN Sensor Integration onto Robotic Platforms (CSIRP) Description: Product Development, Program Management, Test and Evaluation and Support.			10.861	16.581	-
FY 2022 Plans: Prototype #2 will continue multiple sensor integration efforts to improve on Prototype #1 for unmanned ground and air platforms for multiple services. Continue coordination of demonstrations and test events for additional service end users evaluating the capabilities of the integrated sensor prototypes onto the Unmanned Air Systems (UAS) and Unmanned Ground Vehicles (UGV). Continue Program office management and administration processes to include but not limited to program oversight, resource					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) CA5 / Contamination Avoidance (SDD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
justification, budgeting and programming, milestone and schedule tracking. Initiate evaluation of capability and development of CONOPS.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$12.730 Million) transferred to UN5.				
Title: 10) JBTDS Description: EMD Contract & Program Management FY 2022 Plans: Continue program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking. Conduct failure analysis and corrective action of issues identified in EMD testing. Complete preparation of MS C documents, negotiate and award LRIP contract. Conduct a Milestone C decision and move into Low Rate Initial Production (LRIP). FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5. Program completes EMD and completes MS C in FY23.		7.792	1.620	-
Title: 11) JBTDS Description: Test & Evaluation FY 2022 Plans: Complete Engineering Manufacturing and Development (EMD) and Operational Evaluation Report (OER). Finalize development of TEMP update to support MS C. Conduct Low Rate Initial Production (LRIP) testing, continue combat developer and test community support. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.		7.782	5.767	-
Title: 12) JNBCRS 1 (NBCRV SSU) Description: CBRN Sensor Development and Integration		26.508	-	-
Title: 13) JNBCRS 1 (NBCRV SSU) Description: Program Management Support		3.252	-	-
Title: 14) NBCRV SSU		-	18.159	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Description: CBRN Sensor Development and Integration				
FY 2022 Plans: Continue CBRN sensor and integrated sensor suite prototype development, maturation, and procurement. Continue government strategic planning, systems engineering, logistics, training, test and evaluation, technical support, integration, and the bulk of component and system level developmental testing.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$15.224 Million) transferred to UN5.				
Title: 15) NBCRV SSU		-	3.182	-
Description: Program Management Support				
FY 2022 Plans: Continue program office management and administration processes to include but not limited to program oversight, resource justification, budgeting and programming, milestone and schedule tracking.				
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.692 Million) transferred to UN5.				
Title: 16) Mounted Enhanced Radiac Long Range Imaging Networkable (MERLIN)		1.249	-	-
Description: Risk reduction efforts for integration onto Army platforms.				
Title: 17) NTA Defense		3.155	-	-
Description: Program Management, Product Development, Support, and Testing of technologies that have been demonstrated to be TRL 6 or higher in order to rapidly field solutions to combat emerging threats.				
Title: 18) Advanced Emerging Threat (AET) Defense		-	2.626	-
Description: Program Management, Product Development, Support, and Testing of technologies that have been demonstrated to be TRL 6 or higher in order to rapidly field solutions to combat emerging threats.				
FY 2022 Plans: Continue efforts from NTA Defense to leverage expanded requirements to broaden data set for emerging biological threats and PBAs. Produce additional data to better assess detection and decontamination capabilities against new requirements and inform rapid fielding decisions. Conduct table top exercises and field exercises to support Joint Service and interagency tactics,				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
techniques, and procedures (TTP) development and gap analysis for materiel solutions. Assess potential upgrades to systems in the Engineering and Manufacturing Development (EMD) phase of acquisitions to add emerging threat capability prior to or shortly after fielding.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.248 Million) transferred to UN5.												
Accomplishments/Planned Programs Subtotals										129.914	82.295	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290	
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing	
• CA7: Contamination Avoidance (Op Sys Dev)	14.557	15.051	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.608	
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing	
• MC0100: JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)	1.433	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.433	
• MX0001: JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)	0.000	17.060	11.193	-	11.193	21.424	22.238	17.385	44.150	Continuing	Continuing	
• SA0005: CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)	0.503	3.461	2.099	-	2.099	2.626	3.014	3.753	4.563	Continuing	Continuing	
• SA0015: AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)	0.000	0.000	0.000	-	0.000	66.193	78.210	69.497	81.409	Continuing	Continuing	
• SA0017: MULTIPHASE CHEMICAL AGENT DETECTOR (MPCAD)	0.000	9.302	11.912	-	11.912	21.826	21.852	36.758	39.520	Continuing	Continuing	
• SA0046: MOUNTED ENHANCED RADIAC LONG RANGE IMAGING NETWORKABLE (MERLIN)	0.146	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.146	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Remarks											
D. Acquisition Strategy											
AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)											
Aerosol & Vapor Chemical Agent Detector (AVCAD) awarded two MS B Engineering and Manufacturing Development (EMD) contracts with production options. The AVCAD program is conducting full EMD DT Record Testing in support of the Milestone C decision. If supported by EMD Test Data and funding, the program may conduct P&D phase testing with LRIP units from both vendors to promote FRP price competition.											
REACTIVE CHEMISTRY ORTHOGONAL SURFACE AND ENVIRONMENTAL THREAT TICKET ARRAY (ROSETTA)											
ROSETTA will use a streamlined approach to rapidly field multiple components of the modernization of the M256A2 kit. This approach is based on technology that will transition from Science and Technology Efforts and/or commercial off the shelf (COTS) products to the M256 kit. These efforts will utilize multiple contract vehicles including Countering Weapons of Mass Destruction (CWMD) Other Transactional Authority (OTA) and Joint Enterprise- Research, Development, Acquisition, Production/Procurement (JERDAP) in order to streamline the acquisition of the products. The ROSETTA funding will complete the acquisition of the M8 component to the M256 kit and will support the acquisition of a PBA ticket, the M256 vapor unmasking tool, and the other NTAs and TICs. These products will be transitioned to TACOM for production.											
MULTI-PHASE CHEMICAL AGENT DETECTOR (MPCAD)											
The Multi-Phase Chemical Agent Detector (MPCAD) (formerly NGCD 3) is using a streamlined acquisition strategy. The MPCAD contract(s) are utilizing the Countering Weapons of Mass Destruction (CWMD) Other Transaction Authority (OTA) for EMD and LRIP items. The MPCAD will procure production items through a follow-on Federal Acquisition Regulation based contract. The program will develop and validate the systems during EMD and LRIP utilizing two contractors to increase competition and minimize production price.											
CBRN SENSOR INTEGRATION ON ROBOTIC PLATFORMS (CSIRP)											
CSIRP is a streamlined and tailored acquisition effort to rapidly prototype and field CBRN payload capabilities for unmanned platforms. CSIRP will provide and integrate unmanned CBRN payload prototypes in cyclic prototyping plan cycles based on service requirements. The prototyping plans will use a streamlined acquisition process in order to keep pace with industry and the rapid advancement of technologies. The CSIRP strategy is to utilize the rapid prototyping process enabled by the Other Transactional Agreements (OTA) contract vehicle. Upon award, the awardees will have two to three years to produce prototype sensors that are integrated onto service selected (air and/or ground) platforms. These prototypes will be demonstrated, evaluated and tested by the Services as well as laboratories and academia.											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
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<p>Successful prototypes will be transitioned to the platforms and services for the next steps in acquisition, production and eventual fielding across the services. BA4 funding provided market research to support the refinement and the building of technologically mature prototypes. BA5 funding provides integration, demonstrations, testing and operational assessments of prototypes to support transition decisions for residual capabilities and final configurations to Program of Record (PoR) or sustained capability.</p> <p>JOINT BIO TACTICAL DETECTION SYSTEM (JBTDs)</p> <p>The JBTDs program awarded a full and open contract to Chemring Sensors and Electronic Systems (CSES) in the 3rd Quarter of FY15 for Engineering and Manufacturing Development (EMD) with options for Low Rate Initial Production (LRIP) and Full Rate Production (FRP). The JBTDs program uses an evolutionary acquisition strategy. Under this approach, capability is developed based on current technologies, recognizing up front the need for potential technology insertion as technology advances to provide better and more cost effective capabilities. Technology insertions will provide militarily useful and supportable operational capabilities that can be developed, produced, deployed, and sustained. Based on the results at Biological Point System Assessment (BPSA), JBTDs selected integration with the TacBio2 as the detector and Joint Handheld Biological Identifier (JHBI) as the identification capability. These technologies will offer significant production and O&S cost savings.</p> <p>JOINT NBC RECONNAISSANCE SYSTEM - STRYKER (JNBCRS)</p> <p>Joint Nuclear Biological Chemical Radiological System (JNBCRS) was renamed to the Stryker Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU) starting in FY22.</p> <p>NBCRV SSU (NBCRV SSU)</p> <p>The acquisition strategy for the Stryker NBCRV SSU is to integrate mature sensors into the Stryker NBCRV to support the Joint Modernization Focused Assessment and system level testing. The Joint Modernization Command Focused Assessment provided user feedback and operational data to support programmatic and technical decisions. Following the testing and demonstration, the hardware and software was fixed and updated for government developmental and operational testing. Materiel Release decision will be held after system testing is conducted, to approve a Production Decision and Modification Work Order for fielding the first increment at an accelerated pace, defined as Capability Set 2.1 (CS2.1). Additional capability will be added to the system and tested as part of Capability Set 2.2 (CS2.2) in FY23-25. The production and fielding of both Capability Sets are funded using Army funds.</p> <p>MOUNTED ENHANCED RADIAC LONG RANGE IMAGING NETWORKABLE (MMPRDS MERLIN)</p> <p>The MERLIN BA5 line covers risk reduction efforts for the integration of the MERLIN system onto the NBCRV SSU. The work was accomplished through competition using an Other Transaction Authority (OTA) utilizing the Countering Weapons of Mass Destruction (CWMD) OTA.</p> <p>NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) <i>CA5 / Contamination Avoidance (SDD)</i>
<p>The NTA Defense program transitions to the AET DEFENSE program starting in FY22.</p> <p>ADVANCED AND EMERGING THREAT DEFENSE (AET DEFENSE)</p> <p>The AET Defense program will use a variety of acquisition approaches to survey, develop, assess, and rapidly field technologies to inform and fill advanced and emerging threat gaps. The program will utilize an existing Multiple Award Indefinite Delivery Indefinite Quantify Task Order Contract to provide technical support to studies and assessments of performance against emerging threats. For Program of Record (PoR) systems currently in development that will be assessed for performance against emerging threats, those PoR's existing contracts will be modified to incorporate development engineering and test support for emerging threat capability. The AET Defense program will utilize OTAs for system development and prototyping activities and Government Agencies and Federally Funded Research and Development Centers to provide development, testing and technical support.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - HW - Government Product Development Team Labor	MIPR	Various : Various	2.168	2.352	Nov 2020	1.303	Nov 2021	0.000		0.000		0.000	0.000	5.823	0.000
AVCAD - HW S - EMD Contract- Smiths Detection	C/CPIF	Smiths Detection : Edgewood, MD	13.159	7.816	Jun 2021	5.750	Nov 2021	0.000		0.000		0.000	0.000	26.725	0.000
AVCAD - HW S - EMD Contract- Chemring	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	7.443	8.562	Jun 2021	5.750	Nov 2021	0.000		0.000		0.000	0.000	21.755	0.000
ROSETTA - HW C - Product Development	C/FFP	ATI Solutions : Inc., Tysons Corner, VA	2.736	3.335	Jul 2021	0.000		0.000		0.000		0.000	0.000	6.071	0.000
ROSETTA - HW C - Government Product Development Team Labor	MIPR	Various : Various	0.725	1.330	Nov 2021	0.680	Nov 2022	0.000		0.000		0.000	0.000	2.735	0.000
ROSETTA - HW C - Government Product Development Core Team Labor	MIPR	JPM CBRN Sensors : JPEO-CBRND, Aberdeen Proving Ground, MD	0.277	0.296	Nov 2021	0.054	Nov 2022	0.000		0.000		0.000	0.000	0.627	0.000
MPCAD - HW S - EMD Contract - Sig Sci	C/CPFF	Signature Science : Austin, TX	23.871	8.443	Dec 2020	1.450	Dec 2021	0.000		0.000		0.000	0.000	33.764	0.000
MPCAD - HW C - Contractor Product Development Team Labor	C/FFP	Kalman & Company Inc. : Virginia Beach, VA	0.208	0.200	Feb 2021	0.292	Dec 2021	0.000		0.000		0.000	0.000	0.700	0.000
MPCAD - PM/MS S - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	3.673	2.289	Nov 2020	2.420	Nov 2021	0.000		0.000		0.000	0.000	8.382	0.000
MPCAD - HW S - EMD Contract - FLIR	C/CPFF	FLIR Systems : Inc., West Lafayette, IN	14.652	7.868	Dec 2020	2.109	Dec 2021	0.000		0.000		0.000	0.000	24.629	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CSIRP - HW C - Chemical Sensor Prototype and Integration	C/FFP	Intelligent Optical Systems (IOS) : Torrance, CA	0.000	0.485	Apr 2021	0.139	Nov 2021	0.000		0.000		0.000	0.000	0.624	0.000
CSIRP - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	1.383	Mar 2021	2.550	Dec 2021	0.000		0.000		0.000	0.000	3.933	0.000
CSIRP - SW C - UAS and Sensor Manufacturing and Design	C/CPFF	T2S Solutions (T2S : LLC), Belcamp, MD	0.000	1.687	Mar 2021	1.700	Dec 2021	0.000		0.000		0.000	0.000	3.387	0.000
CSIRP - SW C - Sensor Integration	C/CPFF	FLIR Systems Inc. : Elkridge, MD	0.000	0.000		2.193	Jun 2022	0.000		0.000		0.000	0.000	2.193	0.000
CSIRP - HW C - Chem Sensor Design	MIPR	Various : Various	0.000	0.430	Apr 2021	0.331	Dec 2021	0.000		0.000		0.000	0.000	0.761	0.000
CSIRP - HW C - RN Sensor Prototype and Integration	C/FFP	Radiation Monitoring Devices : Inc, Boston, MA	0.000	0.615	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.615	0.000
CSIRP - SW C - Sensor Integration #2	C/CPFF	Charles Stark Draper Laboratories : Inc., Cambridge, MA	0.000	1.500	Mar 2021	2.342	Nov 2021	0.000		0.000		0.000	0.000	3.842	0.000
CSIRP - HW C - UAS Manufacturing and Design	Various	Various : Various	0.000	0.679	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.679	0.000
CSIRP - HW C - Contractor Product Development Labor	C/FFP	Various : Various	0.000	0.318	Apr 2021	0.499	Feb 2022	0.000		0.000		0.000	0.000	0.817	0.000
JBTDs - HW C - LRIP Contract Award	C/CPIF	Chemring Sensors & Electronic Systems : Charlotte, NC	0.000	0.000		0.423	Jun 2022	0.000		0.000		0.000	0.000	0.423	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - HW GFPR - LRIP Test Hardware	C/CPFF	Army Contracting Command : Natick, MA	0.000	0.000		0.654	Jun 2022	0.000		0.000		0.000	0.000	0.654	0.000
JBTDS - HW C - Product Development - Correct Limitation Identified in EMD	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.947	0.635	Jan 2021	0.206	Jan 2022	0.000		0.000		0.000	0.000	1.788	0.000
JBTDS - HW - EMD Contract Award	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	34.954	2.067	Feb 2021	0.000		0.000		0.000		0.000	0.000	37.021	0.000
JBTDS - HW C - Government Team Labor	MIPR	Various : Various	25.199	3.348	Nov 2020	1.197	Nov 2021	0.000		0.000		0.000	0.000	29.744	0.000
JNBCRS 1 - HW-Sensor Suite Development	Various	Various : Various	7.845	0.207	Nov 2020	0.000		0.000		0.000		0.000	0.000	8.052	0.000
JNBCRS 1 - HW C - Contractor Team Labor	C/FFP	Various : Various	1.101	0.624	Feb 2021	0.000		0.000		0.000		0.000	0.000	1.725	0.000
JNBCRS 1 - SW C Integration	C/FFP	FLIR Systems Inc. : Elkridge, MD	19.275	17.872	Nov 2020	0.000		0.000		0.000		0.000	0.000	37.147	0.000
JNBCRS 1 - HW C - Chemical Surface Detector Development	C/CPFF	Various : Various	1.932	1.832	Nov 2020	0.000		0.000		0.000		0.000	0.000	3.764	0.000
JNBCRS 1 - HW C - Government Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	3.820	2.170	Nov 2020	0.000		0.000		0.000		0.000	0.000	5.990	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NBCRV SSU - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		3.032	Dec 2021	0.000		0.000		0.000	0.000	3.032	0.000
NBCRV SSU - SW C - Integration	C/FFP	FLIR Systems Inc. : Elkridge, MD	0.000	0.000		2.830	Dec 2021	0.000		0.000		0.000	0.000	2.830	0.000
NBCRV SSU - HW C - Contractor Team Labor	C/FFP	Various : Various	0.000	0.000		0.779	Feb 2022	0.000		0.000		0.000	0.000	0.779	0.000
NBCRV SSU - HW C - Chemical Surface Detector Development	C/CPFF	FLIR Systems Inc. : Elkridge, MD	0.000	0.000		0.530	Jan 2022	0.000		0.000		0.000	0.000	0.530	0.000
MERLIN - HW C - Army Platform Integration Kit Development	Various	Various : Various	0.000	0.757	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.757	0.000
MERLIN - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.349	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.349	0.000
NTA DEFENSE - HW C - Systems Prototyping & Development	C/CPFF	Various : Various	0.815	0.671	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.486	0.000
AET DEFENSE - HW S - System Prototyping and Modification	Various	Various : Various	0.000	0.000		0.178	Dec 2021	0.000		0.000		0.000	0.197	0.375	0.000
AET DEFENSE - SW C - Prototyping and Modification	Various	Various : Various	0.000	0.000		0.931	Jan 2022	0.000		0.000		0.000	0.000	0.931	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)						Project (Number/Name) CA5 / Contamination Avoidance (SDD)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AET DEFENSE - HW S - Emerging threat detection/ decontamination/protection capability engineering development	Various	Various : Various	0.000	0.000		0.191	Dec 2021	0.000		0.000		0.000	0.000	0.191	0.000
Subtotal			164.800	80.120		40.513		0.000		0.000		0.000	0.197	285.630	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - ES ALD, ISA & TACOM Support	MIPR	Various : Various	0.000	0.000		1.250	Nov 2021	0.000		0.000		0.000	0.000	1.250	0.000
AVCAD - ES C - OGA support (IPTs)	MIPR	Various : Various	0.000	2.132	Jan 2021	0.000		0.000		0.000		0.000	0.000	2.132	0.000
ROSETTA - ES C - Engineering and technical services for ROSETTA	MIPR	Various : Various	0.090	0.398	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.488	0.000
CSIRP - ES C - Engineering Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.650	Dec 2021	0.000		0.000		0.000	0.000	0.650	0.000
CSIRP - ES C - Eng Support	Various	Various : Various	0.000	1.421	Apr 2021	1.378	Dec 2021	0.000		0.000		0.000	0.000	2.799	0.000
JBTDS - ES - Engineering Support	MIPR	Various : Various	1.166	0.436	Nov 2020	0.494	Jun 2022	0.000		0.000		0.000	0.000	2.096	0.000
JBTDS - ES - OTA/OGA Service Representation	MIPR	Various : Various	13.378	1.371	Jan 2021	0.000		0.000		0.000		0.000	0.000	14.749	0.000
JNBCRS 1 - ILS C - Logistics Support	C/FFP	Various : Various	1.893	1.084	Nov 2020	0.000		0.000		0.000		0.000	0.000	2.977	0.000
JNBCRS 1 - ES C - Contract and Product Support	Various	Various : Various	1.068	0.889	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.957	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)						Project (Number/Name) CA5 / Contamination Avoidance (SDD)			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JNBCRS 1 - ES - Engineering Support	MIPR	Various : Various	2.818	0.296	Nov 2020	0.000		0.000		0.000		0.000	0.000	3.114	0.000
NBCRV SSU - ES C - Contract and Product Support	Various	Various : Various	0.000	0.000		0.477	Dec 2021	0.000		0.000		0.000	0.000	0.477	0.000
NBCRV SSU - ES C - Stryker NBCRV Maintenance	C/FFP	General Dynamics Land Systems : Detroit, MI	0.000	0.000		2.603	Mar 2022	0.000		0.000		0.000	0.000	2.603	0.000
NBCRV SSU - ILS C - Logistic Support	C/FFP	TBD : N/A	0.000	0.000		0.798	Feb 2022	0.000		0.000		0.000	0.000	0.798	0.000
NBCRV SSU - ES C - Engineering Support	MIPR	Various : Various	0.000	0.000		1.048	Apr 2022	0.000		0.000		0.000	0.000	1.048	0.000
Subtotal			20.413	8.027		8.698		0.000		0.000		0.000	0.000	37.138	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - OTE C - DT/OT Chem Chamber & Chemicals	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		3.300	Nov 2021	0.000		0.000		0.000	0.000	3.300	0.000
AVCAD - OTE C - DT/OT Test Activities	MIPR	Various : Various	3.990	3.605	Apr 2021	1.775	Nov 2021	0.000		0.000		0.000	0.000	9.370	0.000
AVCAD - OTE C - DT/OT Chemical Chamber & Chemical Purchase for Chamber	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	3.330	2.503	Mar 2021	0.000		0.000		0.000		0.000	0.000	5.833	0.000
ROSETTA - DTE C - Development Testing	MIPR	Various : Various	1.123	0.635	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.758	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) CA5 / Contamination Avoidance (SDD)				
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MPCAD - DTE C - Various	MIPR	Various : Various	0.635	2.677	Jan 2021	0.579	Jan 2022	0.000		0.000		0.000	0.000	3.891	0.000
MPCAD - DTE C - MPCAD support	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.996	1.268	Feb 2021	0.500	Nov 2021	0.000		0.000		0.000	0.000	2.764	0.000
MPCAD - DTE C - DT/OT Chemical Chamber Event	MIPR	West Desert Test Center : Dugway, UT	2.458	3.892	Dec 2020	1.644	Jan 2022	0.000		0.000		0.000	0.000	7.994	0.000
MPCAD - DTE C - OT Limited Users Test	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	1.671	Mar 2021	0.000		0.000		0.000		0.000	0.000	1.671	0.000
MPCAD - OTE S - Multi-Service Operational Test (OTC)	MIPR	Operational Test Command (OTC) : Ft. Hood, TX	0.000	1.150		0.600	Feb 2021	0.000		0.000		0.000	0.000	1.750	0.000
CSIRP - DTE C Prototype Testing and Evaluation	Various	TBD : N/A	0.000	0.574	Aug 2021	1.372	Jun 2022	0.000		0.000		0.000	0.000	1.946	0.000
CSIRP - DTE C - CSIRP Testing & Evaluation	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.107	Aug 2021	0.000		0.000		0.000		0.000	0.000	0.107	0.000
CSIRP - DTE C - CSIRP JHU-APL	MIPR	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.400	Sep 2021	1.053	May 2022	0.000		0.000		0.000	0.000	1.453	0.000
JBTDS - DTE SB - Identifier Live Agent Trials / Developmental Testing	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	6.584	2.681	Nov 2020	0.883	Nov 2021	0.000		0.000		0.000	14.788	24.936	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - OTHT S - JHBI	C/CPFF	Biomeme : Philadelphia, PA	1.315	0.437	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.752	0.000
JBTDS - DTE - Testing	MIPR	Various : Various	0.380	0.410	Nov 2020	0.504	Nov 2021	0.000		0.000		0.000	0.000	1.294	0.000
JBTDS - DTE - ARCA Chamber and Record Test Support	C/FFP	Battelle Memorial Institute : Columbus, OH	1.164	0.400	Jan 2021	0.284	Nov 2021	0.000		0.000		0.000	0.000	1.848	0.000
JBTDS - DTE - V&V of JBTDS Military Utility Model	FFRDC	Institute for Defense Analysis (IDA) : Alexandria, VA	0.200	0.675	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.875	0.000
JBTDS - OT - Operational Assessment	MIPR	Various : Various	0.592	1.207	Jan 2021	1.262	Nov 2021	0.000		0.000		0.000	0.000	3.061	0.000
JBTDS - DTE - BPSA and Other Test Events	C/FFP	Battelle Memorial Institute : Columbus, OH	3.066	0.377	Oct 2020	0.000		0.000		0.000		0.000	0.000	3.443	0.000
JNBCRS 1 - DTE - Test and Evaluation	MIPR	Various : Various	5.813	1.534	Nov 2020	0.000		0.000		0.000		0.000	0.000	7.347	0.000
NBCRV SSU - DTE S - System Level Testing	MIPR	Various : Various	0.000	0.000		1.134	Feb 2022	0.000		0.000		0.000	0.000	1.134	0.000
NBCRV SSU - DTE C - Component Level Testing	MIPR	Various : Various	0.000	0.000		1.689	Jan 2022	0.000		0.000		0.000	0.000	1.689	0.000
NBCRV SSU - DTE C - Test and Evaluation	Various	TBD : N/A	0.000	0.000		3.239	Apr 2022	0.000		0.000		0.000	0.000	3.239	0.000
NTA DEFENSE - DTE C - Field-forward PBA Detection	Various	TBD : N/A	0.000	0.892	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.892	0.000
NTA DEFENSE - DTE C - System Prototype Development	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.255	1.000	Apr 2021	0.000		0.000		0.000		0.000	0.000	1.255	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AET DEFENSE - DTE S - Technology Assessments	Various	Various : Various	0.000	0.000		0.745	Dec 2021	0.000		0.000		0.000	0.000	0.745	0.000
AET DEFENSE - OTHT C - Product Demonstration Events for Users	MIPR	Various : Various	0.000	0.000		0.500	Feb 2022	0.000		0.000		0.000	0.000	0.500	0.000
Subtotal			31.901	28.095		21.063		0.000		0.000		0.000	14.788	95.847	N/A
Remarks EMBD: \$529k for misc organizations															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - PM/MS S - Management Services	MIPR	Various : Various	3.312	3.000	Jan 2021	3.441	Nov 2021	0.000		0.000		0.000	0.000	9.753	0.000
ROSETTA - PM/MS S - Program Management Support	MIPR	Various : Various	0.298	0.572	Oct 2020	0.303	Oct 2021	0.000		0.000		0.000	0.000	1.173	0.000
MPCAD - PM/MS S - Program Management Support	MIPR	Various : Various	7.171	3.321	Dec 2020	1.160	Dec 2021	0.000		0.000		0.000	0.000	11.652	0.000
CSIRP - PM/MS S - Program Management Support	Various	Various : Various	0.000	1.262	Feb 2021	2.374	Oct 2021	0.000		0.000		0.000	0.000	3.636	0.000
JBTDS - PM/MS S - Program Management Support	MIPR	Various : Various	20.226	1.530	Nov 2020	1.480	Nov 2021	0.000		0.000		0.000	0.000	23.236	0.000
JNBCRS 1 - PM/MS S - Program Management Support	MIPR	Various : Various	8.935	3.252	Nov 2020	0.000		0.000		0.000		0.000	0.000	12.187	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CA5 / Contamination Avoidance (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NBCRV SSU - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		3.182	Oct 2021	0.000		0.000		0.000	0.000	3.182	0.000
MERLIN - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.143	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.143	0.000
NTA DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	6.598	0.592	Nov 2020	0.000		0.000		0.000		0.000	0.000	7.190	0.000
AET DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	0.000		0.081	Dec 2021	0.000		0.000		0.000	0.000	0.081	0.000
Subtotal			46.540	13.672		12.021		0.000		0.000		0.000	0.000	72.233	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			263.654	129.914		82.295		0.000		0.000		0.000	14.985	490.848	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program							Date: April 2022			
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) CA5 / <i>Contamination Avoidance (SDD)</i>		

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AVCAD - EMD Contract																												
AVCAD - MS C																												
AVCAD - LRIP																												
AVCAD - FRP Decision																												
AVCAD - IOC																												
ROSETTA - Engineering Design																												
ROSETTA - Testing & Demonstrations (M8)																												
MPCAD - EMD Contract																												
MPCAD - MS C																												
MPCAD - LRIP																												
MPCAD - FRP Decision																												
CSIRP - Transition Decision - Prototyping Plan #1																												
CSIRP - Request for White Papers - Prototyping Plan #2																												
CSIRP - OTA Award and Execution for Prototyping Plan #2																												
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #2																												
CSIRP - Transition Decision - Prototyping Plan #2																												
CSIRP - Request for White Papers - Prototyping Plan #3																												
CSIRP - OTA Award and Execution for Prototyping Plan #3																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								CA5 / Contamination Avoidance (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #3																												
JBTDS - Milestone C																												
JBTDS - LRIP Contract Award																												
JBTDS - LRIP Production																												
JBTDS - PVT																												
JBTDS - MOT&E																												
JBTDS - FRP Decision																												
JBTDS - FRP Award																												
JBTDS - IOC																												
JNBCRS 1 - Design and Fabrication Phase 2																												
NBCRV SSU - Component Test & System Level Test 1																												
NBCRV SSU - Modification Work Order IPR																												
NBCRV SSU - Design and Fabrication Phase 3 (CS2.2)																												
NBCRV SSU - Limited User Test (LUT)																												
MERLIN - Army Platform Integration																												
NTA DEFENSE - Capabilities Assessment																												
NTA DEFENSE - Strategic Coordination/ Information Management																												
NTA DEFENSE - Systems Prototyping and Development																												
AET DEFENSE - Technology Assessments																												
AET DEFENSE - Systems Engineering/ Program Management																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																						Date: April 2022															
Appropriation/Budget Activity 0400 / 5										R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								Project (Number/Name) CA5 / Contamination Avoidance (SDD)																			
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AET DEFENSE - System Development and Prototyping																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CA5 / <i>Contamination Avoidance (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AVCAD - EMD Contract	1	2021	2	2023
AVCAD - MS C	2	2023	2	2023
AVCAD - LRIP	2	2023	1	2025
AVCAD - FRP Decision	1	2025	1	2025
AVCAD - IOC	2	2027	2	2027
ROSETTA - Engineering Design	4	2022	2	2023
ROSETTA - Testing & Demonstrations (M8)	1	2021	2	2022
MPCAD - EMD Contract	1	2021	3	2022
MPCAD - MS C	4	2022	4	2022
MPCAD - LRIP	4	2022	3	2024
MPCAD - FRP Decision	4	2024	4	2024
CSIRP - Transition Decision - Prototyping Plan #1	3	2022	3	2022
CSIRP - Request for White Papers - Prototyping Plan #2	4	2021	1	2022
CSIRP - OTA Award and Execution for Prototyping Plan #2	3	2022	3	2025
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #2	3	2023	3	2025
CSIRP - Transition Decision - Prototyping Plan #2	3	2025	3	2025
CSIRP - Request for White Papers - Prototyping Plan #3	4	2024	1	2025
CSIRP - OTA Award and Execution for Prototyping Plan #3	3	2025	4	2027
CSIRP - Test and Evaluation of Prototypes - Prototyping Plan #3	3	2026	4	2027
JBTDS - Milestone C	4	2022	4	2022
JBTDS - LRIP Contract Award	4	2022	4	2022
JBTDS - LRIP Production	4	2022	4	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CA5 / <i>Contamination Avoidance (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
JBTDS - PVT	1	2023	3	2023
JBTDS - MOT&E	1	2023	2	2023
JBTDS - FRP Decision	1	2024	1	2024
JBTDS - FRP Award	1	2024	1	2024
JBTDS - IOC	4	2027	4	2027
JNBCRS 1 - Design and Fabrication Phase 2	1	2021	4	2021
NBCRV SSU - Component Test & System Level Test 1	4	2021	4	2023
NBCRV SSU - Modification Work Order IPR	3	2023	4	2023
NBCRV SSU - Design and Fabrication Phase 3 (CS2.2)	4	2023	4	2024
NBCRV SSU - Limited User Test (LUT)	3	2023	4	2023
MERLIN - Army Platform Integration	1	2021	4	2021
NTA DEFENSE - Capabilities Assessment	1	2021	4	2021
NTA DEFENSE - Strategic Coordination/Information Management	1	2021	4	2021
NTA DEFENSE - Systems Prototyping and Development	1	2021	4	2021
AET DEFENSE - Technology Assessments	1	2022	4	2027
AET DEFENSE - Systems Engineering/Program Management	1	2022	4	2027
AET DEFENSE - System Development and Prototyping	1	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) CO5 / Collective Protection (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CO5: Collective Protection (SDD)	-	7.688	3.028	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.716
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production 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. CP systems provide spaces safe from the effects of CBR contamination enabling mission accomplishment in CBR environments.

The systems included in this Project are:

(1) Joint Expeditionary Collective Protection (JECP) Family of Systems

The JECP program provides the Joint Expeditionary Forces a collective protection capability that 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 that provide existing host platforms and structures with CBRN protection. Phase 2 includes kits that 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 will reduce the need for personnel and equipment decontamination and is a strategic deterrence against state adversaries and non-state actors from using weapons of mass destruction. FY22 is the last year of BA5 funding for this program.

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

	FY 2021	FY 2022	FY 2023
Title: 1) JECP	7.688	3.028	-
Description: Phase 2 system Development and Demonstration Events			
FY 2022 Plans: Complete Technical Manual verification event. Finalize logistics products and finalize program acquisition documentation in support of a Full Rate Production decision.			
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase.			
Accomplishments/Planned Programs Subtotals	7.688	3.028	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) CO5 / <i>Collective Protection (SDD)</i>			

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• CO7: <i>Collective Protection (Op Sys Dev)</i>	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.392
• JP1111: <i>JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)</i>	14.496	22.719	30.737	-	30.737	37.128	23.201	23.060	23.060	Continuing	Continuing

Remarks

D. Acquisition Strategy

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 (EMD) 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 (FPI) production options in FY17 & FY18 through the now expired contract with Leidos in support of Initial Operational Capability (IOC). A competitive build-to print follow-on production delivery order contract was awarded June 2019 to Production Products Manufacturing and will support the remaining production of Phase 1 Systems to meet Full Operational Capability (FOC). Phase 2 systems will be developed as engineering changes to the Phase 1 systems under a separate competitive delivery order awarded March 2019 to Leidos and undergo limited developmental and operational testing in pursuit of a FRP decision and Full Materiel Release. Production options are included in the delivery order to meet FOC for Phase 2 systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)						Project (Number/Name) CO5 / Collective Protection (SDD)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JECP - HW S - Phase 2 System Product Development/Phase 2 Prototype Manufacturing	C/FPIF	Leidos : Abingdon, MD	6.732	2.087	Nov 2020	0.937	Nov 2021	0.000		0.000		0.000	0.000	9.756	0.000
Subtotal			6.732	2.087		0.937		0.000		0.000		0.000	0.000	9.756	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JECP - ES S/ILS S - Engineering, Logistics, Technical, IPT Support	MIPR	Various : Various	3.443	3.008	Dec 2020	1.116	Nov 2021	0.000		0.000		0.000	0.000	7.567	0.000
Subtotal			3.443	3.008		1.116		0.000		0.000		0.000	0.000	7.567	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JECP - OTHS SB - Test & Evaluation IPT/OTE S - Operational Testing/DTE S - Phase 2 Developmental testing	MIPR	Various : Various	10.999	1.443	Dec 2020	0.638	Dec 2021	0.000		0.000		0.000	0.000	13.080	0.000
Subtotal			10.999	1.443		0.638		0.000		0.000		0.000	0.000	13.080	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>						Project (Number/Name) CO5 / <i>Collective Protection (SDD)</i>			
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JECP - PM/MS S - Program Management Support	MIPR	Various : Various	13.649	1.150	Dec 2020	0.337	Nov 2021	0.000		0.000		0.000	0.000	15.136	0.000
Subtotal			13.649	1.150		0.337		0.000		0.000		0.000	0.000	15.136	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			34.823	7.688		3.028		0.000		0.000		0.000	0.000	45.539	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>					Project (Number/Name) CO5 / <i>Collective Protection (SDD)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JECP - Phase 2 Development Testing (DT)																												
JECP - Phase 2 Operational Testing (OT)																												
JECP - Phase 2 Full Rate Production																												
JECP - Phase 2 Initial Operational Capability (IOC)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) CO5 / <i>Collective Protection (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JECP - Phase 2 Development Testing (DT)	1	2021	2	2021
JECP - Phase 2 Operational Testing (OT)	3	2021	1	2022
JECP - Phase 2 Full Rate Production	3	2022	3	2022
JECP - Phase 2 Initial Operational Capability (IOC)	1	2023	1	2023

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) DE5 / Decontamination (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DE5: Decontamination (SDD)	-	17.274	7.874	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	25.148
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 remove and/or detoxify contaminated material without damaging combat equipment, platforms, personnel, or the environment, helping sustain a resilient force posture, one of the efforts outlined in the National Defense Strategy. 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, Concept of Operations and Tactics, Techniques & Procedures. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. DE5 efforts in FY2022 progress to the Enabling Investments (EN5) and Mitigate (MT5) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Decontamination Family of Systems (DFoS) Contamination Indicator Decontamination Assurance System (CIDAS) Blister **Progresses to MT5 in FY2023**,
- (2) DFoS CIDAS Nerve,
- (3) Forward Area Mobility Spray - System (FAMS-S) **Progresses to MT5 in FY2023**,
- (4) Joint Biological Agent Decontamination System (JBADS),
- (5) Joint Biological Agent Decontamination System Lite (JBADS Lite) (Congressional Interest Item),
- (6) Major Defense Acquisition Program (MDAP) **Progresses to EN5 in FY2023**, and
- (7) Services Equipment Decontamination System (SEDS) **Progresses to MT5 in FY2023**

DFoS CIDAS is a contamination indicator and decontamination assurance technology. The indicator will be sprayed on tactical vehicles, 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. This helps sustain a resilient force posture, making the Joint Force more adaptable against the uncertainty in a changing global strategic environment, an effort listed in the National Defense Strategy under building a more lethal force. It will consist of an indicator and an applicator, with two applicator configurations -- small-scale and tactical large scale applicator -- and three indicator formulations -- nerve training, nerve and blister indicators.

The DFoS CIDAS Blister program addresses traditional blister agents, two separate threat scenarios that require different materiel solutions, modernizing a key capability to help build a more lethal force, as outlined in the National Defense Strategy.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>
<p>The DFOs CIDAS Nerve Program will provide the Joint Forces with a new capability to reduce the logistics burden of decontamination by indicating presence and location of traditional Nerve and non-traditional chemical agents on militarily relevant surfaces pre- and post-decontamination. It will consist of an indicator and an applicator, for which there will be two applicator configurations (small scale and tactical large scale) and two indicator formulations (nerve training and nerve). Post application, the DFOs CIDAS Nerve will not cause material degradation other than that which is allowable in service platforms' specifications to complete primary mission functions. FY21 is the last year of BA5 funding for this program.</p> <p>The FAMS-S, which was a new start in FY21, will provide Special Operations Forces (SOF) and SOF Task Forces (SOTFs) with transportable, rapidly-deployable decontamination systems in three variants: man-portable, small vehicle-mounted, and large vehicle-mounted systems to rapidly decontaminate chemical and biological (CB) agents from the exterior of vehicles and support equipment to a level that is clean enough for re-use during missions without the need for donning CB personal protective equipment. This will maximize tactical flexibility and fighting strength while minimizing the logistical burden and the cost of conducting Countering Weapons of Mass Destruction (CWMD) and CB operations.</p> <p>The Joint Biological Agent Decontamination System (JBADS) will provide the capability to conduct biological agent decontamination of the interior and exterior of aircraft. There is currently no capability to decontaminate both the inside and outside of aircraft. Additionally, this design incorporates a chemical liner for potential chemical agent decontamination ability. The JBADS capability set will include a decontamination delivery system using hot-humid air, shelter to encapsulate an airframe, an environmental control and monitoring system(s), and other ancillary components. It will provide the capability to decontaminate biologically contaminated airframes to safe levels, allow more rapid return to service and provides a key cornerstone to future decontamination capability. The JBADS focus is on the biological agent decontamination of the C-130 aircraft and future efforts may address chemical and biological decontamination of other airframes and vehicles. FY21 is the last year of BA5 funding for this program.</p> <p>The JBADS Lite (Congressional Interest Item) effort will research and analyze, in coordination with the Department of Homeland Security, how JBADS decontamination technology could be utilized in the pandemic preparedness of civilian transportation systems. This is a FY21 congressional interest item and no further funding is anticipated.</p> <p>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 at the Department of Homeland Security (DHS), meet their CBRN defense requirements. In FY23, this effort continues to facilitate and coordinate 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.</p> <p>The Service Equipment Decontamination System (SEDS) program will develop reliable and modular hardware intended to decontaminate military equipment in operational environments including personal effects, and weapons to pre-contamination conditions for immediate re-use. This capability is needed to sustain the Joint Force military by reducing logistical burden to increase tactical agility and sustain a resilient force posture, and align with the National Defense Strategy. SEDS will provide contamination mitigation capabilities for critical equipment that have been exposed to chemical and biological contamination and achieve efficacy levels that allow unprotected post-decontamination exposures for long periods with less than negligible severity effects.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / Decontamination (SDD)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) DFoS CIDAS NERVE Description: Log Demo, Multi Service Operational Test & Evaluation (MOT&E) and Large Scale Applicators			0.710	-	-
Title: 2) DFoS CIDAS BLISTER Description: Blister Indicator Kits and Large Scale Applicators FY 2022 Plans: Award contract option to acquire associated CDRLs and complete Sustainment Cost Reduction efforts with Prime Contractor. Continue planning and test preparation for Developmental Testing (DT) (CIDAS Level of Indication, detector, Individual Protective Equipment testing), Logistics Demonstration and Operational Testing (OT) in support of MS C/FRP. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.681 Million) transferred to MT5.			4.621	2.840	-
Title: 3) Forward Area Mobility Spray - System Description: Prototype Development FY 2022 Plans: Award follow-on development contract for improved prototype variants; conduct developmental and operational testing on 30 backpack variant prototypes to measure decontamination levels, user suitability and system interoperability effectiveness. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.967 Million) transferred to MT5.			1.264	2.743	-
Title: 4) Joint Biological Agent Decontamination System (JBADS) Description: Development and Testing			4.679	-	-
Title: 5) Major Defense Acquisition Program (MDAP) Description: CBRN Survivability Support FY 2022 Plans: Continue to ensure CBRN survivability requirements are met for MDAP's by cross-walking requirements documents with program execution plans. Attend meetings to address integration needs and present CBRN system and hardware options. Provide subject matter expertise in the execution of CBRN survivability requirements for both materiel and non-material solutions. Review and assist in document preparation for milestones and programs reviews. Conduct CBRN survivability compliance reviews for			1.000	2.291	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) DE5 / Decontamination (SDD)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
Optionally Manned Fighting Vehicle, Robotic Combat Vehicle, Future Long Range Assault Aircraft, Future Attack Reconnaissance Aircraft, Littoral Combat Ship, European Reassurance Initiative, and other CBRN survivability system integration in preparation for various program acquisition milestones, system and subsystem test events, design reviews and low rate initial production reviews.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$2.418 Million) transferred to EN5.												
Accomplishments/Planned Programs Subtotals										12.274	7.874	-
								FY 2021	FY 2022			
Congressional Add: 1) Decontamination Technologies - Development and Testing								5.000	-			
FY 2021 Accomplishments: Commenced research and analysis related to JBADS decontamination technology that can aid in pandemic preparedness of civilian transportation systems.												
Congressional Adds Subtotals								5.000	-			
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• DE4: Decontamination (ACD&P)	4.919	18.385	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	23.304	
• EN5: Enabling Investments (SDD)	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing	
• MT5: Mitigate (SDD)	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing	
• JD0050: DECONTAMINATION FAMILY OF SYSTEMS (DFoS)	11.474	4.166	5.795	-	5.795	8.562	8.673	8.820	18.518	Continuing	Continuing	
• JD0070: JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)	5.096	26.367	13.519	-	13.519	1.512	0.000	0.000	0.000	0.000	46.494	
• PHM025: FORWARD AIR MOBILITY SPRAY SYSTEM (FAMS-S)	0.000	0.000	4.607	-	4.607	4.824	4.724	4.724	4.724	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
DFoS CONTAMINATION INDICATOR DECON ASSURANCE SPRAY NERVE (DFoS CIDAS NERVE)												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>
<p>The DfOS CIDAS program will follow an evolutionary acquisition strategy in consonance with user developed capability documents. Following MS A in 2011, the program office collaborated with external efforts, including the Hazard Mitigation, Materiel and Equipment Restoration (HaMMER) Advanced Technology Development (ATD) 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 a tactical large scale applicator to provide affordable solutions to meet specific User requirements. Following MS B in 2015, 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 program integrated the Contractor and Government designed indicator and applicators and conducted developmental and operational testing.</p> <p>DFoS CONTAMINATION INDICATOR DECON ASSURANCE SPRAY BLISTER (DFoS CIDAS BLISTER)</p> <p>The DfOS CIDAS Blister program will follow an evolutionary acquisition strategy. The program office coordinated with Science and Technology efforts to identify blister technologies that met Service requirements. After further development, in 4QFY19 a sole-source performance based indefinite delivery indefinite quantity contract was awarded to develop blister indicator and small scale applicator systems with options for production. The program will leverage the contract to procure blister indicator kits and conduct test and evaluation events for the EMD phase in preparation of MS C/FRP.</p> <p>FORWARD AREA MOBILITY SPRAY SYSTEM (FAMS-S)</p> <p>The FAMS-S will be developed using Middle Tier Acquisition (MTA) to advance decontamination technology and capability for Special Operations Forces (SOF) and Special Operations Task Forces (SOTF) application to tactical and strategic platforms in accordance with MTA authorities and regulations and the Capability Development Document (CDD). FAMS-S will reduce technological risk by reviewing existing materials and technologies as well as designs, configurations, and test data from mature legacy and commercial decontamination systems. The program will utilize the CWMD Other Transaction Authority (OTA) agreement to competitively award projects to three vendors for the man-portable and three vendors for the vehicle-mounted variants followed by a prototype down-select. The program will perform technical evaluations, undergo developmental and operational testing, and early user assessments to inform the final prototype design across each variant in preparation for the man-portable variant production decision in FY23.</p> <p>JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)</p> <p>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. Following testing, the JBADS will transition to Full Rate Production (FRP). 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 delivery order 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. The Future Capabilities Analysis conducted studies, analyses, and prototyping based on the current JBADS concept to improve its readiness to meet potential future requirements with minimal impact to the JBADS program.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>
<p>MAJOR DEFENSE ACQUISITION PROGRAM (MDAP)</p> <p>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.</p> <p>CONGRESSIONAL INTEREST ITEMS</p> <p>CONGRESSIONAL ADD DECONTAMINATION TECHNOLOGIES: The Joint Biological Agent Decontamination System (JBADS) Lite project will research and analyze how JBADS Lite could aid in the pandemic preparedness of civilian transportation systems in coordination with the Department of Homeland Security (DHS). The JBADS Lite was created in response to the Coronavirus Disease 2019 (COVID-19) global pandemic. The JBADS Lite uses Biothermal Decontamination which is hot, humid air to decontaminate the interior of aircraft. Using existing contract vehicles, this effort will research, analyze, and test prototypes to aid in decontamination of other platforms with DHS to aid in civilian transportation pandemic preparedness.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) DE5 / Decontamination (SDD)
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS BLISTER - HW S - Small Scale / Large Scale Applicators/ Kits	SS/FPIF	FLIR Systems : Inc., Stillwater, OK	0.000	2.269	Dec 2020	0.565	Nov 2021	0.000		0.000		0.000	0.000	2.834	0.000
FAMS-S - HW S - System Development and Prototype Refinement	C/CPIF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.876	Aug 2021	1.372	Jan 2022	0.000		0.000		0.000	0.000	2.248	0.000
CONG - HW S - JBADS Lite - Prototype Development & Testing	Various	TBD : N/A	0.000	3.810	Oct 2021	0.000		0.000		0.000		0.000	0.000	3.810	0.000
Subtotal			0.000	6.955		1.937		0.000		0.000		0.000	0.000	8.892	N/A

Remarks

CONG: Includes development, prototyping and testing to support pandemic preparedness of civilian transportation systems.

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS NERVE - ES C - Engineering Support	MIPR	Various : Various	0.000	0.090		0.000		0.000		0.000		0.000	0.000	0.090	0.000
DFoS CIDAS BLISTER - TD/D S - IPT and Technical Support	MIPR	Various : Various	0.000	0.980	Dec 2020	0.426	Dec 2021	0.000		0.000		0.000	0.000	1.406	0.000
FAMS-S - ES S - Systems Engineer/Technical SME Support	MIPR	Various : Various	0.000	0.272	Mar 2021	0.686	Jan 2022	0.000		0.000		0.000	0.000	0.958	0.000
JBADS - TD/D S - Logistics, Engineering, and IPT Support	MIPR	Various : Various	4.454	0.408	Nov 2021	0.000		0.000		0.000		0.000	0.000	4.862	0.000
MDAP - TD/D SB - IPT and Technical Support	MIPR	Various : Various	1.609	0.871	Nov 2020	2.081	Nov 2021	0.000		0.000		0.000	0.000	4.561	0.000
Subtotal			6.063	2.621		3.193		0.000		0.000		0.000	0.000	11.877	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>						Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks CONG: Tech Scouting and Analysis to include prototyping and testing to support pandemic preparedness of civilian transportation systems.															
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS NERVE - OTE C - CIDAS NERVE LSA MOT&E	Various	Various : Various	0.000	0.416		0.000		0.000		0.000		0.000	0.000	0.416	0.000
DFoS CIDAS NERVE - OTH T C - Environmental and Variant T&E	MIPR	Various : Various	0.000	0.147		0.000		0.000		0.000		0.000	0.000	0.147	0.000
DFoS CIDAS BLISTER - DFoS CIDAS BLISTER - OTH T S - DT/OT	MIPR	Various : Various	0.000	1.003	Dec 2020	1.637	Dec 2021	0.000		0.000		0.000	0.000	2.640	0.000
FAMS-S - DTE SB - Decon Solution Analysis	Various	TBD : N/A	0.000	0.100	Mar 2021	0.356	Feb 2022	0.000		0.000		0.000	0.000	0.456	0.000
JBADS - OTE S - Initial Operational Test and Evaluation	C/CPIF	AeroClave : LLC, Winter Park, FL	0.000	3.363	Oct 2021	0.000		0.000		0.000		0.000	0.000	3.363	0.000
JBADS - Future Capabilities	Various	Various : Various	2.699	0.536		0.000		0.000		0.000		0.000	0.000	3.235	0.000
CONG - OTH T S - JBADS Lite - Analysis and Test Support	Various	TBD : N/A	0.000	1.190	Mar 2022	0.000		0.000		0.000		0.000	0.000	1.190	0.000
Subtotal			2.699	6.755		1.993		0.000		0.000		0.000	0.000	11.447	N/A
Remarks CONG: Support for JBADS Lite test events.															

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) DE5 / Decontamination (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS NERVE - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.057		0.000		0.000		0.000		0.000	0.000	0.057	0.000
DFoS CIDAS BLISTER - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.369	Dec 2020	0.212	Dec 2021	0.000		0.000		0.000	0.000	0.581	0.000
FAMS-S - PM/MS S - Program Management	MIPR	Various : Various	0.000	0.016	Mar 2021	0.329	Dec 2021	0.000		0.000		0.000	0.000	0.345	0.000
JBADS - PM/MS S - Program Management Support	MIPR	Various : Various	4.725	0.372	Dec 2020	0.000		0.000		0.000		0.000	0.000	5.097	0.000
MDAP - PM/MS S - Program Management Support	MIPR	Various : Various	0.359	0.129	Nov 2020	0.210	Nov 2021	0.000		0.000		0.000	0.000	0.698	0.000
Subtotal			5.084	0.943		0.751		0.000		0.000		0.000	0.000	6.778	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			13.846	17.274		7.874		0.000		0.000		0.000	0.000	38.994	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) DE5 / Decontamination (SDD)		

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DFoS CIDAS NERVE - CIDAS LSA Nerve MOT&E																												
DFoS CIDAS NERVE - CIDAS Nerve MIL-STD 810G/Environmental Testing																												
DFoS CIDAS BLISTER - Sustainment Cost Reduction Plan (SCRCP)																												
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 1																												
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 2																												
DFoS CIDAS BLISTER - System Verification Review (SVR)/Production Readiness Review																												
DFoS CIDAS BLISTER - Functional Configuration Audit (FCA)																												
DFoS CIDAS BLISTER - CIDAS Blister Operational Testing (OT)																												
DFoS CIDAS BLISTER - Manufacturing Readiness Assessment																												
DFoS CIDAS BLISTER - Physical Configuration Audit																												
DFoS CIDAS BLISTER - Milestone C																												
DFoS CIDAS BLISTER - Full Rate Production (FRP)																												
DFoS CIDAS BLISTER - Initial Operational Capability (IOC)																												
FAMS-S - System Development and Prototype Refinement																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																	Date: April 2022											
Appropriation/Budget Activity									R-1 Program Element (Number/Name)								Project (Number/Name)											
0400 / 5									PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								DE5 / Decontamination (SDD)											
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
FAMS-S - DT/OT																												
FAMS-S - MS C																												
FAMS-S - Low Rate Initial Production																												
FAMS-S - Full Rate Production																												
FAMS-S - IOC																												
JBADS - Initial Operational Test and Evaluation (IOT&E)																												
JBADS - Full Rate Production (FRP)																												
JBADS - Initial Operational Capability (IOC)																												
JBADS - Milestone C																												
JBADS - Full Operational Capability																												
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP																												
MDAP - Armored Multi-Purpose Vehicle (AMPV) FRP																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) RP Contract																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) RFP 2																												
MDAP - Optionally Manned Fighting Vehicle (OMFV) LRIP																												
MDAP - Robotic Combat Vehicle Experimental Prototype Build																												
MDAP - Future Long Range Assault Aircraft (FLRAA)																												
MDAP - Future Attack Reconnaissance Aircraft (FARA)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																							Date: April 2022														
Appropriation/Budget Activity 0400 / 5										R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)										Project (Number/Name) DE5 / Decontamination (SDD)																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CONG - JBADS Lite - Development and Testing										<div></div>																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DFoS CIDAS NERVE - CIDAS LSA Nerve MOT&E	3	2021	3	2021
DFoS CIDAS NERVE - CIDAS Nerve MIL-STD 810G/Environmental Testing	3	2021	2	2022
DFoS CIDAS BLISTER - Sustainment Cost Reduction Plan (SCRP)	1	2021	3	2022
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 1	2	2021	3	2021
DFoS CIDAS BLISTER - Developmental Testing (DT) phase 2	4	2022	4	2023
DFoS CIDAS BLISTER - System Verification Review (SVR)/Production Readiness Review	2	2023	2	2023
DFoS CIDAS BLISTER - Functional Configuration Audit (FCA)	3	2023	3	2023
DFoS CIDAS BLISTER - CIDAS Blister Operational Testing (OT)	4	2023	4	2023
DFoS CIDAS BLISTER - Manufacturing Readiness Assessment	1	2024	1	2024
DFoS CIDAS BLISTER - Physical Configuration Audit	2	2024	2	2024
DFoS CIDAS BLISTER - Milestone C	3	2024	3	2024
DFoS CIDAS BLISTER - Full Rate Production (FRP)	3	2024	4	2027
DFoS CIDAS BLISTER - Initial Operational Capability (IOC)	2	2027	2	2027
FAMS-S - System Development and Prototype Refinement	4	2021	1	2022
FAMS-S - DT/OT	2	2022	2	2024
FAMS-S - MS C	3	2023	2	2024
FAMS-S - Low Rate Initial Production	3	2023	1	2024
FAMS-S - Full Rate Production	2	2024	4	2027
FAMS-S - IOC	4	2024	4	2024
JBADS - Initial Operational Test and Evaluation (IOT&E)	3	2021	1	2022
JBADS - Full Rate Production (FRP)	3	2022	3	2022

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) DE5 / <i>Decontamination (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
JBADS - Initial Operational Capability (IOC)	3	2022	3	2022
JBADS - Milestone C	3	2022	3	2022
JBADS - Full Operational Capability	4	2023	4	2023
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP	1	2021	4	2021
MDAP - Armored Multi-Purpose Vehicle (AMPV) FRP	3	2021	4	2023
MDAP - Optionally Manned Fighting Vehicle (OMFV) RP Contract	1	2021	2	2022
MDAP - Optionally Manned Fighting Vehicle (OMFV) RFP 2	2	2022	3	2023
MDAP - Optionally Manned Fighting Vehicle (OMFV) LRIP	3	2023	2	2026
MDAP - Robotic Combat Vehicle Experimental Prototype Build	1	2021	3	2023
MDAP - Future Long Range Assault Aircraft (FLRAA)	1	2021	4	2027
MDAP - Future Attack Reconnaissance Aircraft (FARA)	1	2021	4	2027
CONG - JBADS Lite - Development and Testing	2	2021	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IP5: Individual Protection (SDD)	-	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
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. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. IP5 efforts in FY2022 progress to the Protect (PT5) and Understand (UN5) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Joint Service Aircrew Mask for Strategic Aircraft (JSAM SA)
- (2) Special Purpose Unit Rapid Capability Development and Deployment (SPU RCDD) - **Progresses to UN5 in FY2023**
- (3) UIPE FoS General Purpose (GP) - **Progresses to PT5 in FY2023**
- (4) UIPE FoS Air - **Progresses to PT5 in FY2023**
- (5) UIPE FoS Gloves - **Progresses to PT5 in FY2023**

JSAM SA will provide individual respiratory, ocular, and percutaneous protection of chemical and biological warfare agents, and select toxic industrial chemicals for USAF, Aeromedical personnel, USN, USMC, and USA strategic aircrew. The mask components will be optimized to minimize their impact on the wearer's performance to continue lethality in a chemical biological (CB) environment 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. FY22 is the last year of BA5 funding for this program, all activities will be completed.

SPU RCDD facilitates Joint Special Operations Command (JSOC) rapid response requirements to near-term and emergent chemical-biological defensive capabilities. This includes select elements from across the Special Operations Force (SOF) Enterprise such as Combatant Commanders Response Forces (CRFs) and other Joint Force enabling units such as the 20th Chemical, Biological, Radiological, Nuclear and Explosives Command. SPU RCDD mitigates risk across the Chemical Biological Defense Program (CBDP) by creating a portfolio of operationally-relevant CB capabilities that can be quickly transitioned in response to the articulated, emergent capability needs of the geographic combatant commanders. These objectives are met by the early transitioning of promising science and technologies (S&T); the focused conduct of combat evaluations and mission-oriented operational assessments to assess technological and mission suitability; and the active leveraging of existing Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) products along with novel redesign approaches to optimize existing solutions to new challenges supported by "buy-try-decide-acquire" acquisition strategies. SPU RCDD initiates efforts such as respiratory breathing systems, biological identification,

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>
<p>unmanned aerial and ground platform sensor integration, development of enhanced and augmented reality systems, and modernization of protective Chemical and Biological ensembles that have gone through requirements validation, and continues product enhancement development and technology upgrades on currently fielded SOF equipment to counter emerging threats, conduct limited user evaluations and operational assessment.</p> <p>The UIPE FoS is a family of systems that provides 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 provides protection from operationally relevant traditional and non-traditional CBRN threats likely to be encountered during joint force operations.</p> <p>UIPE FoS GP is part of a family of systems that will give the Warfighter percutaneous protection from operationally relevant traditional, non-traditional, and advanced CBRN/Toxic Industrial Material (TIM) threats likely to be encountered during joint force operations. The legacy chemical biological garment is nearing the end of its service life and does not meet updated requirements such as emerging threats, aerosol protection, and flame resistance. The UIPE FoS GP is a two-piece lightweight (compared to the legacy system) duty uniform replacement that has an aerosol liner, is flame resistant, and does not reduce Warfighter effectiveness in the areas of mobility and thermal burden. The Tactical All-Hazards Threat Protective Ensemble (TATPE) will provide high risk Special Operations Forces (SOF) and Explosive Ordnance Disposal (EOD) personnel with increased protection against non-traditional and advanced threat agents during CWMD crisis and response missions in a more athletic fit combining a level of protection and performance not previously available together. TATPE will capitalize on the protection factor of commercial Level A with design modifications to align with the necessary operational requirements. The TATPE is a system consisting of a protective garment that integrates with a Self-Contained Breathing Apparatus (SCBA), M53 protective mask, and cooling and hydration systems. The TATPE serves as an additional tool in the arsenal until technology matures to the point of delivering a similar capability applied against the range of military operations in all environments under all conditions. In FY22, the TATPE will obtain a MS C Low Rate Initial Production decision and expects to achieve an Initial Operations Capability (IOC) for SOF, EOD, and Special Mission Units within SOCOM.</p> <p>UIPE FoS Air program will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional Chemical, Biological, Radiological, Nuclear (CBRN) threats. UIPE FoS Air will improve aircrew performance and survivability under CBRN conditions by reducing thermal burden and bulk, while increasing mobility and resulting in an increase operational effectiveness. The UIPE FoS Air is composed of two variants. The UIPE FoS Air Chemical, Biological, Radiological Layer (CBRL) to address the specific requirements of the United States Air Force (USAF) tactical/ejection fixed wing platforms and the Two Piece Undergarment (2PUG) to address the remaining USAF and United States Navy / United States Marine Corps tactical/ejection seat (rotary wing) and non-ejection (fixed wing) platforms.</p> <p>UIPE FoS Gloves provides percutaneous protection to the hand and wrist interface of the warfighter against traditional and non-traditional CBRN threats. UIPE FoS Gloves will provide improved comfort, tactility and dexterity and for certain mission profiles enhanced touch screen and flame resistant capability.</p>		
B. Accomplishments/Planned Programs (\$ in Millions)		
Title: 1) Joint Service Aircrew Mask for Strategic Aircraft (JSAM SA)		FY 2021
Description: Operational Testing and Evaluation (OT&E)		FY 2022
FY 2022 Plans:		FY 2023
		1.060
		1.153
		-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Continue OT, Integration Testing and Safe-to-Fly on various Service aircraft. Continue updates to the Technical Manual to include specialized procedures for the various aircraft based on testing results. Continue engineering studies to assess communication system adaptors and oxygen system adaptors for remaining aircraft.					
FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase. FY22 was last year of engineering and manufacturing development phase; program has fully transitioned to production phase.					
Title: 2) Special Purpose Unit Rapid Capability Development & Deployment (SPU RCDD) Description: Development of specialized equipment for agent-specific threats. FY 2022 Plans: Initiate efforts such as respiratory breathing systems, biological identification, modernization of protective Chemical and Biological ensembles that have gone through requirements validation and continue developing, prototyping, and maturing CBD technologies to rapidly equip users with capabilities in response to new and emerging threats and opportunities, building on the advancements in decontamination, respiratory / ocular, and other defensive technologies demonstrated by prototypes. Conduct limited user evaluations / operational assessments. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.863 Million) transferred to UN5.			5.599	4.581	-
Title: 3) UIPE FoS GP - Tactical All-Hazards Threat Protective Ensemble (TATPE) Description: TATPE system development, developmental testing, and operational assessment.			2.714	-	-
Title: 4) UIPE FoS General Purpose (GP) Description: Development of the next generation protective ensembles. FY 2022 Plans: Begin Developmental/Operational Testing (DT/OT), Award Production Initiation Contract and Begin Operational Assessment. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$9.640 Million) transferred to PT5.			4.381	8.167	-
Title: 5) UIPE FoS Air Description: Design, Test, and Integration of the 2PUG FY 2022 Plans:			3.375	3.858	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Complete system level development testing and Safe to Fly requirements and begin integration testing. Conduct Developmental Testing /Operational Testing (DT/OT), to include flight testing.											
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$5.132 Million) transferred to PT5.											
Title: 6) UIPE FoS Gloves									-	1.182	-
Description: Development of the Next Generation Protective Glove											
FY 2022 Plans: Finalize UIPE FoS Glove prototype development and testing for multiple mission profiles (General Purpose, Aviation Heavy and Aviation Light). Conduct Developmental Testing/Operational Testing (DT/OT) events on mature prototypes.											
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$2.699 Million) transferred to PT5.											
Accomplishments/Planned Programs Subtotals									17.129	18.941	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PT5: Protect (SDD)	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	Continuing	Continuing
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
• IP7: Individual Protection (Op Sys Dev)	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• JI0002: JS AIRCREW MASK (JSAM)	66.468	41.459	20.823	-	20.823	0.000	0.000	0.000	0.000	0.000	128.750
• PHM018: SPU RAPID CAPABILITY DEVELOPMENT AND DEMO (SPU RCDD)	8.808	6.946	13.739	-	13.739	5.973	5.974	5.980	5.980	Continuing	Continuing
• PHM032: UNIFORM INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)	0.000	0.000	0.000	-	0.000	7.478	7.974	7.974	8.328	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• PHM033: UNIFORM INTEGRATED PROTECTIVE ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)	0.000	17.686	51.130	-	51.130	101.486	174.124	194.691	264.433	Continuing	Continuing
• PHM034: UNIFORM INTEGRATED PROTECTION ENSEMBLE FOS AIR (UIPE FOS AIR)	4.786	34.568	23.407	-	23.407	25.794	26.195	26.403	17.586	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
JOINT SERVICE AIRCREW MASK STRATEGIC AIRCRAFT (JSAM SA)											
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 was awarded on 4 January 2019 to Avon Protection Systems, will cover the activities during the Production and Deployment (PD) phase including all Full Rate Production (FRP) builds for the Services.											
SPU RAPID CAPABILITY DEVELOPMENT AND DEPLOYMENT (SPU RCDD)											
The SPU RCDD overall acquisition strategy allows for rapid prototyping and testing of mission critical capabilities needed to enhance mission success, and will use technical and functional evaluations of currently-fielded items to introduce and incorporate operationally-relevant system developments. This will be accomplished through competitive contracting vehicles and by awarding agreements under the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) for the development of prototype test assets. The OTA consists of a consortium of all potential industry, research institutions, and non-traditional government that could be potential solvers for the program, and will be used to procure test prototypes and test articles of possible solutions. Procurement will be through either the OTAs, a Small Business Innovative Research contract, or a more traditional contracting vehicle.											
UNIFORM INTEGRATED PROTECTIVE ENSEMBLE GENERAL PURPOSE (UIPE FOS GP)											
UIPE FoS GP used an Other Transaction Authority (OTA) and Government designed prototypes produced in conjunction with an Industry Partner to acquire prototypes for early user testing. Warfighter feedback, trade space analysis, and chemical testing resulted in three government designed candidates being down selected in 3QFY20. These three candidates are designed to minimize operational burden and provide improved form, fit, function, and integration with the current Warfighter											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>
<p>kits compared to legacy systems. Additional testing, review of the results, stakeholder guidance, and a risk analysis led to the selection of one candidate in FY21 - the Integrated Chemical Biological Lightweight Improved Thermal Ensemble Flame Resistant (ICBLITE FR). UIPE FoS GP will be executing multiple awards in the next 3 years, where production occurring before the milestone to allow for completion of UIPE evaluation (effectiveness, suitability and survivability) prior to award of a high ceiling production contract. This will allow the vendor to better estimate pricing (labor and material) with an initial production ramp up; and Mitigates schedule risk for award of a high ceiling production contract.</p> <p>UNIFORM INTEGRATED PROTECTION ENSEMBLE FOS AIR (UIPE FOS AIR)</p> <p>The UIPE FoS Air utilizes a streamlined acquisition strategy that identifies mature technology and capitalizes on work accomplished by the USAF IAE and UIPE FoS General Purpose programs. The UIPE FoS Air will utilize an Milestone A-C acquisition strategy that will accelerate fielding to the Warfighter. The contract strategy leverages the USAF Integrated Aircrew Ensemble (IAE) SBIR Phase III contract to procure UIPE Air CBRL. The UIPE FoS Air 2PUG will be procured utilizing a Government design on a separate contract.</p> <p>UNIFORM INTEGRATED PROTECTIVE ENSEMBLE FOS GLOVES (UIPE FOS GLOVES)</p> <p>The UIPE FoS Glove program conducted market research through both Requests For Information (RFIs) and a call for White Papers through an Other Transaction Authority (OTA) contracting approach. Eight white papers were deemed acceptable and will be pursued through a Mid-Tier Acquisition Rapid Prototyping strategy. Candidate technologies will undergo Early User Tests/Wear events and material and system level testing to identify available capabilities as well as Analytical framework analyses to determine the most suitable solution(s) per mission profile.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) IP5 / Individual Protection (SDD)				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SPU RCDD - HW C - SEDS Prototype	C/FFP	Battelle Memorial Institute : Columbus, OH	0.000	0.110	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.110	0.000
SPU RCDD - HW C - CBRN Hydration Development	C/FFP	D. Wheatley Enterprises Inc. : Belcamp, MD	0.000	0.250	Nov 2020	0.300	Mar 2022	0.000		0.000		0.000	0.000	0.550	0.000
SPU RCDD - HW C - Assault Respirator	C/FFP	MRIGlobal : Kansas City, MO	0.000	0.564	Nov 2020	0.400	Nov 2021	0.000		0.000		0.000	0.000	0.964	0.000
SPU RCDD - HW C - Prototype Procurement	Various	Various : Various	2.335	1.904	Mar 2021	0.000	Dec 2021	0.000		0.000		0.000	0.000	4.239	0.000
SPU RCDD - HW C - Genetic Sequencing	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	1.219	Sep 2021	0.000		0.000		0.000		0.000	0.000	1.219	0.000
SPU RCDD - HW S - Low Temperature Plasma Mass Spectrometer (LTPMS)	C/CPFF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.000		1.158	Jan 2022	0.000		0.000		0.000	0.000	1.158	0.000
UIPE FOS GP - HW S - TATPE System Development	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	1.632	Feb 2021	0.000		0.000		0.000		0.000	0.000	1.632	0.000
UIPE FOS GP - HW C - Prototype Development	MIPR	TBD : N/A	0.000	0.025	Dec 2020	0.035	Nov 2021	0.000		0.000		0.000	0.000	0.060	0.000
UIPE FOS AIR - HW C - Prototype Development (2PUG)	Various	Various : Various	0.000	0.063		0.000		0.000		0.000		0.000	0.000	0.063	0.000
UIPE FOS GLOVES - HW C - Prototype Manufacturing, Demonstration and Down-select	MIPR	Various : Various	0.000	0.000		0.389	May 2022	0.000		0.000		0.000	0.000	0.389	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			2.335	5.767		2.282		0.000		0.000		0.000	0.000	10.384	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM SA - TD/D S - Logistics, Engineering, and IPT Support	MIPR	Various : Various	0.826	0.204	Dec 2020	0.916	Nov 2021	0.000		0.000		0.000	0.000	1.946	0.000
SPU RCDD - ES C - Engineering Support	Various	Various : Various	0.000	0.672	Dec 2020	0.697	Dec 2021	0.000		0.000		0.000	0.000	1.369	0.000
UIPE FOS GP - ES C - Engineering & Technical IPT Support / SME Support	Various	Various : Various	0.000	1.049	Dec 2020	1.388	Nov 2021	0.000		0.000		0.000	0.000	2.437	0.000
UIPE FOS GP - ILS S - Integrated Log Support-System	Various	Various : Various	0.000	0.000		0.545	Nov 2021	0.000		0.000		0.000	0.000	0.545	0.000
UIPE FOS GP - ES S - TATPE Engineering & Technical IPT Support / SME Support	Various	Various : Various	0.000	0.300	Oct 2020	0.000		0.000		0.000		0.000	0.000	0.300	0.000
UIPE FOS AIR - ES C - Engineering and IPT Support	Various	Various : Various	0.000	0.000		0.578	Nov 2021	0.000		0.000		0.000	0.000	0.578	0.000
UIPE FOS GLOVES - ES C - Engineering, Logistics, Technical, IPT Support	MIPR	Various : Various	0.000	0.000		0.177	May 2022	0.000		0.000		0.000	0.000	0.177	0.000
Subtotal			0.826	2.225		4.301		0.000		0.000		0.000	0.000	7.352	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM SA - DTE S - DT/OT	MIPR	Various : Various	3.423	0.774	Dec 2020	0.115	Nov 2021	0.000		0.000		0.000	0.000	4.312	0.000
SPU RCDD - DTE C - Testing and Evaluation	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.218	0.000		1.468	Dec 2021	0.000		0.000		0.000	0.000	1.686	0.000
SPU RCDD - DTE C - Test and Evaluation	Various	Various : Various	0.000	0.151	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.151	0.000
UIPE FOS GP - DTE C - DT/OT	Various	Various : Various	0.000	2.816	Dec 2020	5.292	Nov 2021	0.000		0.000		0.000	0.000	8.108	0.000
UIPE FOS GP - OTE S - TATPE User Evaluation	Various	Combat Capabilities Development Command (CCDC) Soldier Center : Natick, MA	0.000	0.400	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.400	0.000
UIPE FOS GP - DTE S - TATPE Technical Testing	Various	Combat Capabilities Development Command (CCDC) Soldier Center : Natick, MA	0.000	0.200	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.200	0.000
UIPE FOS AIR - DTE C - System Level Testing	Various	Various : Various	0.000	3.043		2.992	Nov 2021	0.000		0.000		0.000	0.000	6.035	0.000
UIPE FOS GLOVES - DTE C - Early User Testing, Developmental Testing	MIPR	Various : Various	0.000	0.000		0.528	May 2022	0.000		0.000		0.000	0.000	0.528	0.000
Subtotal			3.641	7.384		10.395		0.000		0.000		0.000	0.000	21.420	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IP5 / Individual Protection (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM SA - PM/MS S - Program Management Support	MIPR	Various : Various	1.764	0.082	Dec 2020	0.122	Dec 2021	0.000		0.000		0.000	0.000	1.968	0.000
SPU RCDD - PM/MS C - Program Management Support	Various	Various : Various	0.250	0.729	Nov 2020	0.558	Nov 2021	0.000		0.000		0.000	0.000	1.537	0.000
UIPE FOS GP - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.673	Dec 2020	0.907	Nov 2021	0.000		0.000		0.000	0.000	1.580	0.000
UIPE FOS AIR - PM/MS C - Program Management Services	MIPR	Various : Various	0.000	0.269		0.288	Nov 2021	0.000		0.000		0.000	0.000	0.557	0.000
UIPE FOS GLOVES - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.088	May 2022	0.000		0.000		0.000	0.000	0.088	0.000
Subtotal			2.014	1.753		1.963		0.000		0.000		0.000	0.000	5.730	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			8.816	17.129		18.941		0.000		0.000		0.000	0.000	44.886	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program						Date: April 2022	
Appropriation/Budget Activity 0400 / 5			R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>			Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
JSAM SA - DT/OT (Capability, Integration, Airworthiness Certification)																												
JSAM SA - Initial Operational Capability (IOC)																												
JSAM SA - Full Operational Capability (FOC)																												
SPU RCDD - Low Temperature Plasma Mass Spectrometer (LTPMS)																												
SPU RCDD - Development Efforts																												
SPU RCDD - SEDS Prototype																												
SPU RCDD - CBRN Hydration Resupply																												
SPU RCDD - Assault Respirator																												
SPU RCDD - USSOCOM-specific UGV_UAS Sensor Integration																												
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment																												
UIPE FOS GP - Capability Development Document (CDD)																												
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update																												
UIPE FOS GP - Milestone B																												
UIPE FOS GP - DT/OT																												
UIPE FOS GP - Critical Design Review (CDR)																												
UIPE FOS GP - Operational Assessment																												
UIPE FOS GP - Production Initiation Contract																												
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																	Date: April 2022											
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								IP5 / Individual Protection (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)																												
UIPE FOS GP - Capability Development Document (CDD) Update																												
UIPE FOS GP - Milestone C LRIP																												
UIPE FOS GP - Production Contract Award																												
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)																												
UIPE FOS GP - MS C FRP																												
UIPE FOS GP - TATPE User Evaluation																												
UIPE FOS GP - TATPE Technical Testing																												
UIPE FOS GP - TATPE Milestone C																												
UIPE FOS GP - TATPE IOC																												
UIPE FOS GP - TATPE FOC																												
UIPE FOS AIR - Prototype Development (2PUG)																												
UIPE FOS AIR - Swatch and System Level Testing																												
UIPE FOS AIR - Aircraft Integration Testing																												
UIPE FOS AIR - Human Factors Testing																												
UIPE FOS AIR - Fixed Wing Ejection Aircraft Integration Testing																												
UIPE FOS AIR - Fixed Wing Non-Ejection Aircraft Testing																												
UIPE FOS AIR - Rotary Wing Aircraft Integration Testing																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																Date: April 2022												
Appropriation/Budget Activity										R-1 Program Element (Number/Name)								Project (Number/Name)										
0400 / 5										PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)								IP5 / Individual Protection (SDD)										
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
UIPE FOS AIR - Developmental/Operational Testing (DT/OT)																												
UIPE FOS AIR - Safe-to-Fly and Airworthiness Testing																												
UIPE FOS AIR - 2PUG Full Rate Production (FRP)																												
UIPE FOS AIR - Capability Development Document (CDD) Update																												
UIPE FOS AIR - Safe to Fly Certification																												
UIPE FOS AIR - 2 PUG Initial Operational Capability (IOC)																												
UIPE FOS GLOVES - Early User, material and system level testing																												
UIPE FOS GLOVES - Draft CDD																												
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation																												
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT																												
UIPE FOS GLOVES - Trade Space Analysis Decision																												
UIPE FOS GLOVES - Mid-Tier Acquisition IPR																												
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point																												
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
JSAM SA - DT/OT (Capability, Integration, Airworthiness Certification)	1	2021	4	2022
JSAM SA - Initial Operational Capability (IOC)	2	2021	2	2021
JSAM SA - Full Operational Capability (FOC)	4	2024	2	2025
SPU RCDD - Low Temperature Plasma Mass Spectrometer (LTPMS)	2	2021	2	2023
SPU RCDD - Development Efforts	1	2021	4	2027
SPU RCDD - SEDS Prototype	1	2021	4	2021
SPU RCDD - CBRN Hydration Resupply	1	2021	4	2022
SPU RCDD - Assault Respirator	1	2021	4	2022
SPU RCDD - USSOCOM-specific UGV_UAS Sensor Integration	3	2021	4	2023
UIPE FOS GP - Self Assessment Joint Independent Logistics Assessment	1	2021	1	2021
UIPE FOS GP - Capability Development Document (CDD)	1	2021	1	2021
UIPE FOS GP - Test & Evaluation Master Plan (TEMP) Update	3	2021	3	2021
UIPE FOS GP - Milestone B	3	2021	3	2021
UIPE FOS GP - DT/OT	1	2022	3	2023
UIPE FOS GP - Critical Design Review (CDR)	3	2022	3	2022
UIPE FOS GP - Operational Assessment	4	2022	1	2023
UIPE FOS GP - Production Initiation Contract	4	2022	4	2022
UIPE FOS GP - Manufacturing Readiness Assessment (MRA)	3	2023	3	2023
UIPE FOS GP - Joint Independent Logistics Assessment (JILA)	4	2023	4	2023
UIPE FOS GP - Capability Development Document (CDD) Update	4	2023	4	2023
UIPE FOS GP - Milestone C LRIP	4	2023	4	2023
UIPE FOS GP - Production Contract Award	1	2024	1	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program				Date: April 2022	
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) IP5 / <i>Individual Protection (SDD)</i>	
		Start		End	
Events	Quarter	Year	Quarter	Year	
UIPE FOS GP - Multi-Service Operational Test and Evaluation (MOT&E)	2	2024	2	2024	
UIPE FOS GP - MS C FRP	1	2025	1	2025	
UIPE FOS GP - TATPE User Evaluation	1	2021	2	2021	
UIPE FOS GP - TATPE Technical Testing	1	2021	2	2022	
UIPE FOS GP - TATPE Milestone C	3	2022	3	2022	
UIPE FOS GP - TATPE IOC	1	2023	1	2023	
UIPE FOS GP - TATPE FOC	1	2024	1	2024	
UIPE FOS AIR - Prototype Development (2PUG)	1	2021	3	2022	
UIPE FOS AIR - Swatch and System Level Testing	2	2021	3	2022	
UIPE FOS AIR - Aircraft Integration Testing	3	2021	3	2022	
UIPE FOS AIR - Human Factors Testing	3	2021	3	2022	
UIPE FOS AIR - Fixed Wing Ejection Aircraft Integration Testing	3	2021	3	2023	
UIPE FOS AIR - Fixed Wing Non-Ejection Aircraft Testing	3	2021	3	2023	
UIPE FOS AIR - Rotary Wing Aircraft Integration Testing	3	2021	3	2023	
UIPE FOS AIR - Developmental/Operational Testing (DT/OT)	1	2022	3	2022	
UIPE FOS AIR - Safe-to-Fly and Airworthiness Testing	1	2022	3	2023	
UIPE FOS AIR - 2PUG Full Rate Production (FRP)	4	2022	4	2022	
UIPE FOS AIR - Capability Development Document (CDD) Update	4	2022	4	2022	
UIPE FOS AIR - Safe to Fly Certification	4	2023	4	2023	
UIPE FOS AIR - 2 PUG Initial Operational Capability (IOC)	2	2024	2	2024	
UIPE FOS GLOVES - Early User, material and system level testing	2	2021	2	2024	
UIPE FOS GLOVES - Draft CDD	3	2021	3	2021	
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Prototype Initiation	4	2021	1	2022	
UIPE FOS GLOVES - Mid-Tier Acquisition DT/OT	2	2022	3	2023	
UIPE FOS GLOVES - Trade Space Analysis Decision	3	2022	3	2022	

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022	
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)		Project (Number/Name) IP5 / Individual Protection (SDD)	
	Start		End	
Events	Quarter	Year	Quarter	Year
UIPE FOS GLOVES - Mid-Tier Acquisition IPR	2	2023	2	2023
UIPE FOS GLOVES - Mid-Tier Acquisition Decision Point	2	2024	2	2024
UIPE FOS GLOVES - Mid-Tier Acquisition Rapid Fielding OR/Milestone C	3	2024	3	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IS5 / Information Systems (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IS5: Information Systems (SDD)	-	5.810	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.810
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) CBRN Information System (CBRN IS), and
- (2) Software Support Activity (SSA).

The CBRN IS program provides a collaborative Cloud hosted 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. The CBRN IS enterprise makes CBRN decision aids readily accessible from any desktop through a web browser simplifying interoperability, reducing integration and deployment costs and increases cybersecurity protection. The CBRN IS program will transition to the BA7 MOD CBRN IS program (Project IS7) starting in FY22.

The SSA program provides for enterprise services in the areas of software development, system/network architectures, cybersecurity, information assurance standards and policies and interoperability. The SSA emphasizes development of reference implementations to guide Government and industry system and software developers to ensure that their products meet risk management framework compliance and common interoperability standards such as the Integrated Sensor Architecture (ISA). SSA efforts will transition to the BA7 MOD CBRN IS program (Project IS7) starting in FY22.

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

	FY 2021	FY 2022	FY 2023
Title: 1) CBRN IS	3.022	-	-
Description: Product Development, Operational Assessments, Management, Engineering, and Cybersecurity Support			
Title: 2) SSA	2.788	-	-
Description: Enterprise Support and Services			
Accomplishments/Planned Programs Subtotals	5.810	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program								Date: April 2022			
Appropriation/Budget Activity 0400 / 5				R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) IS5 / <i>Information Systems (SDD)</i>			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• IS7: <i>Information Systems (Op Sys Dev)</i>	3.122	15.281	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.403
• UN7: <i>Understand (Op Sys Dev)</i>	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• SA0006: <i>CBRN INFORMATION SYSTEMS (CBRN IS)</i>	0.512	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.512

Remarks

D. Acquisition Strategy

CBRN INFORMATION SYSTEMS

CBRN IS acquisition utilizes a Family-of-Systems (FoS) approach to align multiple capabilities to the CBRN-IS architecture and operational environment. 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 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 to provide for the spiral development and fielding of modular capability packages. CBRN IS will transition to MOD CBRN IS beginning 1QFY22.

SOFTWARE SUPPORT ACTIVITY (SSA)

Software Support Activity (SSA) is a non-acquisition, service organization that provides professional subject matter expertise support throughout the CBEP Enterprise. These services are provided by government and contract personnel with expertise in software development, network architecture, cybersecurity, technology transitions, information assurance, and standards and policies compliance, and are provided throughout the lifecycle of programs within the CBEP portfolio. These efforts facilitate the efficient development, transition, fielding, modernization, and sustainment of interoperable and integrated Chemical Biological Radiological and Nuclear (CBRN) capabilities. In FY22, SSA efforts will transition to Modernization CBRN Information Systems (MOD CBRN IS).

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) IS5 / Information Systems (SDD)				
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - SW S - software - integration with BSP, JEM, JWARN	MIPR	Various : Various	3.910	1.230	Dec 2020	0.000		0.000		0.000		0.000	0.000	5.140	0.000
SSA - SW S - CBRN Data Model	C/CPAF	Various : Various	9.480	0.778	Feb 2020	0.000		0.000		0.000		0.000	0.000	10.258	0.000
Subtotal			13.390	2.008		0.000		0.000		0.000		0.000	0.000	15.398	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - ES S - Support Costs - Cybersecurity and IA updates, architecture documentation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.122	0.715	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.837	0.000
SSA - ES S - Support Costs	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	12.823	1.900	Feb 2021	0.000		0.000		0.000		0.000	0.000	14.723	0.000
Subtotal			15.945	2.615		0.000		0.000		0.000		0.000	0.000	18.560	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - OTE S - Operational Test - service-specific testing, joint test	MIPR	Various : Various	2.599	0.786	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.385	0.000
Subtotal			2.599	0.786		0.000		0.000		0.000		0.000	0.000	3.385	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) IS5 / Information Systems (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - PM/MS S - Program Management - Planning, Programming, and Budgeting	MIPR	Various : Various	0.910	0.291	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.201	0.000
SSA - PM/MS S - Management Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.537	0.110	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.647	0.000
Subtotal			4.447	0.401		0.000		0.000		0.000		0.000	0.000	4.848	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			36.381	5.810		0.000		0.000		0.000		0.000	0.000	42.191	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IS5 / <i>Information Systems (SDD)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBRN IS - Product Development																												
CBRN IS - Operational Assessments																												
CBRN IS - Developmental Test																												
CBRN IS - Total Package Fielding																												
CBRN IS - Continuous Engineering																												
SSA - Provide Information Assurance Site Compliance Testing																												
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation																												
SSA - Provide Enterprise Architecture Products and Services																												
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing																												
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.																												
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy																												
SSA - Sustain Common Components products, process and services																												
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations																												
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) IS5 / <i>Information Systems (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBRN IS - Product Development	1	2021	4	2021
CBRN IS - Operational Assessments	1	2021	4	2021
CBRN IS - Developmental Test	1	2021	4	2021
CBRN IS - Total Package Fielding	1	2021	4	2021
CBRN IS - Continuous Engineering	1	2021	4	2021
SSA - Provide Information Assurance Site Compliance Testing	1	2021	4	2021
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2021	4	2021
SSA - Provide Enterprise Architecture Products and Services	1	2021	4	2021
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2021	4	2021
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2021	4	2021
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	1	2021	4	2021
SSA - Sustain Common Components products, process and services	1	2021	4	2021
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2021	4	2021
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MB5 / Medical Biological Defense (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MB5: Medical Biological Defense (SDD)	-	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505
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 medical countermeasures, development of reagents, assays, diagnostic equipment, Biosurveillance and supporting efforts. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. MB5 efforts in FY2022 progress to the Enabling Investments (EN5), Mitigate (MT5), Protect (PT5), and Understand (UN5) portfolios. This restructuring is intended to provide standardization/alignment across CBDP research, development /acquisition efforts and small model development with a success End of Phase 1 meeting with the FDA.

Efforts included in this Project are:

- (1) Countering Emerging Threats Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR) **Progresses to MT5 in FY2023**,
- (2) Botulinum Monoclonal Antibodies (BOT MAB) **Progresses to PT5 in FY2023**,
- (3) Chem Bio Incident Preparedness and Response - Advanced Development and Manufacturing (CBIPR - ADM) **Progresses to EN5 in FY2023**,
- (4) Next Generation Diagnostic System (NGDS) 2 Chemical Diagnostic (NGDS 2 CHEMDX) **Progresses to UN5 in FY2023**,
- (5) Next Generation Diagnostic System (NGDS) 2 Man Portable Diagnostic System (NGDS 2 MPDS) **Progresses to UN5 in FY2023**,
- (6) Defense Biological Products Assurance Program (DBPAP) **Progresses to UN5 in FY2023**,
- (7) Antiviral Therapeutics Program (AV TX) **Progresses to MT5 in FY2023**,
- (8) Special Immunizations Program (VAC SIP) **Progresses to PT5 in FY2023**,
- (9) Antiviral Prophylaxis Studies (Congressional Interest Item - CONG), and
- (10) Botulinum and Plague Vaccine Storage and Stability Testing (Congressional Interest Item - CONG),

The Countering Emerging Threats Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR) program will develop repurposed drugs as medical countermeasures towards known, potential, and unknown and emerging threats, bridging the gap from when a threat is identified until targeted countermeasures such as vaccines are available. CET RAIDR will leverage lessons learned in Coronavirus Aid, Relief, and Economic Security (CARES) Act funded efforts under Coronavirus Disease (COVID) Repurposed Therapeutics (CR TX) and address advanced development portion of Science and Technology (S&T) efforts from Defense Threat Reduction Agency (DTRA) Joint Science and Technology Office (JSTO) Development of Medical Countermeasures Against Novel Entities (DOMANE) and Layered Integrated Medical Countermeasures Intervention Technologies (LIMIT) programs for new and emerging threats.

The BOT MAB program will provide protection from Botulinum neurotoxin (BoNT) which is classified by the CDC as a category A threat, one that poses the highest risk to the public and national security. This medical countermeasure will prevent (pre-exposure) and reduce the incidence or progression of disease following exposure to

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MB5 / <i>Medical Biological Defense (SDD)</i>
<p>BoNT serotypes A/B in adults. The drug product contains a total of six monoclonal antibodies, three for BoNT type A and three for BoNT type B, and the planned route of administration is Intra-Muscular (IM) injection.</p> <p>The CBIPR-ADM program maintains the DoD-ADM facility in a state of operational readiness so that it can rapidly develop and manufacture medical countermeasures (MCMs) against current and emerging chemical and biological threats including pandemic response. Operational readiness is achieved by establishing and enhancing proven biopharmaceutical manufacturing platform technologies and infrastructure at the facility. By establishing and enhancing proven manufacturing platform technologies and infrastructure, the DoD-ADM facility will have the capability to accelerate development of MCMs at all stages of development, enhance preparedness for existing threats, and rapidly respond to emerging threats as part of a medical integrated layered defense. MCMs impacted by these efforts include: Vaccines for Viral Agents, Vaccines for Bacterial Agents and Toxins, monoclonal antibodies, antibody fragments and conjugates for therapeutic and prophylactic use across all agent classes. Funds to support the facility in a state of operational readiness were previously provided via individual product development and manufacturing funding lines. The Department is now providing dedicated funds. The CBIPR-ADM return on investment is an increased level of preparedness and responsiveness.</p> <p>The NGDS 2 ChemDx program will provide a rapid, hand-held, point-of-care device, for the quantitative detection of acetyl cholinesterase (AChE) activity in finger stick and venous whole blood samples of individuals suspected of being exposed to cholinesterase inhibiting substances, such as chemical nerve agents. NGDS 2 ChemDx will be employed by the Army, Air Force, Navy, Marines and SOCOM at multiple echelons of healthcare. NGDS 2 ChemDx test results are to be used to aid in the diagnosis and treatment of individuals suspected of having exposure to chemical nerve agents.</p> <p>The NGDS 2 MPDS program will provide a simple-to-use, portable diagnostic device capability that can be used in austere battlefield environments to assist in the diagnosis of infectious diseases and biological warfare agents. The MPDS will enable earlier patient diagnosis improve decision support for treatment, evacuation and command situational awareness, and mitigate the effects of exposure to unknown infectious disease and biological agents. In FY23, NGDS 2 MPDS concludes hardware, software and assay design; completes clinical trials for the device and two assay panels, and; continues development of a third assay panel.</p> <p>The DBPAP program facilitates new technology transition to advanced development, efficient production, and timely distribution. DBPAP consists of a Critical Assays and Reagents, which serves as the principal resource for biological assays and reagents, and the Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC), which generates data on biodefense pathogens to inform product development. DBPAP 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 TARMAC initiative, the DBPAP will use a systematic approach to the introduction of new materials and information into MCM development. This includes advanced platform technologies within the DoD's ADM facility. In FY23 DBPAP continues development/expansion of biological threat agents reference materials to known and emerging threats.</p> <p>The AV TX program will develop and deliver FDA approved antiviral therapeutics for the warfighter. Based on the current gap in defense to the warfighter, the initial therapeutic candidate is now for a treatment against the Marburg virus in lieu of Ebola Zaire to follow for approval of a PanFilo therapeutic. Other pathogens on the biological warfare threat lists, including viruses of interest from Filoviridae, Arenaviridae, Bunyaviridae, and Flaviviridae, are targets of future interest. Developed broad spectrum antiviral therapeutics will be employed after suspected or confirmed exposure to the relevant threat agents and AVTX Medical Countermeasures (MCMs)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MB5 / Medical Biological Defense (SDD)	
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			
The SIP continually manages, updates, and executes the Investigational New Drugs (INDs) of selected prophylaxis, treatments and diagnostics development products which provide additional protection to individuals that are at high risk of exposure to CBRN agents. These vaccines will be used to provide additional levels of protection to laboratory workers conducting research. DoD has the mission to maintain IND vaccines in Good Manufacturing Practice (GMP) storage and to conduct the periodic potency and stability testing of these materials to support submissions to the FDA.			
The Antiviral Prophylaxis Studies (Congressional Interest Item) program will manage the development of TPOXX as Post-Exposure Prophylaxis (PEP) for Smallpox. TPOXX is only approved as treatment for clinically evident smallpox, which is usually diagnosed 12 to 14 days post-exposure, but as late as 17 days post-exposure. The warfighter is therefore exposed to a "window of vulnerability" in the progression of smallpox for which no treatment options are approved by the FDA. This effort will complete all required nonclinical and clinical studies necessary to submit a supplemental New Drug Application (sNDA) or New Drug Application (NDA) seeking approval of TPOXX as a post-exposure prophylaxis. The funding supports a regulatory pathway to provide a Post-Exposure Prophylactic to close the "window of vulnerability" by providing a treatment option for smallpox after vaccination ceases to be effective and prior to clinically evident disease.			
The Botulinum and Plague Vaccine Storage Stability Testing (VSST) (Congressional Interest Item) program utilizes Congressional directed funding for the Botulinum and Plague vaccines. DoD has the mission to maintain the existing material in Good Manufacturing Practice (GMP) storage and to conduct the periodic potency and stability testing of these materials to support submissions to the FDA and potential future emergency response. In FY21, VSST continues storage and stability testing of VAC BOT and VAC PLG materials, and initiates a Phase 2 clinical trial evaluating the use of a biological response modifier (BRM) co-administered with the VAC PLG drug product to identify avenues for faster onset and longer duration of protection.			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Title: 1) Countering Emerging Threats Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR) Description: Advance Development FY 2022 Plans: Initiate advanced development of up to two (2) FDA-approved and/or late-stage products for repurposing against CBRN indications. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT5.	-	8.000	-
Title: 2) CET RAIDR Description: Pandemic Preparedness FY 2022 Plans:	-	12.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>		Project (Number/Name) MB5 / <i>Medical Biological Defense (SDD)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Continues on-going COVID activities to conduct advanced development of repurposed drugs. These resources support development of repurposing reports (including animal T&E studies) and pre-Emergency Use Authorization (EUA) submissions up to two therapeutics each year. These efforts will address known and potential threats to prepare DoD for response to biological threats.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MT5.					
Title: 3) Botulinum Monoclonal Antibodies (BOT MAB) Description: Clinical and Nonclinical Studies FY 2022 Plans: Initiate nonhuman primate proof of concept efficacy study and the Phase 2 clinical study. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$27.000 Million) transferred to PT5.			20.474	27.723	-
Title: 4) Botulinum Monoclonal Antibodies (BOT MAB) Description: Manufacturing FY 2022 Plans: Continue Botulinum monoclonal antibody platform development with large scale manufacturing runs to produce product for pivotal animal studies and Phase 3 clinical study. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$37.741 Million) transferred to PT5.			0.001	33.000	-
Title: 5) Chem Bio Incident Preparedness and Response - Adv Dev Mfg (CBIPR - ADM) Description: ADM Infrastructure FY 2022 Plans: Continue activities to maintain the DoD ADM's capabilities in a state of readiness to support Medical Countermeasure (MCM) development and manufacturing. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 Funding (\$10.974 Million) transferred to EN5.			9.805	10.363	-
Title: 6) NGDS 2 Chemical Diagnostic (NGDS 2 CHEMDX)			2.016	2.693	-

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Description: Chemical Diagnostic System (CHEMDX) FY 2022 Plans: Continue Engineering & Manufacturing Development and initiate clinical trials for NGDS 2 ChemDx System. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.					
Title: 7) NGDS 2 Chemical Diagnostic (NGDS 2 CHEMDX) Description: Chemical Diagnostic System (CHEMDX) FY 2022 Plans: Conduct program management and government test activities for NGDS 2 CHEMDX. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY23 funding transferred to UN5.			-	2.236	-
Title: 8) NGDS 2 Man Portable Diagnostic System (NGDS 2 MPDS) Description: Man Portable Diagnostic System (MPDS) Product Development FY 2022 Plans: Continue hardware, software, assay development, and start clinical trials; continue development of third assay panel, and; management of hardware and software configurations. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN5.			30.604	8.937	-
Title: 9) NGDS 2 MPDS Description: Man Portable Diagnostic System (MPDS) Program Management and Support FY 2022 Plans: Conduct program management. Complete developmental testing and operational assessments. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY23 funding transferred to UN5.			-	3.246	-
Title: 10) Defense Biological Products Assurance Program (DBPAP)			8.564	8.043	-

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Description: Development FY 2022 Plans: Continue development/expansion of biological threat agents reference materials to known and emerging threats. Continue development of assays and nucleic acid based genomic assays to support fielded and developmental systems. Continue QA/QC testing to encompass the transition and fielding of biological detection assays. 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. Continue development of prototypes/information for strains contained in Unified Culture Collection. Supports establishment of a Common Reference Repository - a single source for well-characterized, traceable test articles and vital information for biological defense, effective verification of proficiency testing, improved acquisition of emerging technologies, all at a decreased cost for the individual organizations. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$8.163 Million) transferred to UN5.					
Title: 11) Antiviral Therapeutics Program (AV TX) Description: Enabling Technologies FY 2022 Plans: Complete Natural History study with Non-Human Primates (NHPs) infected with Marburg virus. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$10.122 Million) transferred to MT5.			11.420	14.476	-
Title: 12) VAC SIP Description: Storage, Distribution, Potency Testing FY 2022 Plans: Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$6.694 Million) transferred to PT5.			2.777	6.631	-
Accomplishments/Planned Programs Subtotals			85.661	137.348	-

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	FY 2021	FY 2022
Congressional Add: 1) Antiviral Prophylaxis Studies FY 2021 Accomplishments: Completed protocol development and executed Phase II and Phase III trials.	4.500	-
Congressional Add: 2) Recombinant Botulinum and Plague Vaccines - Storage FY 2021 Accomplishments: Stored Botulinum and Plague vaccines and associated critical reagents to ensure there is a stock of material available to the Warfighter in an emergency.	1.000	-
Congressional Add: 3) Adaptive Clinical Trial FY 2021 Accomplishments: Conducted adaptive clinical trial to test for improved efficacy and reduced immunization time for the Warfighter achieved by utilizing a Biological Response Modulator (BRM) with the current Plague vaccine. The intent of new BRMs is to reduce needle in arm count and time for full immunity, allowing for faster recovery and deployment of the warfighter.	23.613	-
Congressional Add: 4) Recombinant Botulinum and Plague Vaccines - Stability Testing FY 2021 Accomplishments: Conducted stability testing of the VAC BOT and VAC PLG to ensure the drug product is safe and usable for the warfighter in case of an emergency use situation. Initial testing began on contract award and maintained appropriate time points.	2.383	-
Congressional Adds Subtotals	31.496	-

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

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• EN4: <i>Enabling Investments (ACD&P)</i>	0.000	0.000	8.781	-	8.781	9.172	9.179	9.392	9.440	Continuing	Continuing
• PT4: <i>Protect (ACD&P)</i>	0.000	0.000	203.689	-	203.689	183.220	139.375	113.754	105.176	Continuing	Continuing
• EN5: <i>Enabling Investments (SDD)</i>	0.000	0.000	13.392	-	13.392	13.984	14.037	14.341	13.728	Continuing	Continuing
• MT5: <i>Mitigate (SDD)</i>	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• PT5: <i>Protect (SDD)</i>	0.000	0.000	96.860	-	96.860	98.427	78.868	48.793	35.494	Continuing	Continuing
• UN5: <i>Understand (SDD)</i>	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
• JX0210: <i>DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)</i>	2.845	2.760	2.736	-	2.736	2.736	2.736	2.736	2.736	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PHM039: <i>BOTULINUM MONOCLONAL ANTIBODIES (BOT MAB)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	20.157	21.299	Continuing	Continuing
• SA0043: <i>NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEM DX)</i>	0.000	0.000	0.000	-	0.000	7.778	12.730	12.730	12.730	Continuing	Continuing
• SA0044: <i>NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)</i>	0.000	4.624	3.126	-	3.126	4.915	5.374	3.006	0.538	Continuing	Continuing

Remarks

D. Acquisition Strategy

COUNTERING EMERGING THREATS RAPID ACQUISITION AND INVESTIGATION OF DRUGS FOR REPURPOSING (CET RAIDR)

The Countering Emerging Threats - Rapid Acquisition and Investigation of Drugs for Repurposing (CET RAIDR) program will leverage lessons learned from the COVID-19 response to conduct nonclinical studies and/or clinical trials to evaluate FDA-approved and late-stage development products against CBRN threats. Data generated from these efforts will be used to support a future interim capability, such as repurposing reports to inform Clinical Practice Guidelines (CPGs), pre-Emergency Use Authorizations (pre-EUAs) to stage products in preparation for emergencies, EUAs to rapidly treat warfighters once an emergency is declared, and data for potential new approved FDA indications. This program is funded under both CET RAIDR and CET RAIDR-ENBD.

BOTULINUM MONOCLONAL ANTIBODIES (BOT MAB)

The BOT MAB program was initiated by the Medical Countermeasure Platform Technologies (MCMPT). The regulatory approach of the program is to pursue development of products for FDA approval. The program will conduct clinical and non-clinical studies to confirm duration of protection and on-set of protection. The performer will complete small model development and procure long lead items during the Technology Maturation and Risk Reduction (TMRR) phase in order to mitigate risk and accelerate the schedule activities for BLA submission during the Product & Development (P&D) phase. The performer will continue large scale manufacturing during the Engineering and Manufacturing Development (EMD) phase in order to accelerate the schedule activities for the prophylactic indication.

CHEM BIO INCIDENT PREPAREDNESS AND RESPONSE - (CBIPR-ADM)

A contract was awarded to Ology Bioservices (then Nanotherapeutics, Inc.) on 20 March 2013 to establish a Department of Defense (DoD) Advanced Development and Manufacturing (ADM) capability that can rapidly develop and manufacture Medical Countermeasures (MCMs) from early stage development up through Food

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<p>and Drug Administration (FDA) licensure. The establishment of this capability consisted of designing, commissioning, and validating a biopharmaceutical facility (both its infrastructure and equipment) that is equipped with two (2) advanced development and manufacturing suites, which utilize flexible, agile, single-use (disposable), modular, and multi-product technologies that comply with Good Manufacturing Practices (GMPs) and can operate at Biological Safety Level-3 (BSL-3). The capability was established on 31 March 2017.</p> <p>Since its establishment, the DoD ADM has been sustained in a state of operational readiness so that it can continue to be an enduring domestic MCM manufacturing capability that provides the DoD with priority access. The original sustainment strategy consisted of directly funding all costs/activities (i.e. calibration, maintenance, etc.) via sustainment options on the original contract. The CBIPR funds requested support this critical DoD infrastructure. The CBIPR-ADM funding line supports the infrastructure by funding new capability-building efforts (such as manufacturing platforms using FDA known technologies) that will enable new additional MCM product development. This strategy will result in the self-sustainability of the DoD ADM by spreading the sustainment costs equally across all projects (including commercial clients), which mimics the standard practice across the Contract Development and Manufacturing Organization (CDMO) industry.</p> <p>NEXT GEN DIAG 2 CHEMICAL DIAGNOSTICS (NGDS 2 CHEMDX)</p> <p>NGDS Increment 2 ChemDx is using an Other Transactions Authority (OTA) agreement to take advantage of nontraditional Defense contractor offerings. NGDS 2 ChemDx will use the agreement holder to conduct system development, clinical trials and pre-developmental testing (pre-DT) testing. ChemDx will use Department of Defense (DoD) test agencies to conduct Development Testing and operational user evaluations. Clinical trials will inform approval of the ChemDx system by the U.S. Food and Drug Administration for "Prescription Home Use."</p> <p>NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)</p> <p>NGDS 2 MPDS is currently in engineering and manufacturing development (EMD). MPDS is using Other Transactions Authority (OTA) agreements to take advantage of nontraditional Defense contractor offerings. MPDS will use the agreement holder to conduct the clinical trials and pre-developmental testing (pre-DT) instrument testing. MPDS will be using DoD clinical trial sites to support the agreement holder. MPDS will be using Department of Defense (DoD) agencies to conduct DT, operational assessment (OA), and Initial Operational Test & Evaluation (IOT&E). For the Production/Deployment Phase, the NGDS 2 MPDS will be using a COVID established Indefinite Delivery/Indefinite Quantity (IDIQ) contract with the EMD performer to procure prime mission product, support, and assays.</p> <p>DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)</p> <p>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) as well as detection and diagnostic assays for bio-threat 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. DBPAP provides a centralized management function for the establishment of a common repository of standardized biological materials to effectively support the Department of Defense (DoD)'s and the Department of Homeland Security's (DHS) mission of providing consistent capabilities and a capacity for customers to mitigate biological events.</p>		

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<p>ANTI-VIRAL THERAPEUTICS (AV TX)</p> <p>The Anti-viral Therapeutics (AVTX) program acquisition strategy supports the development of therapeutics through the Engineering, Manufacturing and Development (EMD) phase against the Ebola (Zaire), Marburg and Sudan bio warfare threats. The initial therapeutic candidate is now for a treatment against the Marburg virus in lieu of Ebola Zaire based on the current gap in defense to the warfighter. The overall regulatory approach of the program remains to pursue development of products to Food and Drug Administration (FDA) approval under the Animal Rule that was approved as the path, by the FDA in 1QFY19. The program completed a dose ranging study for the Ebola Zaire indication and initiated a Natural History Study for Marburg that is part of the holistic FDA regulatory approach for a final indication of a broad spectrum antiviral pan filo drug product. A natural history study for Marburg and Sudan and 3 pivotal animal studies per indication are required as part of the animal rule requirements for the FDA) approved plan. The acquisition strategy for Marburg and Sudan indications will have the performer submitting amended New Drug applications for the therapeutics during the EMD phase.</p> <p>CONGRESSIONAL INTEREST ITEMS</p> <p>CONGRESSIONAL INTEREST ITEM #230</p> <p>Smallpox Antiviral Prophylaxis Studies - Assay development and validation performed in FY19 to inform approval from the FDA for post-exposure prophylaxis (PEP) indication for smallpox. Contract awarded to performer to complete Phase II and Phase III clinical trials and complete regulatory submission for label expansion. Full and open competition</p> <p>Botulinum and Plague Vaccine Storage and Stability Testing (VSST) - This is to utilize the funding to its maximum potential and obtain best result and value for the warfighter. Contract award winners are required to maintain consistent and regular testing time points of the vaccine drug product to ensure safety and usability for the warfighter.</p> <p>SPECIAL IMMUNIZATION PROGRAM (VAC SIP)</p> <p>The SIP effort continually manages, updates, and executes the Investigational New Drugs (INDs) of selected prophylaxis, treatments and diagnostics development products which provide additional protection to individuals that are at high risk of exposure to CBRN agents. Efforts span Good Manufacturing Practices (GMP), Good Laboratory Practices guidelines necessary to conduct storage and periodic potency testing, as well as clinical administration of products in accordance with the FDA regulated Investigational New Drug requirements. This Department of Defense program supports the Federal interagency with this effort, as well as academic and industry partners.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)						Project (Number/Name) MB5 / Medical Biological Defense (SDD)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBIPR-ADM - ADM Capability	C/CPFF	Ology Bioservices : Inc., Alachua, FL	0.000	9.805	Dec 2020	0.000		0.000		0.000		0.000	0.000	9.805	0.000
CBIPR-ADM - Infrastructure	C/CPFF	Ology Bioservices : Inc., Alachua, FL	0.000	0.000		9.553	Mar 2022	0.000		0.000		0.000	0.000	9.553	0.000
NGDS 2 CHEMDX - HW C - Chemical Diagnostic System (CHEMDX) Product Development	C/CPFF	MRIGlobal : Kansas City, MO	0.000	1.849	Dec 2021	2.693	Dec 2021	0.000		0.000		0.000	0.000	4.542	0.000
NGDS 2 CHEMDX - HW C - ChemDx Product Management	Various	Various : Various	0.000	0.000		1.329	Dec 2021	0.000		0.000		0.000	0.000	1.329	0.000
NGDS 2 MPDS - HW C - Man Portable Diagnostic System (MPDS)	C/CPFF	Cepheid : Sunnyvale, CA	0.000	21.112	Dec 2020	5.303	Dec 2021	0.000		0.000		0.000	0.000	26.415	0.000
NGDS 2 MPDS - HW C - MPDS Product Management	Various	Various : Various	0.000	2.505	Dec 2020	2.234	Dec 2021	0.000		0.000		0.000	0.000	4.739	0.000
NGDS 2 MPDS - HW C - Assay Development	Various	US Army Medical Research and Development Command (USAMRDC) : Fort Detrick, MD	0.000	0.000		1.400	Dec 2021	0.000		0.000		0.000	0.000	1.400	0.000
DBPAP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : Various	4.888	1.873	Mar 2021	1.698	Mar 2022	0.000		0.000		0.000	0.000	8.459	0.000
AV TX - AV TX Product Development	Various	Various : Various	0.000	1.201	Jan 2021	0.000		0.000		0.000		0.000	0.000	1.201	0.000
AV TX - Joint Mobile Emerging Disease Intervention OCONUS	C/FP	Battelle Memorial Institute : Columbus, OH	1.448	1.476	Jul 2021	0.000		0.000		0.000		0.000	0.000	2.924	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Clinical Capability (JMEDICC) - OTA															
AV TX - Nonclinical Trials - OTA	C/FP	Gilead Sciences : San Francisco, CA	12.379	6.524	Apr 2021	8.000	Nov 2021	0.000		0.000		0.000	0.000	26.903	0.000
CONG - Antiviral Prophylaxis Studies-Clinical Trials - OTA	C/CPFF	SIGA Technologies : Inc., New York, NY	23.792	4.500	Feb 2021	0.000		0.000		0.000		0.000	0.000	28.292	0.000
CONG - CONG VSST - Stability Testing	C/FFP	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	2.383	Sep 2021	0.000		0.000		0.000		0.000	0.000	2.383	0.000
CONG - HW C - Recombinant Botulinum and Plague Vaccines - Storage	C/FFP	Various : Various	0.000	1.000	Sep 2021	0.000		0.000		0.000		0.000	0.000	1.000	0.000
CONG - HW C - Adacptive Clinical Trial	C/FFP	Various : Various	0.000	23.613	Sep 2021	0.000		0.000		0.000		0.000	0.000	23.613	0.000
Subtotal			42.507	77.841		32.210		0.000		0.000		0.000	0.000	152.558	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS 2 MPDS - ES C - Studies and Support	Various	Various : Various	0.000	0.129	Dec 2020	0.129	Dec 2021	0.000		0.000		0.000	0.000	0.258	0.000
DBPAP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : Various	4.896	1.911	Mar 2021	1.732	Mar 2022	0.000		0.000		0.000	0.000	8.539	0.000
DBPAP - ES C - Select Biological Threat Agent Reference Material Regulatory/Quality Assurance (QA) Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	4.423	1.927	Mar 2021	1.747	Mar 2022	0.000		0.000		0.000	0.000	8.097	0.000

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Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC SIP - Storage and Distribution of Vaccines	SS/FP	Fisher BioServices : Rockville, MD	2.715	0.439	Jan 2021	0.593	Jan 2022	0.000		0.000		0.000	0.000	3.747	0.000
Subtotal			12.034	4.406		4.201		0.000		0.000		0.000	0.000	20.641	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CET RAIDR - DTE C - Non-Clinical and Clinical Studies	Various	Various : Various	0.000	0.000		15.920	Dec 2021	0.000		0.000		0.000	0.000	15.920	0.000
BOT MAB - DTE C - BOT MONO	C/CPFF	Ology Bioservices : Inc., Alachua, FL	0.000	14.437	Dec 2020	45.723	Dec 2021	0.000		0.000		0.000	52.034	112.194	0.000
NGDS 2 MPDS - OTHT S - BSL4 Testing	MIPR	US Army Medical Research and Development Command (USAMRDC) : Fort Detrick, MD	0.000	0.364	Apr 2021	0.000	Dec 2021	0.000		0.000		0.000	0.000	0.364	0.000
NGDS 2 MPDS - DTE S - MPDS SystemTest & Evaluation	MIPR	Various : Various	0.000	1.454	Dec 2020	0.803	Dec 2021	0.000		0.000		0.000	0.000	2.257	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	15.755	1.746	Jan 2021	1.828	Jan 2022	0.000		0.000		0.000	0.000	19.329	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines #2	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.520	0.592	Dec 2020	4.210	Jan 2022	0.000		0.000		0.000	0.000	5.322	0.000
Subtotal			16.275	18.593		68.484		0.000		0.000		0.000	52.034	155.386	N/A

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Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CET RAIDR - PM/MS SB - Program Management	Various	Various : Various	0.000	0.000		2.180	Dec 2021	0.000		0.000		0.000	0.000	2.180	0.000
CET RAIDR - PM/MS SB - Management Support	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.000	0.000		1.400	Dec 2021	0.000		0.000		0.000	0.000	1.400	0.000
CET RAIDR - PM/MS S - Program Management (SETA)	C/FFP	Various : Various	0.000	0.000		0.500	Dec 2021	0.000		0.000		0.000	0.000	0.500	0.000
BOT MAB - PM/MS C - BOT MONO	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	1.700	Dec 2020	2.500	Dec 2021	0.000		0.000		0.000	5.577	9.777	0.000
BOT MAB - PM/MS C - JPdM Support	Various	JPM CBRN Medical : Ft. Detrick, MD	0.000	4.338		12.500	Dec 2021	0.000		0.000		0.000	4.765	21.603	0.000
CBIPR-ADM - Program Management Support JPL EB	Various	JPL CBRN EB : Frederick, MD	0.000	0.000		0.810	Feb 2022	0.000		0.000		0.000	0.000	0.810	0.000
NGDS 2 CHEMDX - PM/MS S - JPM/JPEO Management Services	Various	Various : Various	0.000	0.167	Dec 2020	0.907	Dec 2021	0.000		0.000		0.000	0.000	1.074	0.000
NGDS 2 MPDS - PM/MS S - JPM/JPEO Management Services	Various	Various : Various	0.000	5.040	Dec 2020	2.314	Dec 2021	0.000		0.000		0.000	0.000	7.354	0.000
DBPAP - PM/MS C - Product Management Contractor Support	SS/FFP	Various : Various	2.832	1.075	Feb 2021	0.975	Feb 2022	0.000		0.000		0.000	0.000	4.882	0.000
DBPAP - PM/MS C - Product Management Support	Various	Various : Various	5.998	1.778	Jan 2021	1.891	Jan 2022	0.000		0.000		0.000	0.000	9.667	0.000
AV TX - PM/MS S - Program Management (SETA)	C/FFP	Various : Various	0.000	1.248	Jan 2021	2.476	Dec 2021	0.000		0.000		0.000	0.000	3.724	0.000
AV TX - PM/MS - SB - Program Management	Various	JPM CBRN Sensors : JPEO-	9.497	0.948	Jan 2021	1.500	Dec 2021	0.000		0.000		0.000	0.000	11.945	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MB5 / Medical Biological Defense (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		CBRND, Aberdeen Proving Ground, MD													
AV TX - PM/MS - SB - Management Support (Biological Therapeutics)	Various	JPM CBRN Medical : Ft. Detrick, MD	3.286	0.001	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.287	0.000
AV TX - PM/MS - SB - Management Support	Various	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	4.605	0.022	Jan 2021	2.500		0.000	Dec 2022	0.000		0.000	0.000	7.127	0.000
Subtotal			26.218	16.317		32.453		0.000		0.000		0.000	10.342	85.330	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			97.034	117.157		137.348		0.000		0.000		0.000	62.376	413.915	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)					Project (Number/Name) MB5 / Medical Biological Defense (SDD)		

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CET RAIDR - Advance Development Efforts to Repurpose FDA Approved Products																												
BOT MAB - Clinical and Nonclinical																												
BOT MAB - Platform Development																												
BOT MAB - Manufacturing																												
BOT MAB - MS B																												
BOT MAB - MS C																												
BOT MAB - BLA Submission																												
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)																												
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)																												
NGDS 2 CHEMDX Increment 2 - MS B																												
NGDS 2 CHEMDX Increment 2 - EMD																												
NGDS 2 CHEMDX Increment 2 - MS C																												
NGDS 2 MPDS - EMD																												
NGDS 2 MPDS - MS C / LRIP																												
NGDS 2 MPDS - FRP																												
DBPAP - Expand Select Biological Threat Agent Reference Material																												
DBPAP - Development and Implementation of Quality Initiatives																												
DBPAP - Optimization and Development of Nucleic Acid Assays																												
DBPAP - ISO Certification																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity												R-1 Program Element (Number/Name)												Project (Number/Name)																			
0400 / 5												PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)												MB5 / Medical Biological Defense (SDD)																			
												FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027							
												1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
DBPAP - PCR assay validation																																											
DBPAP - Enabling early warning tools and information exchange																																											
DBPAP - Surveillance capabilities																																											
AV TX - Natural History Study (Marburg)																																											
AV TX - Animal Efficacy Studies (Marburg)																																											
AV TX - sNDA (Marburg)																																											
CONG - SPX AV PEP Regulatory Submissions																																											
CONG - SPX AV PEP Clinical Trials																																											
CONG - CONG VSST Storage																																											
CONG - CONG VSST - Stability Testing																																											
CONG - CONG VSST Adaptive Clinical Trial																																											
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities																																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MB5 / <i>Medical Biological Defense (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CET RAIDR - Advance Development Efforts to Repurpose FDA Approved Products	1	2022	4	2027
BOT MAB - Clinical and Nonclinical	1	2021	4	2024
BOT MAB - Platform Development	1	2021	4	2025
BOT MAB - Manufacturing	3	2021	4	2025
BOT MAB - MS B	2	2022	2	2022
BOT MAB - MS C	3	2023	3	2023
BOT MAB - BLA Submission	4	2025	4	2025
CBIPR-ADM - MCM Enabling Manufacturing Tech. (Vero Cell & Virus Like Particle Platforms)	1	2021	4	2027
CBIPR-ADM - MCM Development and Manufacturing Support (Infrastructure)	1	2021	4	2027
NGDS 2 CHEMDX Increment 2 - MS B	1	2022	1	2022
NGDS 2 CHEMDX Increment 2 - EMD	1	2022	3	2024
NGDS 2 CHEMDX Increment 2 - MS C	3	2024	3	2024
NGDS 2 MPDS - EMD	1	2021	1	2024
NGDS 2 MPDS - MS C / LRIP	2	2023	2	2023
NGDS 2 MPDS - FRP	2	2024	2	2024
DBPAP - Expand Select Biological Threat Agent Reference Material	1	2021	4	2027
DBPAP - Development and Implementation of Quality Initiatives	1	2021	4	2027
DBPAP - Optimization and Development of Nucleic Acid Assays	1	2021	4	2027
DBPAP - ISO Certification	1	2021	4	2027
DBPAP - PCR assay validation	1	2021	4	2027
DBPAP - Enabling early warning tools and information exchange	1	2021	4	2027

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MB5 / <i>Medical Biological Defense (SDD)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
DBPAP - Surveillance capabilities	1	2021	4	2027
AV TX - Natural History Study (Marburg)	1	2021	1	2022
AV TX - Animal Efficacy Studies (Marburg)	4	2021	4	2023
AV TX - sNDA (Marburg)	4	2023	4	2023
CONG - SPX AV PEP Regulatory Submissions	1	2023	1	2023
CONG - SPX AV PEP Clinical Trials	4	2021	1	2023
CONG - CONG VSST Storage	4	2021	1	2022
CONG - CONG VSST - Stability Testing	4	2021	2	2022
CONG - CONG VSST Adaptive Clinical Trial	4	2021	2	2024
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities	1	2021	4	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MC5 / Medical Chemical Defense (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC5: Medical Chemical Defense (SDD)	-	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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. This 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). In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. MC5 efforts in FY2022 progress to the Mitigate (MT5) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Advanced Anticonvulsant System (AAS),
- (2) Alternative Autoinjector Manufacturer Capability (AUTOINJ) **Progresses to MT5 in FY2023**,
- (3) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) **Progresses to MT5 in FY2023**, and
- (4) Rapid Opioid Countermeasure System (ROCS)

The AAS program provides for 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. In FY23 AAS completes a Phase 1 clinical study from a new manufacturer and submits a New Drug Application (NDA).

The AUTOINJ program provides for FDA approved alternative source(s) for autoinjectors that deliver DoD nerve agent antidote and treatment capabilities to the warfighter; thereby mitigating capability fielding and operational readiness risks. This program augments legacy autoinjectors, ATNAA, 2-PAM, and Convulsant Antidote for Nerve Agents (CANAs) by providing alternative commercial sources which includes Dual Drug Delivery Device (D4), the Atropine Auto-Injector, and an anti-convulsant autoinjector.

The INATS CA program provides a centrally-acting anticholinergic agent to increase survivability and decrease morbidity after exposure to toxic nerve agent threats. Scopolamine was selected for development after an extensive analysis of alternatives and review of data by the Science and Technology community. Added to the currently fielded system, the INATS CA program will improve overall medical outcomes and will be utilized as both a vial for use at definitive care and a stand-alone

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / Medical Chemical Defense (SDD)		
auto-injector for use in the field. In FY22 INATS CA continues autoinjector development and manufacturing activities of the drug product and autoinjector device, as well as continues non-clinical animal studies.				
The ROCS program supports the discovery, characterization, development, and fielding of FDA-approved therapeutic Medical Countermeasures (MCMs) to protect the Joint Service warfighter against operational exposures to the opioid class of pharmaceutical-based agents (PBAs), a high priority. The first increment of the ROCS program will develop a naloxone autoinjector as a rescue treatment that will counteract the adverse effects from exposure to opioids. The ROCS will be developed using a Middle Tier Acquisition (MTA) approach. In FY22 ROCS completes manufacturing activities, including manufacturing of the drug product and autoinjector device, and completes regulatory activities such as preparation and submission of the New Drug Application (NDA) for approval.				
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Title: 1) Advanced Anticonvulsant System (AAS) Description: New Drug Application (NDA) Submission Activities FY 2022 Plans: Complete NDA submission activities. Complete Phase 1 clinical study and Submit NDA. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase. Procurement contract in FY23 is follow-on to RDTE effort.		4.308	3.229	-
Title: 2) Alternative Autoinjector (AUTOINJ) Description: Development FY 2022 Plans: Complete prototype tooling for D4 and Alt-Diazepam, i.e., develop necessary equipment and tools to use in the process for manufacturing devices. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase. Sustainment by DLA after FDA approval.		2.825	2.000	-
Title: 3) Alternative Autoinjector (AUTOINJ) Description: Manufacturing FY 2022 Plans: Complete manufacturing & validation for dual drug chamber autoinjector. Continue engineering lots for D4. Continue manufacturing lots for Diazepam. FY 2022 to FY 2023 Increase/Decrease Statement:		1.033	3.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / Medical Chemical Defense (SDD)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Minor change due to routine program adjustments. Manufacturing activities now complete.				
Title: 4) AUTOINJ Description: Prototyping and Testing FY 2022 Plans: Complete stability studies for atropine. Complete functional testing for dual chamber auto injector. Complete prototype development of single autoinjector. FY 2022 to FY 2023 Increase/Decrease Statement: Decrease due to change in program/project schedule. Completed design of autoinjector.		9.393	4.000	-
Title: 5) AUTOINJ Description: FDA Coordination FY 2022 Plans: Complete FDA preparation, filing and meetings for single and dual drug autoinjectors. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$0.633 Million) transferred to MT5.		1.256	1.000	-
Title: 6) AUTOINJ Description: Government Testing FY 2022 Plans: Complete human factors and environmental testing for single and dual drug autoinjectors. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project is entering completion and all activities will be closed. Submitting FDA application in FY23.		0.931	0.188	-
Title: 7) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Clinical		3.509	-	-
Title: 8) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Manufacturing/Auto-Injector FY 2022 Plans:		5.400	5.423	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 5		R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)	Project (Number/Name) MC5 / Medical Chemical Defense (SDD)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Continue Auto-Injector Development and manufacturing activities of the drug product and autoinjector device.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$14.815 Million) transferred to MT5.					
Title: 9) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) Description: Non-Clinical FY 2022 Plans: Continue Non-Clinical Animal Studies. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$3.063 Million) transferred to MT5.			15.361	20.142	-
Title: 10) Rapid Opioid Countermeasure System (ROCS) Description: Manufacturing FY 2022 Plans: Complete manufacturing activities, including manufacturing of the drug product and autoinjector device. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase.			4.841	4.800	-
Title: 11) Rapid Opioid Countermeasure System (ROCS) Description: Clinical Studies			3.648	-	-
Title: 12) Rapid Opioid Countermeasure System (ROCS) Description: FDA & Regulatory activities FY 2022 Plans: Initiate and complete regulatory activities such as writing and submitting the New Drug Application (NDA)for submission and approval. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project transitioned to Production and Deployment Phase.			-	6.580	-
Accomplishments/Planned Programs Subtotals			52.505	50.362	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>Medical Chemical Defense (SDD)</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MT5: <i>Mitigate (SDD)</i>	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• MC7: <i>Medical Chemical Defense (Op Sys Dev)</i>	1.754	1.336	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.090
• MT7: <i>Mitigate (Op Sys Dev)</i>	0.000	0.000	5.098	-	5.098	3.879	6.747	4.360	3.419	Continuing	Continuing
• JM6677: <i>ADVANCED ANTICONVULSANT SYSTEM (AAS)</i>	0.000	4.243	18.147	-	18.147	24.101	15.301	0.000	0.000	0.000	61.792
• PHM015: <i>RAPID OPIOID COUNTERMEASURE SYSTEM (ROCS)</i>	0.000	1.549	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.549
• PHM040: <i>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	31.888	33.051	Continuing	Continuing

Remarks

D. Acquisition Strategy

ADVANCED ANTICONVULSANT SYSTEM (AAS)

The Advanced Anticonvulsant System (AAS), consists of Midazolam in an autoinjector for treatment of seizures, to include those caused by nerve agent. 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. The Contractor will need to initiate and complete studies that comply with new FDA requirements for manufacturing and quality for autoinjector products, ultimately leading to FDA approval. Upon FDA approval, sufficient quantities of product to meet Initial Operational Capability (IOC) and Full Operational Capability (FOC) will be purchased through a follow-on sole source procurement contract. Subsequent purchases for product sustainment will be made by the Defense Logistics Agency. Post marketing commitments and requirements are anticipated as a result of the FDA approval and will be the responsibility of the contractor and the government.

ALTERNATE AUTOINJECTOR MANUFACTURER CAPABILITY (AUTOINJ)

The Alternative Autoinjector Manufacturer Capability (AUTOINJ) will identify an alternative source(s) to develop and provide required FDA-approved autoinjector-delivered nerve agent antidote and treatment capabilities to the DoD. The AUTOINJ effort leverages novel technologies and industrial base expansion in order to develop the autoinjector products. AUTOINJ uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>Medical Chemical Defense (SDD)</i>
<p>development and testing activities consistent with current Food and Drug Administration (FDA) regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, purchases for product sustainment will be made by the Defense Logistics Agency.</p> <p>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</p> <p>In the Technology Maturation and Risk Reduction (TM&RR) phase, close collaborations will occur with the science and technology (S&T) 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 centrally acting formulation development efforts, nonclinical toxicology and efficacy studies and clinical safety studies. In the Engineering and Manufacturing Development (EMD) phase, the Government will engage with commercial partner(s) to ensure that development and manufacture is in accordance with Food and Drug Administration (FDA) regulations.</p> <p>For scopolamine autoinjector development INATS CA uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting development and testing activities consistent with current FDA regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, a follow-on procurement agreement will be used to procure initial operational capability (IOC) / full operational capability (FOC).</p> <p>The Soman Nerve Agent Pre-Treatment Pyridostigmine (SNAPP) effort under INATS CA is a modernization effort for pyridostigmine bromide (PB) tablet requirements from the joint service users for the FDA approved SNAPP product. The effort uses OTAs for conducting development and testing activities consistent with current FDA regulations.</p> <p>RAPID OPIOID COUNTERMEASURE SYSTEM (ROCS)</p> <p>Rapid Opioid Countermeasure System (ROCS) is a Joint ACAT III Medical Countermeasure (MCM) Middle Tier Acquisition Program of Record (POR) in the Prototype Phase of development. The ROCS program is using existing naloxone autoinjector capabilities identified from focused Market Research. ROCS is a Middle Tier Acquisition program. The development of the autoinjector is being conducted under Other Transaction Authority (OTA) agreement. The program will have a follow-on sole source procurement OTA agreement for the residual capability. Once FDA approval achieved, the program will provide a residual capability of 4,121 autoinjector prototypes to select DoD user groups. The program will then transition directly into sustainment.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MC5 / Medical Chemical Defense (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AAS - AAS Product Development	Various	Various : Various	0.000	0.389	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.389	0.000
AAS - SW S - NDA Submission Activities	C/CPFF	RAFA Laboratories : TBD	0.000	3.345	Oct 2020	2.782	Dec 2021	0.000		0.000		0.000	0.000	6.127	0.000
AUTOINJ - AUTOINJ Product Development	Various	Various : Various	0.000	1.095	Dec 2020	0.000		0.000		0.000		0.000	0.000	1.095	0.000
AUTOINJ - HW S - Dual Drug Delivery Device (D4) Prototype Development	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	23.905	4.533	Nov 2020	0.000		0.000		0.000		0.000	0.000	28.438	0.000
AUTOINJ - HW S - Diazepam Autoinjector	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	10.811	7.234	Nov 2020	3.451	Nov 2021	0.000		0.000		0.000	0.000	21.496	0.000
AUTOINJ - HW S - Dual Drug Delivery Device (D4) Prototype	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	1.785	0.000		3.450	Dec 2021	0.000		0.000		0.000	0.000	5.235	0.000
AUTOINJ - HW C - Regulatory Support	C/CPFF	Ology : Alachua, FL	0.697	0.000		0.150		0.000		0.000		0.000	0.000	0.847	0.000
INATS CA - INATS CA Product Development	Various	Various : Various	0.000	2.602	Dec 2020	1.751	Mar 2022	0.000		0.000		0.000	0.000	4.353	0.000
INATS CA - HW C - Clinical	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	3.198	Nov 2020	0.000		0.000		0.000		0.000	0.000	3.198	0.000
INATS CA - HW C - Manufacturing	C/FFP	Aktivax : Boulder, CO	0.000	4.716	Dec 2020	2.977	Dec 2021	0.000		0.000		0.000	0.000	7.693	0.000
INATS CA - HW C - Non-Clinical	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	9.397	Nov 2020	14.922	Nov 2021	0.000		0.000		0.000	0.000	24.319	0.000
ROCS - ROCS Product Development	Various	Various : Various	0.000	0.711	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.711	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022					
Appropriation/Budget Activity						R-1 Program Element (Number/Name)						Project (Number/Name)					
0400 / 5						PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)						MC5 / Medical Chemical Defense (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract		
ROCS - Manufacturing	C/CPFF	kaleo : Richmond, VA	4.979	3.047	Dec 2020	3.500	Nov 2021	0.000		0.000		0.000	0.000	11.526	0.000		
ROCS - Clinical Studies	C/CPFF	kaleo : Richmond, VA	4.150	3.003	Dec 2020	0.000		0.000		0.000		0.000	0.000	7.153	0.000		
ROCS - Regulatory	C/CPFF	kaleo : Richmond, VA	0.000	0.000		4.988	Oct 2021	0.000		0.000		0.000	0.000	4.988	0.000		
Subtotal			46.327	43.270		37.971		0.000		0.000		0.000	0.000	127.568	N/A		
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total					
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract		
AUTOINJ -	MIPR	US Army Medical Research Material Command (USAMRMC) : Fort Detrick, MD	0.068	0.035	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.103	0.000		
INATS CA -	MIPR	US Army Medical Research and Development Command (USAMRDC) : Fort Detrick, MD	0.000	0.035	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.035	0.000		
ROCS -	MIPR	US Army Medical Research and Development Command (USAMRDC) : Fort Detrick, MD	0.000	0.100	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.100	0.000		
Subtotal			0.068	0.170		0.000		0.000		0.000		0.000	0.000	0.238	N/A		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MC5 / Medical Chemical Defense (SDD)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - MIL STD Testing	MIPR	US Army Medical Research Material Command (USAMRMC) : Fort Detrick, MD	0.196	0.070	Nov 2020	0.200	Nov 2021	0.000		0.000		0.000	0.000	0.466	0.000
Subtotal			0.196	0.070		0.200		0.000		0.000		0.000	0.000	0.466	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AAS - JPM/JPEO Management Services	Various	Various : Various	0.370	0.574	Nov 2020	0.234	Nov 2021	0.000		0.000		0.000	0.000	1.178	0.000
AAS - Program Management (SETA)	C/FFP	Various : Various	0.548	0.000	Nov 2020	0.213	Nov 2021	0.000		0.000		0.000	0.000	0.761	0.000
AUTOINJ - JPM/JPEO Management Services	Various	Various : Various	4.295	2.471	Dec 2020	0.600	Dec 2021	0.000		0.000		0.000	0.000	7.366	0.000
AUTOINJ - Program Management (MCS) Support	Various	JPM CBRN Medical : Ft. Detrick, MD	2.168	0.000	Nov 2020	0.975	Nov 2021	0.000		0.000		0.000	0.000	3.143	0.000
AUTOINJ - Program Management (CDP)	Various	JPM CBRN Medical : Ft. Detrick, MD	0.629	0.000		0.272	Nov 2021	0.000		0.000		0.000	0.000	0.901	0.000
AUTOINJ - Program Management (SETA)	C/FFP	Various : Various	3.060	0.000	Nov 2020	1.090	Nov 2021	0.000		0.000		0.000	0.000	4.150	0.000
INATS CA - JPM/JPEO Management Services	Various	JPEO Chem : Bio, Rad, and Nuc Defense (JPEO-CBRND)	0.000	4.322	Dec 2020	2.466	Dec 2021	0.000		0.000		0.000	0.000	6.788	0.000
INATS CA - Program Management (MCS) Support	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.000	0.000		1.520	Dec 2021	0.000		0.000		0.000	0.000	1.520	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) MC5 / Medical Chemical Defense (SDD)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS CA - Program Management (CDP)	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.000	0.000		0.520	Dec 2021	0.000		0.000		0.000	0.000	0.520	0.000
INATS CA - Program Management (SETA)	C/FFP	Various : Various	0.000	0.000		1.409	Dec 2021	0.000		0.000		0.000	0.000	1.409	0.000
ROCS - JPM/JPEO Management Services	Various	Various : Various	0.999	1.628	Dec 2020	0.825	Dec 2021	0.000		0.000		0.000	0.000	3.452	0.000
ROCS - Program Management (MCS) Support	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.847	0.000		1.253	Dec 2021	0.000		0.000		0.000	0.000	2.100	0.000
ROCS - Program Management (CDP)	Various	JPM CBRN Medical : JPEO-CBRND, Fort Detrick, MD	0.200	0.000		0.418	Dec 2021	0.000		0.000		0.000	0.000	0.618	0.000
ROCS - Program Management (SETA)	C/FFP	Various : Various	0.417	0.000		0.396	Dec 2021	0.000		0.000		0.000	0.000	0.813	0.000
Subtotal			13.533	8.995		12.191		0.000		0.000		0.000	0.000	34.719	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			60.124	52.505		50.362		0.000		0.000		0.000	0.000	162.991	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>					Project (Number/Name) MC5 / <i>Medical Chemical Defense (SDD)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AAS - NDA Submission Activities																												
AAS - FDA Approval																												
AAS - FRP																												
AAS - IOC																												
AAS - FOC																												
AUTOINJ - Development																												
AUTOINJ - Manufacturing																												
AUTOINJ - Prototyping and Testing																												
AUTOINJ - FDA Coordination																												
AUTOINJ - Government Testing																												
AUTOINJ - Alt Midazolam Development																												
AUTOINJ - Wet/Dry Atropine Development																												
INATS CA - MS B																												
INATS CA - Clinical Trials																												
INATS CA - Manufacturing/Auto-Injector																												
INATS CA - Non-Clinical Studies																												
INATS CA - NDA Submission Activities																												
INATS CA - FDA Approval																												
ROCS - Human Clinical Studies																												
ROCS - Manufacturing Activities																												
ROCS - FDA																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) MC5 / <i>Medical Chemical Defense (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AAS - NDA Submission Activities	1	2021	3	2022
AAS - FDA Approval	4	2022	4	2022
AAS - FRP	3	2023	3	2023
AAS - IOC	4	2023	4	2023
AAS - FOC	4	2025	4	2025
AUTOINJ - Development	1	2021	1	2022
AUTOINJ - Manufacturing	1	2021	4	2022
AUTOINJ - Prototyping and Testing	1	2021	2	2023
AUTOINJ - FDA Coordination	1	2021	3	2023
AUTOINJ - Government Testing	1	2021	2	2022
AUTOINJ - Alt Midazolam Development	1	2023	4	2026
AUTOINJ - Wet/Dry Atropine Development	1	2023	4	2027
INATS CA - MS B	4	2021	2	2022
INATS CA - Clinical Trials	1	2021	4	2023
INATS CA - Manufacturing/Auto-Injector	1	2021	2	2025
INATS CA - Non-Clinical Studies	1	2021	4	2023
INATS CA - NDA Submission Activities	4	2024	3	2026
INATS CA - FDA Approval	3	2026	3	2026
ROCS - Human Clinical Studies	1	2021	4	2021
ROCS - Manufacturing Activities	1	2021	4	2022
ROCS - FDA	1	2022	4	2022

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) TE5 / Test & Evaluation (SDD)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
TE5: Test & Evaluation (SDD)	-	5.995	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.995
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project supports the Chemical Biological Material Assessment Infrastructure (CBMAI). CBMAI addresses test infrastructure needs with improvements, modifications, and/or new critical test capabilities for chemical, biological, and emerging threat products across the CBDP. The CBMAI provides test fixtures and methodology to support system development test and evaluation intended to meet a changing threat regardless of the test site/location.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023	
Title: 1) CBMAI									4.941	-	-	
Description: CBMAI provides test infrastructure modification build and integration to address detection, protection, and decontamination requirements and milestone schedules. Provide analysis and testing of innovative technologies and rapid prototyping of equipment to expedite the infrastructure development process. Execution of infrastructure modifications and modernization efforts allow test facilities to expand productivity and reduce costs while providing critical test data.												
Title: 2) CBMAI									1.054	-	-	
Description: Government Integrated Product Team program management and IPT Support to all CBDP programs and external partners.												
Accomplishments/Planned Programs Subtotals									5.995	-	-	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• TE4: Test & Evaluation (ACD&P)	4.107	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.107	
Remarks												
D. Acquisition Strategy												
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 Chemical Biological Defense Program (CBDP) test and evaluation needs. The												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) TE5 / <i>Test & Evaluation (SDD)</i>
<p>CBMAI program will be ending in FY21 as development efforts come to completion. Future test infrastructure needs, improvements, or modifications will be managed and funded by the supported programs of record beginning in FY22.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / CHEMICAL/BIOLOGICAL DEFENSE (EMD)				Project (Number/Name) TE5 / Test & Evaluation (SDD)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - HW C - OADMS	MIPR	Army Materiel Systems Analysis Activity : Aberdeen Proving Ground, MD	0.000	0.066	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.066	0.000
CBMAI - HW C - OADMS-SCA-V	MIPR	CCDC AVIATION AND MISSILE CENTER : Huntsville, AL	0.000	0.045	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.045	0.000
CBMAI - HW S - Open Architecture Data Management System (OADMS) Software Modifications	C/CPFF	Various : Various	3.971	3.936	Mar 2021	0.000		0.000		0.000		0.000	0.000	7.907	0.000
CBMAI - HW S - Government SE & Technical Management Team	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	2.799	0.894	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.693	0.000
Subtotal			6.770	4.941		0.000		0.000		0.000		0.000	0.000	11.711	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - PM/MS C - Core Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.150	0.159	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.309	0.000
CBMAI - PM/MS S - IPT Support/Program Management	MIPR	JPM CBRN Sensors : JPEO-	2.775	0.895	Dec 2020	0.000		0.000		0.000		0.000	0.000	3.670	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022		
Appropriation/Budget Activity 0400 / 5						R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>				Project (Number/Name) TE5 / <i>Test & Evaluation (SDD)</i>				

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		CBRND, Aberdeen Proving Ground, MD													
Subtotal			2.925	1.054		0.000		0.000		0.000		0.000	0.000	3.979	N/A

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9.695	5.995	0.000	0.000	0.000	0.000	0.000	15.690	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) TE5 / <i>Test & Evaluation (SDD)</i>	

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

CBMAI - Open Architecture Data Management System (OADMS) Integration	[REDACTED]																										
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (EMD)</i>	Project (Number/Name) TE5 / <i>Test & Evaluation (SDD)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBMAI - Open Architecture Data Management System (OADMS) Integration	1	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	125.455	115.503	124.475	-	124.475	125.966	124.779	125.158	126.060	Continuing	Continuing
DW6: Major Range And Test Facility Base (Mgmt Support)	-	65.604	65.560	59.190	-	59.190	58.028	57.833	57.833	57.833	Continuing	Continuing
LS6: Laboratory Support (Mgmt Support)	-	12.376	10.213	10.291	-	10.291	10.289	10.289	10.289	10.289	Continuing	Continuing
MS6: Management Support (Mgmt Support)	-	42.800	36.175	54.994	-	54.994	57.649	56.657	57.036	57.938	Continuing	Continuing
DT6: Joint Doctrine And Training Support (Mgmt Support)	-	1.829	2.615	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.444
O49: Joint Concept Development (Mgmt Support)	-	2.846	0.940	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.786

A. Mission Description and Budget Item Justification

This program element (PE) resources research, development, test, and evaluation (RDT&E) management support as a key enabler across the Enabling Investments, Mitigate, Protect, and Understand portfolios. Chemical Biological Defense Program (CBDP) investments provide an integrated, layered capability to enable combating weapons of mass destruction (CWMD) missions ranging from combat operations to Department of Defense (DoD) support to domestic incident prevention and response. The Projects in this PE support sustainment and modernization of laboratory infrastructure, test capabilities, studies and analyses, Joint doctrine and training, and program and financial management support. FY23 funding accelerates characterization and situational awareness of emerging biothreats and accelerates delivery of improved protection from and mitigation of biothreats, including rapid repurposing of available therapeutics and development of new vaccines.

Individual Projects include:

- Major Range and Test Facility Base (MRTFB) (DW6): Operating support to West Desert Test Center (WDTC) and BioTesting Division (Chemical Biological Center) for the required institutional test operating costs (e.g. institutional civilian and contractor labor; repair and maintenance of test instrumentation, equipment, and facilities; and replacement of test equipment).

- Laboratory Support (LS6): Operating support for sustainment and modernization efforts for surety laboratory infrastructure in order 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.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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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)
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- Management Support (MS6): 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 (DASD(CBD)).

- Joint Doctrine and Training Support (DT6) and Joint Concept Development (O49) are no longer active FY23 Projects due to budget restructure.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	127.951	110.503	0.000	-	0.000
Current President's Budget	125.455	115.503	124.475	-	124.475
Total Adjustments	-2.496	5.000	124.475	-	124.475
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	0.000	5.000			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.855	-			
• SBIR/STTR Transfer	-1.641	-			
• Other Adjustments	0.000	-	124.475	-	124.475

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: DW6: Major Range And Test Facility Base (Mgmt Support)

Congressional Add: 1) Chemical/Biological Defense Testing

Congressional Add Subtotals for Project: DW6

Congressional Add Totals for all Projects

FY 2021	FY 2022
5.000	5.000
5.000	5.000
5.000	5.000

Change Summary Explanation

Funding: FY 2021 (-\$0.855 Million): Below threshold reprogramming adjustments to balance overall portfolio efforts.

FY 2021 (-\$1.641 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.

FY 2021 (+\$5.000 Million) and FY 2022 (+\$5.000 Million): Congressional Add for chemical/biological defense testing. FY 2021 Congressional Add is reflected in the Current President's Budget.

FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for enhanced biodefense and pandemic preparedness investments (+\$7.000 Million) and Departmental inflation rate adjustments (+\$4.292 Million).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support	PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	
Schedule: N/A		
Technical: N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 (Mgmt Support)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DW6: Major Range And Test Facility Base (Mgmt Support)	-	65.604	65.560	59.190	-	59.190	58.028	57.833	57.833	57.833	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Major Range and Test Facility Base (MRTFB) Research, Development, Test, and Evaluation (RDT&E) Management Support Project provides for the Dugway Proving Ground (DPG) MRTFB 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.

Efforts included in this Project are:

- (1) Combat Capability Development Command (DEVCOM) Chemical and Biological Center BioTesting Division (BTD-CBC)
- (2) West Desert Test Center (WDTC)

BTD-CBC and WDTC, both part of the MRTFB located at DPG, 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. BTD-CBC and WDTC use uniquely designed 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 are generated to support acquisition decisions of CB defense equipment. Project provides institutional and overhead funding required to operate WDTC and BTD-CBC in compliance with National Defense Authorization Act (NDAA) for FY03 (Public Law 107-314 - December 2002), Section 232, "Objective for institutional funding of test and evaluation facilities." Institutional operating costs were transferred to the consolidated OSD Chemical and Biological Defense Program (CBDP) consistent with Public Law 103-160 Section 1701.

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

	FY 2021	FY 2022	FY 2023
Title: 1) BTD TEST - Biological Defense Test and Evaluation Capability, MRTFB	7.514	8.114	7.641
Description: Maintains MRTFB test and evaluation (T&E) mission readiness at Bio-Testing Division for biological surety laboratory operations, bio-safety risk management, and defensive T&E mission support activities. The LSTF complex contains BSL 1, 2, and 3 laboratories for testing biological weapons detectors, individual protective clothing and equipment, decontamination systems, and material survivability in a bioweapon contaminated environment. The LSTF is the sole DoD facility			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>		Project (Number/Name) DW6 / <i>Major Range And Test Facility Base (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
certified to challenge developmental defensive test equipment with aerosolized biological warfare agents, including bacteria, viruses, and biological toxins, in BSL-3 chambers.					
FY 2022 Plans: Funds provide continued T&E mission support activities (civilian labor, travel, training, communications, printing and reproduction, supplies, equipment acquisition, contract support, purchased equipment maintenance) maintaining mission readiness of the bioweapons defense technical T&E capability.					
FY 2023 Plans: Funds will continue T&E mission support activities (civilian labor, travel, training, communications, printing and reproduction, supplies, equipment acquisition, contract support, and purchased equipment maintenance) not chargeable to a test customer to maintain mission readiness of biological developmental and operational T&E capability.					
FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.					
Title: 2) West Desert Test Center (WDTC), MRTFB, Civilian Pay			26.099	26.882	27.715
Description: Supports the overhead costs of the civilian labor for Program Budget Guidance (PBG) authorizations. The balance is customer funded. The test customer pays all direct costs that are directly attributable to the use of a test facility or resource for testing of a particular program. Funding is essential to maintain core T&E skills as part of the Government civilian workforce used in support of the Chemical Biological Defense Program (CBDP) mission. WDTC provides specially trained support staff to operate and maintain all critical testing systems.					
FY 2022 Plans: Funds continue to support the overhead costs of the civilian labor for PBG authorizations.					
FY 2023 Plans: Funds will continue to support the overhead costs of the civilian labor for PBG authorizations.					
FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.					
Title: 3) WDTC, MRTFB, Mission Support			13.628	13.002	12.588
Description: Provides ongoing sustainment of existing test instrumentation and equipment at WDTC in support of their operations to maintain mission readiness of chemical laboratories, field and simulant chamber chemical and biological capabilities of test data and staff functions not chargeable to a test customer. 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					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>		Project (Number/Name) DW6 / <i>Major Range And Test Facility Base (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>components and systems. Support test facility maintenance, handling and disposal of hazardous materials, transportation, postage, administrative supplies, tools, software, spare parts, mission unique installation costs, temporary duty/training of civilian and contractor personnel, certifications, printing, reproduction, and communications. Funding supports indirect costs for MRTFB in accordance with DoD Instruction 3200.18 and DoD Financial Management Regulation 7000.14-R.</p> <p>FY 2022 Plans: Funds provide 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. Support test facility maintenance, handling and disposal of hazardous materials, transportation, postage, administrative supplies, tools, software, spare parts, mission unique installation costs, temporary duty/training of civilian and contractor personnel, certifications, printing and reproduction, and communications.</p> <p>FY 2023 Plans: Funds will provide 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. Support test facility maintenance, handling and disposal of hazardous materials, transportation, postage, administrative supplies, tools, software, spare parts, mission unique installation costs, temporary duty/training of civilian and contractor personnel, certifications, printing and reproduction, and communications.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.</p>					
<p>Title: 4) WDTC, MRTFB, Contractor Support</p> <p>Description: Supports contractor labor costs not billable to customers. Contract labor is essential to augment core civilian T&E personnel with additional capabilities and/or capacity. Functions performed will include chemical and biological analysis, field support, planning, and report documentation as well as range operations, warehousing support, project management, recurring/general maintenance to test facilities and data acquisition support.</p> <p>FY 2022 Plans: Funds continue to support contractor labor costs not billable to customers.</p> <p>FY 2023 Plans:</p>			13.363	12.562	11.246

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) DW6 / <i>Major Range And Test Facility Base (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
Funds will continue to support contractor labor costs not billable to customers.			
FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals		60.604	60.560
		FY 2021	FY 2022
Congressional Add: 1) Chemical/Biological Defense Testing		5.000	5.000
FY 2021 Accomplishments: Conducted testing upgrades and modernization to support chemical/biological defense testing at West Desert Test Center.			
FY 2022 Plans: Continue testing upgrades and modernization to support chemical/biological defense testing at West Desert Test Center.			
Congressional Adds Subtotals		5.000	5.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 (Mgmt Support)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
LS6: Laboratory Support (Mgmt Support)	-	12.376	10.213	10.291	-	10.291	10.289	10.289	10.289	10.289	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Laboratory Support Research, Development, Test, and Evaluation (RDT&E) Management Support Project provides Department of Defense (DoD) laboratory infrastructure sustainment and modernization to upgrade key systems to current state-of-the-art capabilities. Ensures that the necessary surety operations can be conducted effectively and safely in support of the Chemical and Biological Defense Program (CBDP). As a force multiplier, this Project will provide more robust capabilities to the CBDP and ensure continuity of operations and environmental compliance.

Efforts included in this Project are:

- (1) U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) Laboratory Infrastructure
- (2) U.S. Army Medical Research and Development Command (MRDC) Laboratory Infrastructure

U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) laboratory infrastructure provides sustainment and modernization to research and develop CB defense capabilities that enable the Joint Force to fight and win in contested environments. CBC explores, assesses, and demonstrates operational utility of Integrated Early Warning and Integrated Layered Defense approaches that impact the Warfighter's ability to manage operational decisions while playing a critical role in modernizing the Army and DoD's Biodefense capabilities. CBC assesses and characterizes emerging threats in order to prevent use and avoid surprise in addition to exploring technology integration of CB defense capabilities into combat platforms thus unencumbering the Warfighter.

U.S. Army Medical Research and Development Command (MRDC) laboratory infrastructure provides for laboratory operations, facilities sustainment, and regulatory compliance for critical CB defense activities at the U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID) and the U.S. Army Medical Research Institute for Chemical Defense (USAMRICD). to counter an expanding threat space, exploit advances in technology, and develop and transition CB defense equipment and countermeasures to the Warfighter.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Chemical Biological Center (CBC) Laboratory Infrastructure	10.600	8.643	8.850
Description: U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) provides sustainment and modernization of critical surety capabilities at key tier 1 Chemical Biological Defense Program (CBDP) laboratories. Consisting of the only Organization for the Prohibition of Chemical Weapons (OPCW) Treaty and flyaway laboratory capability in the United States, which provides chemical analyses in compliance with the Chemical Weapons Convention (CWC)			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>		Project (Number/Name) LS6 / <i>Laboratory Support (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<p>Implementation Act, and the only CWC Single-Small Scale Facility, which provides critical support to U.S. Army CB Defense operations worldwide through Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) programs of record, early development for Multi-Phase Chemical Agent Detector (MPCAD), Joint Service Aircrew Mask (JSAM), Joint Expeditionary Collective Protection (JECF), Joint Chem Agent Detector (JCAD), and support of multiple Operational Needs Statements from Combatant Commanders, DEVCOM CBC utilizes continued support to provide vital CBD acquisition life-cycle research, experimentation, and testing in support delivery of CB Defense capabilities to the Warfighter.</p> <p>FY 2022 Plans: Continuation of the sustainment and modernization efforts that support chemical and biological capabilities at DEVCOM CBC. Continual testing and characterization of opioids and other pharmaceutically based agents (PBAs) to inform detection and protection technologies, which include solids handling capabilities that support decontamination capabilities against advanced threat compounds and PBAs at various environmental conditions vital to CB Protection systems and concepts. Continue OPCW support mission by conducting the evaluation of chemical protective items for the Warfighter and Homeland Defense. Conduct carbon testing and SMARTMAN mask tests to protect both the Warfighter and First Responders against chemical and biological threats, including COVID-19. Execute Operational Toxicology research, providing rapid threat agent and toxicology assessments for novel threats. Perform testing, validation, and certification of product lot acceptance and shelf-life extension for all Department of Defense (DoD) activated carbon products.</p> <p>FY 2023 Plans: Continuation of the sustainment and modernization efforts that support chemical and biological research, development, and life-cycle engineering capabilities at DEVCOM CBC. Continue testing and characterization to inform detection, protection, and decontamination capabilities as it relates to CB Protection systems and concepts. Continue OPCW support mission to both the Warfighter and Homeland Defense. Conduct carbon testing and SMARTMAN mask tests to protect both the Warfighter and First Responders. Continue execution of Operational Toxicology research. Perform testing, validation, and certification of product lot acceptance and shelf-life extension for all Department of Defense (DoD) activated carbon products.</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.</p>					
<p>Title: 2) Medical Research and Development Command (MRDC) Laboratory Infrastructure</p> <p>Description: U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID) and the U.S. Army Medical Research Institute for Chemical Defense (USAMRICD) provides support to laboratory infrastructure for laboratory operations, facilities sustainment, and regulatory compliance for critical chemical biological defense activities.</p> <p>FY 2022 Plans:</p>			1.776	1.570	1.441

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) LS6 / <i>Laboratory Support (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
<p>Funds continue to support laboratory support operations, maintenance and repair of existing capabilities, chemical agent security, quality systems compliance, chemical and biological safety, and research protections. Sustain Joint Worldwide Intelligence Communications System (JWICS) access at USAMRICD for Top Secret (TS) and TS/Sensitive Compartmented Information (SCI) onsite communication. The SCI Facility (SCIF) will assist with ensuring USAMRICD meets all security regulations and policies related to its chemical defense mission.</p> <p><i>FY 2023 Plans:</i></p> <p>Funds will continue to support laboratory infrastructure for laboratory operations, facilities sustainment, and regulatory compliance for critical chemical biological defense activities at USAMRIID and USAMRICD. Activities supported include elements of laboratory support operations, maintenance and repair of existing capabilities, chemical agent security, quality systems compliance, chemical and biological safety, and/or research protections. Sustain JWICS access at USAMRICD for TS and TS/SCI onsite communication. The SCIF will assist with ensuring USAMRICD meets all security regulations and policies related to its chemical defense mission.</p> <p><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></p> <p>Minor change due to routine program adjustments.</p>			
Accomplishments/Planned Programs Subtotals		12.376	10.213
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)				Project (Number/Name) MS6 / Management Support (Mgmt Support)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MS6: Management Support (Mgmt Support)	-	42.800	36.175	54.994	-	54.994	57.649	56.657	57.036	57.938	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Management Support Research, Development, Test, and Evaluation (RDT&E) Project provides management support for the Department of Defense (DoD) Chemical and Biological Defense Program (CBDP). It includes program oversight and integration of overall non-Chemical Biological Radiological Nuclear (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)).

Efforts included in this Project are:

- (1) Biological Select Agent and Toxins (BSAT) Biorisk Program Office (BBPO)
- (2) Executive Agent (EA) Management
- (3) Joint Acquisition CB Knowledge System Defense Business System (JACKS DBS)
- (4) Joint Requirements Office Management (JRO MGT)
- (5) Joint Test Infrastructure Working Group (JTIWG)
- (6) Office of the Secretary of Defense Management (OSD MGT)
- (7) Joint CBRN Defense Program Analysis and Integration Office Management (PAIO MGT)
- (8) Joint Concepts, Studies, and Analysis (JCSA)
- (9) Workforce and Biosafety - Enhanced Biodefense (WB-ENBD)

BBPO supports the DoD EA and EA Responsible Official (EARO) for BSAT Biosafety and Biosecurity Programs in their responsibilities for mission oversight, technical review, inspection, harmonization of biosafety and biosecurity protocols and procedures across DoD laboratories handling BSAT. Efforts also support the Scientific Gaps in Biorisk Research Program (SGBRP) to address gaps in scientific knowledge to facilitate validation of BSAT protocols and procedures. Closing these gaps will reduce the inherent risks associated with BSAT research in CBDP laboratories and supports research and development work on priority agents. Research projects, selected from an order of merit list are funded for one year.

EA Management conducts coordination and integration of the RD&TE and acquisition requirements of the military departments for CB warfare defense programs of the DoD.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / Management Support (Mgmt Support)		
<p>JACKS DBS is a web-based capability that provides users with a centralized, authoritative and comprehensive source of CBRN equipment information that includes program oversight and integration of CBRN and non-CBRN defense equipment. The project provides for the development, coordination and integration of Joint CBRN defense capability requirements and supports the preparation of Joint Capability System documents.</p> <p>JRO MGT, through the Joint Requirements Office (JRO) for CBRN Defense, a Chairman's Controlled Activity aligned under the Joint Staff J8, is responsible for representing the Services and Combatant Commands (CCMD) in the requirements generation process for the development of Joint materiel and non-materiel solutions in the medical and physical CBRN defense mission areas. Directly supports the improvement of CBRN defense-related leadership development, education, and training at the Joint and Service levels and provides technical and subject matter expert support in the areas of CBRN Defense/Countering Weapons of Mass Destruction (CWMD), including during CCMD exercises.</p> <p>JTIWG, through the Chemical, Biological, Radiological and Nuclear Defense (CBRND) Test and Evaluation (T&E) Executive, 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. The JTIWG program supports T&E Early Involvement; test threat planning; T&E studies; and T&E standards planning and development to support CBRND testing for all Services to include medical T&E efforts. The CBRND T&E Executive 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 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.</p> <p>OSD MGT performs program reviews/assessments, provides programmatic PPBE oversight/analysis, provides Congressional issue analysis and support, and financial management. OSD MGT also provides the CBDP Enterprise all aspects of accounting, to include financial statements, reconciliation of budgetary and proprietary accounts, and compliance.</p> <p>PAIO MGT conducts independent analysis and provides objective advice to the CBDP and CWMD stakeholders to inform senior leader decision-making across the DoD and whole of government partners. PAIO ensures CBRN defense programs mission areas, policies, and processes support operational requirements, promote efficiency and readiness, and meet national security objectives.</p> <p>JCSA supports foundational Joint Concepts development, studies, and analyses to enable requirements and capabilities development of both medical and physical CBRN defense systems; coordinates WMD/CBRN threat information requirements; and conducts integrated CBRN risk assessments.</p> <p>WB-END provides centralized DoD expertise, implements biosafety improvements, and adds protections for CBDP defense industrial supply chain and intellectual property.</p>					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) Office of the Secretary of Defense (OSD) Biosafety (OSD BIOSAFETY)			2.249	1.956	1.824

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>		Project (Number/Name) MS6 / <i>Management Support (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Description: Biological Select Agent and Toxins (BSAT) Support FY 2022 Plans: Continue to maintain the Joint Interagency Biorisk Program System (JIBS) (Defense BSAT Business System), continue to perform laboratory site visits, participate and oversee laboratory inspections, execute stakeholders meetings, BSRP meetings, SGBRP committees, contribute towards harmonization of the biosafety and biosecurity across DoD BSAT registered laboratories. FY 2023 Plans: Continue to maintain the Joint Interagency Biorisk Program System (JIBS) (Defense BSAT Business System), continue to perform laboratory site visits, participate and oversee laboratory inspections, execute stakeholders meetings, BSRP meetings, SGBRP committees, contribute towards harmonization of the biosafety and biosecurity across DoD BSAT registered laboratories. FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.					
Title: 2) BSAT RESEARCH SUPPORT Description: Scientific Gaps in Biorisk Research Program (SGBRP) Support FY 2022 Plans: Conduct two preliminary gap research projects based on a new order of merit list. FY 2023 Plans: Select gap research projects based on a new order of merit list, while remaining in accordance with the Scientific Gap Biorisk Research Program (SGBRP) Charter.			0.959	0.806	0.806
Title: 3) Executive Agent (EA) Management FY 2022 Plans: Funds continue providing support to the DoD EA to conduct coordination and integration of the RDT&E and acquisition requirements of the military departments for CB warfare defense programs of the DoD and review all funding requirements for the CDBP as codified in public law and DoDD 5160.05E. FY 2023 Plans: Funds will continue providing support to the DoD EA to conduct coordination and integration of the RDT&E and acquisition requirements of the military departments for CB warfare defense programs of the DoD and review all funding requirements for the CDBP as codified in public law and DoDD 5160.05E.			0.510	0.940	0.940
Title: 4) Joint Acquisition CB Knowledge System Defense Business System (JACKS DBS)			2.695	3.200	3.500

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 6		R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>		Project (Number/Name) MS6 / <i>Management Support (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<i>FY 2022 Plans:</i> Funds support the CBRN community of users by modernizing the JACKS DBS development platform and migrating the JACKS DBS to the Cloud to ensure the system remains flexible, relevant, reliable and secure.					
<i>FY 2023 Plans:</i> Funds will update and streamline the JACKS user interface with a more modern look and feel. The updates to the user interface will provide users with a better overall user experience and enable them to find the information they need faster. Additionally, the changes to the user interface will help improve data quality and integrity by making it easier to identify, report, and correct data fed to JACKS from external systems.					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i> Minor change due to routine program adjustments.					
<i>Title:</i> 5) Joint Requirements Office Management (JRO MGT)			5.132	6.568	9.160
<i>FY 2022 Plans:</i> Funds continue to represent the Services and Combatant Commands (CCMD) in the requirements generation process for materiel and non-materiel solutions in the medial and physical CBRN defense mission areas; conduct foundational studies for the combating weapons of mass destruction (CWMD) / CBRN defense community; and support CCMD exercises. Continue to chair the CBRN Support to Command and Control Sub-working Group supporting the C4Cyber Functional Capabilities Board (FCB) include the preparation and validation of Capability Development Packages and Capability Packages.					
<i>FY 2023 Plans:</i> Funds will continue to represent the Services and CCMD in the requirements generation process for Joint materiel and non-materiel solutions in the medical and physical CBRN defense mission areas; conduct foundational studies for the CWMD / CBRN defense community; provide support to Joint and Multi-service doctrine development, including the preparation of various Joint publications which then inform MTTPs. Continue to support CBRN/CWMD training efforts at various Joint Senior Leadership schools. Continue to support COCOM scenario development and controller/evaluator training and provide expertise to CCMD exercises. Continue to chair the CWMD Working Group to ensure synchronized JCIDS documents are appropriately vetted and staffed prior to being brought to the Protection Functional Capabilities Board. Continue to chair the CBRN Support to Command and Control Sub-working Group supporting the C4Cyber FCB include the preparation and validation of Capability Development Packages and Capability Packages.					
<i>FY 2022 to FY 2023 Increase/Decrease Statement:</i>					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) MS6 / <i>Management Support (Mgmt Support)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Increase due to change in program/project technical parameters. Funding was transferred from DT6 and consolidated under MS6 as part of the budget restructure.				
Title: 6) Joint Test Infrastructure Working Group (JTIWG) FY 2022 Plans: Funds support continued Test and Evaluation (T&E) Executive mission support to ensure credible testing; T&E Early Involvement; T&E Studies; evaluation and decision support for CBDP systems; supported the Director of Operational T&E (DOT&E) for OSD T&E Oversight; supported the NCB in infrastructure planning; continued 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. Continued mission to improve the quality and reduce the costs of test planning and execution; eliminated unnecessary redundancies in test infrastructure. Continued efforts to identify and mitigate critical T&E Gaps in order to reduce cost/test schedule impacts to near-term programs. Continued to align and streamline policies and processes to support more efficient and effective management and sustainment of test infrastructure and methodologies. FY 2023 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; support the NCB in infrastructure planning; 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 programs. Continue to align and streamline policies and processes to support more efficient and effective management and sustainment of test infrastructure and methodologies. FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.		6.068	5.749	6.287
Title: 7) Office of the Secretary of Defense Management (OSD MGT) FY 2022 Plans: Funds continue performing program reviews/assessments, providing planning, programming, budgeting, and execution (PPBE) oversight/analysis, and providing Congressional issue analysis and support. Supporting financial management services provided by the Defense Threat Reduction Agency (DTRA), such as funding distribution and execution reporting. Continue to provide the CBDP Enterprise all aspects of accounting; financial statements; reconciliation of budgetary and proprietary accounts, processing of commitments and obligations; financial accounting compliance; funds management and control; management of the Managers' Internal Control Program and financial systems integration and coordination. FY 2023 Plans:		15.882	8.354	15.565

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022		
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)	Project (Number/Name) MS6 / Management Support (Mgmt Support)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Funds will continue performing program oversight/reviews/assessments, leading PPBE processes, and supporting strategic and Congressional engagements. Funds Defense Finance and Accounting Service transactions and direct support. Continues to support financial management and audit functions for the CBDP Enterprise including all aspects of accounting; financial statements; reconciliation of budgetary and proprietary accounts, processing of commitments and obligations; financial accounting compliance; funds management and control; management of the Managers' Internal Control Program and financial systems integration and coordination.				
FY 2022 to FY 2023 Increase/Decrease Statement: Increase due to change in program/project technical parameters. Increased support for strategic high priority efforts.				
Title: 8) Program Analysis and Integration Office Management (PAIO MGT)		9.305	8.602	8.592
FY 2022 Plans: Funds continue to analyze and evaluate CWMD defense plans, programs, and budgets in relation to U.S. defense objectives, projected threats, allied contributions, estimated costs, and resource constraints. Review, analyze, and evaluate CWMD defense programs for execution of approved strategies and policies. Promote improved analytical skills and competencies, tools, data, and methods for analyzing CWMD defense planning and the allocation of resources. Ensure that the costs/budget justification for CWMD defense programs are presented accurately and completely. Provide independent analytic advice and evaluate alternative policies to ensure that CWMD defense programs can be implemented.				
FY 2023 Plans: Funds will continue to analyze and evaluate CWMD defense plans, programs, and budgets in relation to U.S. defense objectives, projected threats, allied contributions, estimated costs, and resource constraints. Review, analyze, and evaluate CWMD defense programs for execution of approved strategies and policies. Promote improved analytical skills and competencies, tools, data, and methods for analyzing CWMD defense planning and the allocation of resources. Ensure that the costs/budget justification for CWMD defense programs are presented accurately and completely. Provide independent analytic advice and evaluate alternative policies to ensure that CWMD defense programs can be implemented.				
FY 2022 to FY 2023 Increase/Decrease Statement: Minor change due to routine program adjustments.				
Title: 9) Joint Concepts, Studies, and Analysis (JCSA)		-	-	1.320
FY 2023 Plans: Funds will conduct the follow-on study/assessment to the FY20 CBRN Response Enterprise Capability Based Assessment. Initiate a Post-Integrated Early Warning "Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities" (DOTMLPF-P) Change Recommendation Study/Assessment. Sponsor the first Personal Contamination Mitigation (Wound and Ocular Decontamination) Analysis of Alternatives. Plan and conduct all modelling and scenario development in				

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022	
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) MS6 / <i>Management Support (Mgmt Support)</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022
support of CASSANDRA 24, the preeminent CBRN-focused Operational Risk Analysis exercise. Continue to update detailed operational risk analyses to support CBDP leadership decisions.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$0.940 Million) remains in O49.			
Title: 10) Workforce and Biosafety - Enhanced Biodefense (ENBD) Description: This effort will focus on Biodefense and Biosafety Expertise & Technology Protection & Supply Chain Risk Management (Biosecurity) FY 2023 Plans: Provide technical subject matter expertise and acquisition program management to work across the research, development, and acquisition enterprise, to include collaborative efforts with the Defense Advanced Research Projects Agency and the Defense Health Agency, as well as with the interagency through the Public Health Emergency Medical Countermeasures Enterprise. Establish an enduring capability to surveil, address threats, and mitigate risks related to the CBDP supply chain, its cybersecurity, protection of intellectual property, and information security. FY 2022 to FY 2023 Increase/Decrease Statement: Additional investment in enhanced biodefense and pandemic preparedness.		-	-
			7.000
Accomplishments/Planned Programs Subtotals		42.800	36.175
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 (Mgmt Support)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DT6: Joint Doctrine And Training Support (Mgmt Support)	-	1.829	2.615	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.444
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Doctrine and Training Support Research, Development, Test, and Evaluation (RDT&E) Management Support Project provides the Joint Requirements Office for Chemical, Biological, Radiological and Nuclear Defense (JRO-CBRND) Training and Leader Education program directly supporting the Chemical Biological Defense Program (CBDP). In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP Portfolio. DT6 efforts in FY2022 progress to the Management Support (MS6) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

(1) Joint Requirements Office Doctrine and Training (JRO DT) **Progresses to MS6 in FY2023**

JRO DT develops Joint Chemical, Biological, Radiological, and Nuclear (CBRN) defense capability requirements and the improvement of CBRN defense related education and training at the Joint and Service levels. This requirement provides technical and subject matter expert support in the areas of CBRN Defense (CBRND) and Countering Weapons of Mass Destruction (CWMD). Joint and Service training, leadership development, and education includes: (1) The CBDP Joint Senior Leader Course (JSLC) and (2) 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. Provide contract support to the CBDP-directed Graduate Fellowship Program in CBRN/CWMD Studies.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Joint Requirements Office Doctrine and Training (JRO DT)	1.829	2.615	-
Description: Supports Joint Doctrine, Training, Leader Development & Education.			
FY 2022 Plans: Complete the CBRN/CWMD Graduate Fellowship Program. Continue to support training efforts at various Joint Senior Leadership schools.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to MS6.			
Accomplishments/Planned Programs Subtotals	1.829	2.615	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) DT6 / <i>Joint Doctrine And Training Support (Mgmt Support)</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605384BP / CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)				Project (Number/Name) O49 / Joint Concept Development (Mgmt Support)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
O49: Joint Concept Development (Mgmt Support)	-	2.846	0.940	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.786
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Concept Development Research, Development, Test, and Evaluation (RDT&E) Management Support Project supports the Joint Requirements Office and the Chairman's Risk Assessment Process by producing, coordinating, & executing Chemical, Biological, Radiological, and Nuclear (CBRN) defense studies, experiments, analyses, and architecture, in order to develop future operational concepts and support the efficient and effective generation of CBRN requirements. In FY2023, the CBRN RDT&E Projects have been restructured to align to the CBRN Portfolio. O49 efforts in FY2022 progress to the Management Support (MS6) portfolio. This restructuring is intended to provide standardization and alignment across CBRN research, development and acquisition efforts.

Efforts included in this Project are:

(1) Joint Concepts, Studies, and Analyses (JCSA) **Progresses to MS6 in FY2023**

JCSA provides specific lines of effort to 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 (CONOPS) for employing and developing capabilities; and analyzing specific issues as part of program development.

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

	FY 2021	FY 2022	FY 2023
Title: 1) Joint Concepts, Studies, and Analysis (JCSA)	2.846	0.940	-
Description: Support to JCSA			
FY 2022 Plans: Implement the Chairman's Joint Supporting Concept by publishing a new Joint CBRN Defense Modernization Plan. Conduct a study to inform specific requirement Key Performance Parameters and System Attributes (KPPs/KSAs) in an integrated layered defense against persistent chemical agents like Fourth Generation Agents. Continue to sponsor and prepare various JCIDS supporting documents, including AoAs.			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.320 Million) transferred to MS6.			
Accomplishments/Planned Programs Subtotals	2.846	0.940	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 6	R-1 Program Element (Number/Name) PE 0605384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (RDT&E MGT SUPPORT)</i>	Project (Number/Name) O49 / <i>Joint Concept Development (Mgmt Support)</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
0400: Research, Development, Test & Evaluation, Defense-Wide / BA 6: RDT&E Management Support					PE 0605502BP / SMALL BUSINESS INNOVATIVE RESEARCH (SBIR)							
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	26.967	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.967
SB6: Small Business Innovative Research (SBIR)	-	26.967	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.967

A. Mission Description and Budget Item Justification

The overall objective of the Chemical Biological Defense (CBD) Small Business Innovative Research (SBIR) program is to improve the transition or transfer of innovative CBD technologies between Department of Defense (DoD) components and the private sector for mutual benefit. The CBD SBIR 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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	26.967	0.000	0.000	-	0.000
Total Adjustments	26.967	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	26.967	-			
• Other Adjustments	0.000	-	-	-	-

Change Summary Explanation

Funding: FY21 (+\$26.967 Million): Funding transferred and applied to Small Business Innovative Research program.

Schedule: N/A

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 6					R-1 Program Element (Number/Name) PE 0605502BP / SMALL BUSINESS INNOV ATIVE RESEARCH (SBIR)				Project (Number/Name) SB6 / Small Business Innovative Research (SBIR)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
SB6: Small Business Innovative Research (SBIR)	-	26.967	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	26.967
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Small Business Innovative Research (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 3.2% 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, Public Law (PL) 102-564. 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 (0.45% of the extramural R&D budget vs. 3.2% for the SBIR Program).

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 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. The executive agent for the SBIR/STTR portion of the CDBP is the Army Research Office-Washington.

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

	FY 2021	FY 2022	FY 2023
Title: 1) SBIR/STTR	26.967	0.000	0.000
Description: Small Business Innovative Research/Small Business Technology Transfer			
FY 2022 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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)		
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
<div>- Detection (\$5.8 million): prototype development and test & evaluation for bio-aerosol point detection and identification; Plume Characterization and Differentiation in Multimodal Threat Sensing; Remote LIBS + Laser Induced Thermal (Infrared) Emission (LITE) for in-situ Surface Contaminant Mapping & Identification.</div> <div>- Protection (\$6.6 million): Engineered Beads for Chem-Bio Defense Personal Protective Equipment; Military Working Dog Decontamination Kit; On-site Treatment of Contaminated Equipment.</div> <div>- Physiological Monitoring (\$2.2 million): Development of a Non-Invasive Device to Measure Changes in Intra-Cranial Pressure resulting from Viral or Bacterial Infections of the Central Nervous System.</div> <div>- Medical Therapeutics/Countermeasures (\$5.9 million): Development of Small Molecule Therapeutics for Emerging Viral Agents; Optimized platforms for proper glycosylation and sialylation of recombinant human butyrylcholinesterase; Long Duration, Novel Opioid Medical Countermeasure for Intramuscular Injection; Marburg Virus Prophylactic Medical Countermeasures.</div> <div>- Medical CONOPS and Enhancements for Austere Environments (\$1.1 million): Design, Testing and Production of Shatter Resistant Autoinjector Formula Containers.</div> <div>- Medical Diagnostics (\$1.5 million): Circulating Diagnostic Markers of Infectious Disease.</div> <div>FY 2023 Plans:</div> <div>- Detection (estimated funding, \$7.7 million): Addressing Surface-Enhanced Raman Scattering Substrate Development; Addressing Millimeter Wave Imaging with Metamaterials; Addressing Opioid Contamination Identification for Military Surfaces.</div> <div>- Protection (estimated funding, \$7.7 million): Addressing CBRN Gloves with Improved Tactility and Touch-Screen Capability; Addressing On-Demand Generation of Hydrogen Peroxide for Vaporous Decontamination Systems; Addressing Plasma Decontamination of Biological Warfare Agents.</div> <div>- Medical Pretreatments (estimated funding, \$2.2 million)</div> <div>- Medical Diagnostics (estimated funding, \$2.2 million)</div> <div>- Medical Therapeutics Chemical/Biological Countermeasures (estimated funding, \$5.5 million)</div>					
Accomplishments/Planned Programs Subtotals			26.967	0.000	0.000
C. Other Program Funding Summary (\$ in Millions)					
N/A					
Remarks					
D. Acquisition Strategy					
N/A					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program	Date: April 2022
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Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	-	38.475	58.261	68.030	-	68.030	55.189	61.378	56.905	56.308	Continuing	Continuing
MT7: <i>Mitigate (Op Sys Dev)</i>	-	0.000	0.000	5.098	-	5.098	3.879	6.747	4.360	3.419	Continuing	Continuing
PT7: <i>Protect (Op Sys Dev)</i>	-	0.000	0.000	20.076	-	20.076	15.426	12.029	9.942	8.693	Continuing	Continuing
UN7: <i>Understand (Op Sys Dev)</i>	-	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
CA7: <i>Contamination Avoidance (Op Sys Dev)</i>	-	14.557	15.051	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.608
CM7: <i>Homeland Defense (Op Sys Dev)</i>	-	1.276	1.522	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.798
C07: <i>Collective Protection (Op Sys Dev)</i>	-	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.392
DE7: <i>Decontamination (Op Sys Dev)</i>	-	0.633	1.072	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.705
IP7: <i>Individual Protection (Op Sys Dev)</i>	-	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
IS7: <i>Information Systems (Op Sys Dev)</i>	-	3.122	15.281	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.403
MB7: <i>Medical Biological Defense (Op Sys Dev)</i>	-	1.578	3.833	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.411
MC7: <i>Medical Chemical Defense (Op Sys Dev)</i>	-	1.754	1.336	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.090

A. Mission Description and Budget Item Justification

This program element (PE) resources Operational System Development across the Mitigate, Protect, and Understand portfolios. Chemical Biological Defense Program (CBDP) investments provide an integrated, layered capability to enable combating weapons of mass destruction (CWMD) missions ranging from combat operations to Department of Defense (DoD) support to domestic incident prevention and response. The Projects in this PE support the upgrade of systems that have been fielded or have received approval for full rate production in order to maintain Joint Force readiness.

Individual Projects include:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program				Date: April 2022		
Appropriation/Budget Activity 0400: <i>Research, Development, Test & Evaluation, Defense-Wide / BA 7: Operational Systems Development</i>		R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>				
<p>- Mitigate (MT7): Technology refresh of fielded Contamination Mitigation (ConMit) systems that will remove and/or detoxify contaminated material without damaging combat equipment, personnel, or the environment.</p> <p>- Protect (PT7): Efforts to refresh technology of fielded individual and protective equipment that enables the Joint Force to operate in a contaminated chemical, biological, and radiological (CBR) environment with little or no degradation of performance. Technology refresh efforts for fielded collective protection systems that are smaller, lighter, less costly to produce and maintain, and more logistically supportable, enabling mission accomplishment in spaces safe from the effects of CBR contamination.</p> <p>- Understand (UN7): Technology refresh, modernization and continuous engineering of software applications and information systems to shape and inform the battlespace against CBRN threats. Continued development and testing of CB sensor equipment to maintain system interoperability with emerging information technology and decrease size, weight and power requirements to reduce logistical burden of associated capabilities. Technology refresh of fielded medical diagnostic systems and associated capabilities (e.g., assays) that contribute to the layered medical defenses against biological warfare agent and upgrade of fielded medical nerve agent treatment system that contribute to the layered medical defenses against chemical warfare agent threats facing U.S. Forces in the field.</p> <p>- Contamination Avoidance (CA7), Homeland Defense (CM7), Collective Protection (C07), Decontamination (DE7), Individual Protection (IP7), Information Systems (IS7), Medical Biological Defense (MB7) and Medical Chemical Defense (MC7) are no longer active FY23 Projects due to budget restructure.</p> <p>The projects in this PE support operational systems development necessary to maintain operational effectiveness and are therefore correctly placed in Budget Activity 7.</p>						
B. Program Change Summary (\$ in Millions)		FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget		39.530	58.261	0.000	-	0.000
Current President's Budget		38.475	58.261	68.030	-	68.030
Total Adjustments		-1.055	0.000	68.030	-	68.030
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		0.000	-			
• Congressional Directed Transfers		0.000	-			
• Reprogrammings		0.101	-			
• SBIR/STTR Transfer		-1.156	-			
• Other Adjustments		0.000	-	68.030	-	68.030
Change Summary Explanation						
Funding: FY 2021 (+\$0.101 Million): Below threshold reprogramming adjustments to balance overall portfolio efforts.						
FY 2021 (-\$1.156 Million): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400: Research, Development, Test & Evaluation, Defense-Wide I BA 7: Operational Systems Development	R-1 Program Element (Number/Name) PE 0607384BP I CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	
FY 2023: Funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding. Funding includes specific increases for Departmental inflation rate adjustments (+\$7.303 Million), to modernize or upgrade medical chemical defense countermeasures, individual protection modernization, and medical modernization (+\$1.615 Million).		
Schedule: N/A		
Technical: N/A		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) MT7 / Mitigate (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MT7: Mitigate (Op Sys Dev)	-	0.000	0.000	5.098	-	5.098	3.879	6.747	4.360	3.419	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Mitigate Operational System Development Project provides the Joint Force continued readiness of fielded personnel and materiel contamination mitigation and chemical agent therapeutic capabilities and provides size, weight and power improvements to reduce logistical burden on the Warfighter.												
Efforts included in this Project are:												
(1) Improved Nerve Agent Treatment System Centrally Acting (INATS CA), and												
(2) Modernization Protection Decontamination (MODPROT DE)												
INATS CA will develop the centrally-acting anticholinergic, scopolamine, to increase survivability and decrease morbidity following exposure to toxic nerve agents. When added to currently fielded nerve agent treatments, scopolamine will improve overall medical outcomes and will be available in both a vial for use at definitive care, and in an autoinjector for use in the field. INATS CA includes modernization of Soman Nerve Agent Pretreatment Pyridostigmine (SNAPP; pyridostigmine bromide [PB] tablets). In FY23, INATS CA continues studies on the Food and Drug Administration (FDA)-approved SNAPP, a medical pretreatment against nerve agent poisoning to upgrade its joint service utility and ensure its continued safety and efficacy. Also in FY23, the INATS CA program will submit to the FDA for approval, documents supporting sustained release PB tablets in blister packs. These tablets will provide a single tablet per day dose alternative to the current SNAPP dosing regimen for the pretreatment against soman nerve agent poisoning.												
MODPROT DE addresses obsolescence and technical data concerns, beginning with the M26 Joint Services Transportable Decontamination System-Small Scale (JSTDSS-SS) through validation and verification of Technical Manual (TM) changes as well as technical data for spare and repair parts; the M12A1 Power Driven Decontamination Apparatus (PDDA) by updating technical references and performing the necessary validation and verification before publishing an updated TM. In FY23, MODPROT DE will continue to update technical data for spares and repair parts for M26 JSTDSS-SS Technical Data Package (TDP) and continue to update technical references and validation/verification efforts for M12A1 PDDA TM.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023	
Title: 1) INATS - CA									-	-	0.346	
Description: SNAPP Shelf Life Modernization: Studies required by the FDA and/or users to modernize or upgrade medical chemical defense countermeasures.												
FY 2023 Plans:												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 7				R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) MT7 / Mitigate (Op Sys Dev)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Continue SNAPP stability studies.											
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding remains in MC7. Due to OTA agreement, number of samples required decreased.											
Title: 2) INATS - CA Description: Pyridostigmine Bromide (PB) Extended Release Tablet Development FY 2023 Plans: Continue Extended Release Tablet Development. FY 2022 to FY 2023 Increase/Decrease Statement: Program/project funding transferred from another funding line. FY22 Funding (\$1.336M) remains in MC7.									-	-	3.664
Title: 3) MODPROT DE Description: Upgrades, improvements, and modernizations to fielded decontamination systems FY 2023 Plans: Continue to update technical data for spares and repair parts for M26 Joint Service Transportable Decontamination System - Small Scale (JSTDSS-SS) Technical Data Package (TDP). Continue to update technical references and validation/verification efforts for M12A1 Power Driven Decontamination Apparatus (PDDA) Technical Manual (TM). FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.072M) remains in DE7.									-	-	1.088
Accomplishments/Planned Programs Subtotals									-	-	5.098
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MC5: Medical Chemical Defense (SDD)	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867
• MT5: Mitigate (SDD)	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• DE7: Decontamination (Op Sys Dev)	0.633	1.072	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.705

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MT7 / <i>Mitigate (Op Sys Dev)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MC7: <i>Medical Chemical Defense (Op Sys Dev)</i>	1.754	1.336	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.090
• JD0050: <i>DECONTAMINATION FAMILY OF SYSTEMS (DFoS)</i>	11.474	4.166	5.795	-	5.795	8.562	8.673	8.820	18.518	Continuing	Continuing
• PHM040: <i>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	31.888	33.051	Continuing	Continuing

Remarks

D. Acquisition Strategy

IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)

For scopolamine autoinjector development INATS CA uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting development and testing activities consistent with current FDA regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, a follow-on procurement agreement will be used to procure initial operational capability (IOC) / full operational capability (FOC).

The Soman Nerve Agent Pre-Treatment Pyridostigmine (SNAPP) effort under INATS CA is a modernization effort for pyridostigmine bromide (PB) tablet requirements from the joint service users for the FDA approved SNAPP product. The effort uses OTAs for conducting development and testing activities consistent with current FDA regulations.

MODERNIZATION DECONTAMINATION (MODPROT DE)

MODPROT DE 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 (TDPs) to be used in Engineering Change Proposals (ECPs) and provided to the item managers.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) MT7 / Mitigate (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS CA - PB Extended Release	Various	TBD : N/A	0.000	0.000		0.000		2.935	Dec 2022	0.000		2.935	Continuing	Continuing	0.000
INATS CA - Shelf Life Modernization (SNAPP)	C/CPFF	CMC Pharma : Cleveland, OH	0.000	0.000		0.000		0.150	Dec 2022	0.000		0.150	Continuing	Continuing	0.000
MODPROT DE - HW C - M26 Tech Data Package; Modernization Update / M12A1 TM Update	MIPR	Various : Various	0.000	0.000		0.000		0.810	Dec 2022	0.000		0.810	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		3.895		0.000		3.895	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT DE - ES C - IPT, Engineering, Technical, Logistics Support	MIPR	Various : Various	0.000	0.000		0.000		0.205	Dec 2022	0.000		0.205	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		0.205		0.000		0.205	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS CA - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.000		0.925	Dec 2022	0.000		0.925	Continuing	Continuing	0.000
MODPROT DE - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.073	Dec 2022	0.000		0.073	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		0.998		0.000		0.998	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program											Date: April 2022			
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)					Project (Number/Name) MT7 / Mitigate (Op Sys Dev)				
		Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		0.000	0.000		0.000		5.098		0.000		5.098	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MT7 / <i>Mitigate (Op Sys Dev)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
INATS CA - SNAPP Shelf Life Modernization																												
INATS CA - PB Extended Release Tablet Development																												
MODPROT DE - JSEW Bio Capability Testing																												
MODPROT DE - M26 JSTDS-SS TDP																												
MODPROT DE - M12A1 TM Update																												
MODPROT DE - M26 JSTDS-SS Modernization																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MT7 / <i>Mitigate (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
INATS CA - SNAPP Shelf Life Modernization	1	2021	4	2027
INATS CA - PB Extended Release Tablet Development	1	2022	2	2024
MODPROT DE - JSEW Bio Capability Testing	1	2021	4	2021
MODPROT DE - M26 JSTDS-SS TDP	1	2021	4	2023
MODPROT DE - M12A1 TM Update	1	2021	4	2023
MODPROT DE - M26 JSTDS-SS Modernization	1	2021	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) PT7 / Protect (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
PT7: Protect (Op Sys Dev)	-	0.000	0.000	20.076	-	20.076	15.426	12.029	9.942	8.693	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Protect Operational System Development Project provides the Joint Force the continued readiness of fielded collective and individual protective capabilities and provides size, weight and power improvements to reduce logistical burden on the Warfighter and Services.

Efforts included in this Project are:

- (1) Modernization Protection Collective Protection (MODPROT CP), and
- (2) Modernization Protection Individual Protection (MODPROT IP)

MODPROT CP incorporates a value engineering approach to address the need to reduce logistics cost and minimizes supply chain shortages by addressing obsolescence issues to the Department of Defense (DoD) /Joint Services fielded chemical, biological, and radiological (CBR) protection portfolio for mobile, transportable, fixed facility and shipboard collective protection (CP) systems without the high cost of requiring a new program. The obsolescence of critical equipment, if not modernized, will continue to face significantly increased cost and long lead times making the equipment unaffordable and unprocurable to meet major weapon system program's requirements and schedules. MODPROT CP modernizes decades old collective protection equipment reducing costs, shortening lead times, and updating key components to extend service life and ensure affordable and procurable to warfighters. In FY23, MODPROT CP will continue redesign of M49 gas filters, continue M48A1 Filter Redesign, continue CP Modernization for Ships and Buildings and complete system lab testing and system design packages for platform installation, and continue conducting collective protection system filter surveillance testing to improve system sustainment.

MODPROT IP addresses obsolescence issues with Individual Protective (IP) equipment and the need to modernize fielded IP with capabilities to meet or exceed the Services requirements. MODPROT IP will also conduct modernization efforts and reverse engineering of maintenance and repair procedures for the Joint Services Mask Leakage Tester (JSMLT). MODPROT IP will also provide mask and filter system upgrades and modernization of fielded protection systems to enhance respiratory and ocular protection resulting in an increased lethality of fighter aircraft by mitigating risk due to operationally unsuitable aircrew CBRN masks. Modernization efforts will include technical manual updates and a Logistics Demonstration for an updated, lightweight version of the Joint Protective Aircrew Ensemble (JPAGE). Testing and analysis with aircraft will fully validate and refine new Tactics, Techniques and Procedures (TTPs) that allow aircrews to operate without restrictive CBRN protective equipment by determining time and techniques required to reduce cockpit hazards to acceptable levels by flushing with clean air. The impact of funding these programs will address modernization and obsolescence across the DoD IP portfolio to increase readiness, sustainability, reliability, and affordability of these systems. MODPROT IP incorporates a value engineering approach to address the need to reduce logistics cost and solve obsolescence issues to the DoD /Joint services fielded CBR protection portfolio for individual protective equipment and test equipment systems. In FY23, MODPROT IP will continue modernization of the Joint Mask Leakage Tester (JSMLT), continue Fixed Wing Aircraft/Aircrew PPE optimization effort for multiple airframes, finalize Second Generation Filter Engineering Change Proposal (ECP), and initiate Third Generation Filter Prototype Developmental Testing (DT).

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7				R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) PT7 / Protect (Op Sys Dev)				
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2021	FY 2022	FY 2023
Title: 1) MODPROT CP										-	-	10.088
Description: Upgrades, improvements, and modernizations to fielded collective protection (CP) systems												
FY 2023 Plans: Continue redesign of M49 gas filters. Continue M48A1 Filter Redesign. Continue Collective Protection Modernization for Ships and Buildings and complete system lab testing and system design packages for platform installation. Continue conducting collective protection system filter surveillance testing to improve system sustainment.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.442M) remains in CO7.												
Title: 2) MODPROT IP										-	-	9.988
Description: Upgrades, improvements, and modernizations to fielded individual protection (IP) systems												
FY 2023 Plans: Continue modernization of the Joint Mask Leakage Tester (JSMLT). Continue Fixed Wing Aircraft/Aircrew PPE optimization effort for multiple airframes. Finalize Second Generation Filter Engineering Change Proposal (ECP). Initiate Third Generation Filter Prototype Developmental Testing (DT).												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$8.327M) remains in IP7.												
Accomplishments/Planned Programs Subtotals										-	-	20.076
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• CO7: Collective Protection (Op Sys Dev)	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.392
• IP7: Individual Protection (Op Sys Dev)	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• PHM036: MODERNIZATION PROTECTION COLLECTIVE PROTECTION (MODPROT CP)	0.000	1.385	1.385	-	1.385	0.300	0.000	0.000	0.000	0.000	0.000	3.070
Remarks												

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) PT7 / <i>Protect (Op Sys Dev)</i>
D. Acquisition Strategy MODERNIZATION PROTECTION COLLECTIVE PROTECTION (MODPROT CP) MODPROT CP 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 to meet applicable military standards will validate both Government and contractor furnished improvements. The improvements will be added into the specific systems' updated Technical Data Packages (TDPs) to be used in Engineering Change Proposals (ECPs) and provided to the item managers. MODERNIZATION PROTECTION INDIVIDUAL PROTECTION (MODPROT IP) MODPROT IP leverages mature technology from contractor developed components to address and replace obsolete components of various fielded individual 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 TDP to be used in ECPs and provided to the item managers.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) PT7 / Protect (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - HW C - Collective Protection Modernization for Ships	Various	Various : Various	0.000	0.000		0.000		6.604	Dec 2022	0.000		6.604	Continuing	Continuing	0.000
MODPROT CP - HW C - Filter Redesign, Filter Life Extension Residual Life Indicator (RLI)	MIPR	Various : Various	0.000	0.000		0.000		0.721	Dec 2022	0.000		0.721	Continuing	Continuing	0.000
MODPROT IP - HW C - Filter Prototypes & JSMLT Modernization	Various	Various : Various	0.000	0.000		0.000		3.732	Dec 2022	0.000		3.732	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		11.057		0.000		11.057	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - ES C - IPT, Technical, Engineering and Logistics Support	MIPR	Various : Various	0.000	0.000		0.000		0.549	Dec 2022	0.000		0.549	Continuing	Continuing	0.000
MODPROT IP - ES C - IPT, Engineering, Technical, Logistics Support	MIPR	Various : Various	0.000	0.000		0.000		0.545	Dec 2022	0.000		0.545	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		1.094		0.000		1.094	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - DTE C - CP Modernization Testing	Various	Various : Various	0.000	0.000		0.000		1.465	Dec 2022	0.000		1.465	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) PT7 / Protect (Op Sys Dev)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - DTE C - Fixed Wing Aircraft/Aircrew PPE Optimization Effort	MIPR	Various : Various	0.000	0.000		0.000		3.200	Dec 2022	0.000		3.200	Continuing	Continuing	0.000
MODPROT IP - DTE C - Filter Prototype Testing	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		1.770	Dec 2022	0.000		1.770	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		6.435		0.000		6.435	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.749	Dec 2022	0.000		0.749	Continuing	Continuing	0.000
MODPROT IP - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.741	Dec 2022	0.000		0.741	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		1.490		0.000		1.490	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		20.076		0.000		20.076	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) PT7 / <i>Protect (Op Sys Dev)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MODPROT CP - M93 GPFU Electro Magnetic Interference																												
MODPROT CP - Environmental M98 Guard Bed Testing																												
MODPROT CP - Non Destructive (ND) Acceptance Leak Test CP Filters																												
MODPROT CP - Collective Protection Training Development																												
MODPROT CP - Collective Protection Modernization for Ships and Buildings																												
MODPROT CP - Filter Surveillance Testing																												
MODPROT CP - M48A1 Filter Redesign																												
MODPROT CP - M49 Filter Modernization																												
MODPROT IP - Second Generation Filter & NIOSH DT																												
MODPROT IP - JSMLT Modernization																												
MODPROT IP - LJPAGE TM Updates & LOGDEMO																												
MODPROT IP - MALO Shelf Life Extension Testing																												
MODPROT IP - Fixed Wing Aircraft/Aircrew PPE Optimization Effort																												
MODPROT IP - M53A1 Hard to Fit Testing																												
MODPROT IP - Maximum Age Study for JB2GU nFR Glove																												
MODPROT IP - Second Generation Filter ECP																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																								Date: April 2022													
Appropriation/Budget Activity 0400 / 7										R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)										Project (Number/Name) PT7 / Protect (Op Sys Dev)																	
										FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
										1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
MODPROT IP - Third Generation Filter Prototype DT																																					
MODPROT IP - Third Generation Filter Technology ECP																																					

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) PT7 / <i>Protect (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MODPROT CP - M93 GPFU Electro Magnetic Interference	1	2021	4	2021
MODPROT CP - Environmental M98 Guard Bed Testing	1	2021	4	2021
MODPROT CP - Non Destructive (ND) Acceptance Leak Test CP Filters	1	2021	4	2022
MODPROT CP - Collective Protection Training Development	1	2021	4	2022
MODPROT CP - Collective Protection Modernization for Ships and Buildings	1	2021	4	2025
MODPROT CP - Filter Surveillance Testing	1	2021	4	2026
MODPROT CP - M48A1 Filter Redesign	1	2021	4	2027
MODPROT CP - M49 Filter Modernization	1	2021	4	2027
MODPROT IP - Second Generation Filter & NIOSH DT	1	2021	4	2022
MODPROT IP - JSMLT Modernization	1	2021	4	2026
MODPROT IP - LJPAGE TM Updates & LOGDEMO	2	2021	4	2022
MODPROT IP - MALO Shelf Life Extension Testing	1	2022	2	2022
MODPROT IP - Fixed Wing Aircraft/Aircrew PPE Optimization Effort	1	2022	4	2026
MODPROT IP - M53A1 Hard to Fit Testing	2	2022	4	2022
MODPROT IP - Maximum Age Study for JB2GU nFR Glove	2	2022	4	2022
MODPROT IP - Second Generation Filter ECP	1	2023	2	2023
MODPROT IP - Third Generation Filter Prototype DT	3	2023	4	2025
MODPROT IP - Third Generation Filter Technology ECP	1	2026	2	2026

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) UN7 / Understand (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
UN7: Understand (Op Sys Dev)	-	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Understand Operational System Development Project provides the Joint Force continued readiness of fielded sensor, information technology and medical diagnostic capabilities and provides size, weight and power improvements to reduce logistical burden on the Warfighter and Services.

Efforts included in this Project are:

- (1) Enhanced Maritime Biological Detection (EMBD),
- (2) Modernization Chemical Biological Radiological Nuclear Information Systems (MOD CBRN IS),
- (3) Modernization Medical (MOD MED),
- (4) Modernization Sensors (MOD SEN),
- (5) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA),
- (6) Special Purpose Unit Rapid Capability Development and Deployment (SPU RCDD), and
- (7) Weapons of Mass Destruction - Civil Support Team (WMD CST)

EMBD undertakes engineering efforts to combat Diminishing Manufacturing Sources and Material Shortages (DMSMS) and maintain a stable production line. Specific efforts include a new External Controller Subsystem (ECS) in FY22 and flash memory in the Rapid Agent Aerosol Detector (RAAD) in FY23. EMBD also anticipates a major software development effort to upgrade fielding systems as software changes occur.

MOD CBRN IS provides for the management CBRN IS, Joint Effects Model (JEM), Joint Warning and Reporting Network (JWARN) and the Software Support Activity (SSA) under one family of systems. MOD CBRN IS provides for the continuous engineering and developmental efforts to modernize and conduct post production and deployment support to fielded CBRN software information systems and capabilities. This project supports software applications and information systems that help shape and inform the battlespace against CBRN threats. MOD CBRN IS encompasses the processes, procedures, people, material and information required to support and modernize fielded CBRN information systems and applications. In FY23, the MOD CBRN IS program activities include: continuous engineering including software code updates and modernization to correct deficiencies, comply with Joint and Service command and control (C2) system architectural changes, cybersecurity, test and evaluation, configuration management, software redistribution, documentation, and training.

MOD MED supports improvements to fielded systems and supports post-approval Food and Drug Administration (FDA) requirements for devices and combination products. Under MOD MED, program efforts include FDA required postmarketing commitments and requirements for combination products (AUTOINJ) and system hardware and software upgrades for fielded Next Generation Diagnostics System (NGDS) (both NGDS 1 and NGDS 2 Man Portable Diagnostics System (MPDS)) that are required to maintain the capability for CBR threat and infectious disease identification and FDA-cleared diagnostics to inform individual patient treatment and CBR

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) UN7 / <i>Understand (Op Sys Dev)</i>
<p>situational awareness and disease surveillance. In FY23, funding initiates development of bacterial versus viral (B vs. V) assay and Flexible Cartridge (FlexCart). The B vs. V assay detects host responses and viral pathogens. The FlexCart effort enables the DoD to address emerging threats using Cepheid-configured cartridges.</p> <p>MOD SEN addresses obsolescence of critical equipment and functionality issues for the Services by establishing a modernization plan to integrate and incorporate advancements in technology for the Analytical Laboratory System Modification (ALS MOD), Common Analytical Laboratory System (CALS) Field Confirmatory Analytical Capability Set (FC ACS), CALS Theater Validation Integrated System (TV IS) and CBRN Dismounted Reconnaissance System (DRS). In FY23, MOD SEN supports the evaluation of components for technical refreshment of the CBRN DRS, CALS and ALS MOD.</p> <p>ROSETTA is a modernization effort to provide the General Forces a low-cost, easy to use surface and/or vapor hazard detection ticket for a wide range of chemical warfare agents (CWAs) and non-traditional agents (NTAs). These highly-selective, multiplexed array tickets will enable accurate hazard identification in the presence of common battlefield interferents at the tactical-level. ROSETTA is based on colorimetric technology and will be eye-readable and has potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. In addition, the ROSETTA tickets will provide improved hazard detection performance with reduced false alarm rate, potential for increased number of chemicals detected, reduced detection time especially for compounds of interest (CWAs, pharmaceutical based agents (PBAs), NTAs and toxic industrial chemicals (TICs)), and potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. In FY23, ROSETTA will continue contract actions with down select of vendors.</p> <p>SPU RCDD facilitates Joint Special Operations Command (JSOC) rapid response requirements to near-term and emergent CB defensive capabilities. This includes select elements from across the Special Operations Force (SOF) Enterprise such as Combatant Commanders Response Forces (CRFs) and other Joint Force enabling units such as the 20th Chemical, Biological, Radiological, Nuclear and Explosives Command. SPU RCDD mitigates risk across the Chemical Biological Defense Program (CBDP) by creating a portfolio of operationally-relevant CB capabilities that can be quickly transitioned in response to the articulated, emergent capability needs of the geographic combatant commanders. These objectives are met by the early transitioning of promising science and technologies (S&T); the focused conduct of combat evaluations and mission-oriented operational assessments to assess technological and mission suitability; and the active leveraging of existing commercial-off-the-shelf (COTS) and government-off-the-shelf (GOTS) products along with novel redesign approaches to optimize existing solutions to new challenges supported by "buy-try-decide-acquire" acquisition strategies. SPU RCDD initiates efforts such as respiratory breathing systems, biological identification, unmanned aerial and ground platform sensor integration, development of enhanced and augmented reality systems, and modernization of protective CB ensembles that have gone through requirements validation, and continues product enhancement development and technology upgrades on currently fielded SOF equipment to counter emerging threats, conduct limited user evaluations and operational assessment. In FY23, SPU RCDD will continue the Modular Self Contained Breathing Apparatus (M-SCBA) and Enhanced Warfighter Augmented Training (EWAT) product efforts.</p> <p>WMD CST supports the fielded system upgrade and ongoing assessment and acquisition of COTS and GOTS analytical detection, protection, decontamination and sampling equipment for survey in order to expand/enhance the operational capabilities of the (57) WMD CST Teams. Program efforts support upgrades of key components of the WMD CST Program that have become obsolete, or are no longer being supported by the manufacturer. In FY23, the WMD CST program continues system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022	
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) UN7 / Understand (Op Sys Dev)		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2021	FY 2022	FY 2023
Title: 1) EMBD Description: Product Development, test and evaluation (T&E), and Management FY 2023 Plans: Continue obsolescence support to include production efforts, testing and verification efforts. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.615 Million) remains in CA7. Minor change due to routine program adjustments from FY22 to FY23.		-	-	1.748
Title: 2) MOD CBRN IS Description: CBRN Information Systems Modernization FY 2023 Plans: Perform management, preplanned product improvements and continuous engineering efforts to modernize currently fielded capabilities of the Joint Effects Model (JEM), Joint Warning and Reporting Network (JWARN) and CBRN IS hosted on cloud and Joint Service Command and Control (C2) systems. Update host architectures, operating systems, cyber security requirements and North Atlantic Treaty Organization (NATO) standards in order to maintain interoperability, efficiency and functionality and compliance. Continue Government developmental and operational testing on software updates and modernization efforts. Provide program/financial management, costing, contracting, scheduling and acquisition oversight. Provide product support for software redeployment and training to operational forces. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$15.281 Million) remains in IS7.		-	-	18.995
Title: 3) MOD MED Description: Food and Drug Administration (FDA) required Post-Marketing commitments and requirements for combination products (AUTOINJ) and system hardware and software upgrades for fielded Next Generation Diagnostics System (NGDS) (both NGDS 1 and NGDS 2 Man Portable Diagnostics System (MPDS)) FY 2023 Plans: Support Army, Office of the Surgeon General (OTSG) - Sponsored regulatory activities for legacy autoinjectors. Initiate autoinjector FDA Post-Marketing Commitments. Provide NGDS 1 obsolescence management, including annual cyber security		-	-	5.881

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
Appropriation/Budget Activity 0400 / 7		R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)		Project (Number/Name) UN7 / Understand (Op Sys Dev)	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
updates and management of hardware and software configurations. Initiate NGDS 2 MPDS system upgrades and support through development of FlexCart and Bacterial versus Viral Assays.					
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.833M) remains in MB7.					
Title: 4) MOD SEN Description: Sensors Modernization FY 2023 Plans: Complete evaluation of improved and integrated sensors and personal protective equipment (PPE) for CBRN Dismounted Reconnaissance System (DRS), identifying new electrochemiluminescence (ECL) technology to refresh CBRN DRS, Common Analytical Laboratory System (CALS) and Analytical Laboratory System (ALS) Modification (MOD). Initiate evaluation of Liquid Chromatography Mass Spectrometry (LCMS) technology and assay development to refresh ALS. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$10.391M) remains in CA7. Decrease due to fact of life change in the program/project. CBRN DRS modernization activity completes in FY23. Funding required to complete that activity in FY23 and continues to maintain obsolescence management of CALS and CBRN DRS.			-	-	6.379
Title: 5) ROSETTA Description: Product Development, Engineering Design & Testing FY 2023 Plans: Continue contract efforts and conduct contractor testing for down select. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.045 Million) remains in CA7. Funding increases due to continuation of modernization efforts.			-	-	4.889
Title: 6) SPU RCDD Description: The Modular Self Contained Breathing Apparatus (M-SCBA) project will replace the three different SCBA systems currently being used by the customer with a modular system that can be configured to meet their three (3) specific mission profiles. The current SCBA systems are made by three different manufactures which creates a logistical burden. The Enhanced Warfighter Augmented Training (EWAT) project will allow the Warfighter to interact with specific CBRN equipment through an			-	-	1.463

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) UN7 / Understand (Op Sys Dev)	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
actual device or with a created 3D version of that device to perform maintenance as well as to load and analyze CB samples using pre-positioned training scenarios.			
FY 2023 Plans: Initiate product enhancement, development, and technology upgrades on currently fielded equipment to counter emerging threats, conduct limited user evaluations and operational assessments, and provide program management support. Continue the M-SCBA and EWAT product enhancement, development, and technology upgrades, conduct limited user evaluation, and operational assessments, and provide program management support. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$3.397 Million) remains in IP7. Decrease due to fact of life change in the program/project.			
Title: 7) WMD CST Description: System Upgrade and Support FY 2023 Plans: Continue system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system. Continue 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. Conduct logistics engineering and integrated logistics support (ILS) management (e.g., maintenance support, facilities, personnel, training, testing, and activation of the system). Initiate start of Phase III unmanned aerial sensors (UAS) testing and larger scale Decon effluent testing. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred from another Project due to budget restructure. FY22 funding (\$1.522 Million) remains in CM7. Funding increase due to start of Phase III UAS testing and the larger scale Decon effluent testing.	-	-	3.501
Accomplishments/Planned Programs Subtotals	-	-	42.856

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• IS4: Information Systems (ACD&P)	13.414	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.414

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 7				R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) UN7 / Understand (Op Sys Dev)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CA5: Contamination Avoidance (SDD)	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209
• IP5: Individual Protection (SDD)	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
• IS5: Information Systems (SDD)	5.810	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.810
• MB5: Medical Biological Defense (SDD)	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505
• MC5: Medical Chemical Defense (SDD)	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867
• MT5: Mitigate (SDD)	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
• CA7: Contamination Avoidance (Op Sys Dev)	14.557	15.051	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.608
• CM7: Homeland Defense (Op Sys Dev)	1.276	1.522	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.798
• IP7: Individual Protection (Op Sys Dev)	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• IS7: Information Systems (Op Sys Dev)	3.122	15.281	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.403
• MB7: Medical Biological Defense (Op Sys Dev)	1.578	3.833	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.411
• JS0005: COMMON ANALYTICAL LABORATORY SYSTEM (CALS)	42.773	48.258	66.765	-	66.765	28.382	0.000	0.000	0.000	0.000	186.178
• JS5230: MODERNIZATION CBRN INFORMATION SYSTEMS (MOD CBRN IS)	0.074	0.611	0.656	-	0.656	0.329	0.345	0.396	0.000	0.000	2.411
• MC0101: CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)	52.393	21.611	47.324	-	47.324	59.433	64.556	37.802	23.292	Continuing	Continuing
• PHM018: SPU RAPID CAPABILITY DEVELOPMENT AND DEMO (SPU RCDD)	8.808	6.946	13.739	-	13.739	5.973	5.974	5.980	5.980	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
Appropriation/Budget Activity 0400 / 7				R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) UN7 / Understand (Op Sys Dev)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• SA0003: ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)	13.562	21.473	21.472	-	21.472	21.899	21.203	26.500	2.240	Continuing	Continuing
• SA0006: CBRN INFORMATION SYSTEMS (CBRN IS)	0.512	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.512
• SA0025: ANALYTICAL LABORATORY SYSTEM MODIFICATION (ALS MOD)	19.002	1.056	3.894	-	3.894	4.256	4.806	5.088	9.137	Continuing	Continuing
• SA0044: NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)	0.000	4.624	3.126	-	3.126	4.915	5.374	3.006	0.538	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)											
<p>The EMBD program uses a streamlined acquisition strategy and awarded a Full Rate Production (FRP) contract in 1QFY22 with options for production of EMBD kits and Obsolescence Support in Production (OSIP) to resolve diminishing sources and obsolescence issues. The FY22 OSIP Option will specifically address obsolescence problems with the External Controller Subsystem (ECS) which is used to remotely control the Joint Biological Point Detection System (JBPDS) / EMBD. The FY23 OSIP Option will address major obsolescence problems identified by the prime contractor that affect a stable production line. As portions of the ECS are no longer procurable, the contractor will identify and qualify a new hardware that both supports EMBD requirements for future upgradability and is also backwards compatible with previously fielded units.</p>											
MODERNIZATION CBRN INFORMATION SYSTEMS (MOD CBRN IS)											
<p>MOD CBRN IS combines CBRN IS, Joint Effects Model (JEM), Joint Warning and Reporting Network(JWARN) and the Software Support Activity under one portfolio. The acquisition strategy utilizes a managed portfolio approach to align multiple capabilities in support of modernization of CBRN Information Systems. MOD CBRN IS leverages the concepts of CBRN Hazard Awareness and Understanding and the DISA milCloud Enterprise Services to integrate current CBRN capabilities and intelligence services, applications, and systems to provide increased situational awareness and decision support to commanders for CBRN defense. This strategy provides an integration platform and supports the implementation of CSC2 and other emerging technologies from advanced technology demonstrations (ATD) and experimental capability demonstrations (ECD). MOD CBRN IS provides for the continuous engineering and modernization of fielded information systems for JEM and JWARN and Next Generation hazard prediction, warning and reporting, and CBRN decision support tool applications. MOD CBRN IS utilizes the Agile software</p>											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) UN7 / <i>Understand (Op Sys Dev)</i>
<p>development and IT Box to provide for the continuous spiral development, and fielding of modular capability packages. In FY23 MOD CBRN IS will transition from IS7 to UN7.</p> <p>MODERNIZATION MEDICAL (MOD MED)</p> <p>MOD MED, for NGDS will ensure system upgrades for both hardware and software track to latest updates, including cybersecurity, for the commercial devices from the original equipment manufacturer. MOD MED will also fund development of additional assays (i.e. tests), for fielded systems, to address emerging biological threats and diseases. For NGDS 1, an existing Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order contract will be utilized for any required system upgrades. For NGDS 2 MPDS, an Other Transaction Authority (OTA) Project Agreement (PA) is planned, separate from the OTA PA utilized for Technology Maturation/Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) phases of advanced development, to conduct system upgrades and assay development.</p> <p>MOD MED, for AUTOINJ will ensure postmarketing commitments and requirements are anticipated as a result of the FDA approval and will be the responsibility of the performer and the government. AUTOINJ uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting post-approval FDA requirements.</p> <p>MODERNIZATION SENSORS (MOD SEN)</p> <p>MOD SEN program uses a COTS/GOTS 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. Current efforts focus on supporting CALS TV-IS, FC-ACS, ALS MOD, and CBRN DRS PoR's through maintaining baseline capabilities with obsolescence management, technology insertions, and enhancements based on changes in requirements. Additionally, in order to meet the demands of the NDS to Counter Weapons of Mass Destruction, units equipped with the systems must be able to both assess and exploit CBRN hazards. ODASD (CBD) goals to modernize the Joint Force to combat advancing threats and current capability gaps in sensitive site exploitation capability require a system modernization strategy for each system.</p> <p>REACTIVE CHEMISTRY ORTHOGONAL SURFACE AND ENVIRONMENTAL THREAT TICKET ARRAY (ROSETTA)</p> <p>ROSETTA will use a streamlined approach to rapidly field multiple components of the modernization of the M256A2 kit. This approach is based on technology that will transition from Science and Technology Efforts and/or commercial off the shelf (COTS) products to the M256 kit. These efforts will utilize multiple contract vehicles including Countering Weapons of Mass Destruction (CWMD) Other Transactional Authority (OTA) and Joint Enterprise- Research, Development, Acquisition, Production/Procurement (JERDAP) in order to streamline the acquisition of the products. The ROSETTA funding will complete the acquisition of the M8 component to the M256 kit and will support the acquisition of a PBA ticket, the M256 vapor unmasking tool, and the other NTAs and TICs. These products will be transitioned to TACOM for production.</p> <p>SPU RAPID CAPABILITY DEVELOPMENT AND DEPLOYMENT (SPU RCDD)</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) UN7 / <i>Understand (Op Sys Dev)</i>
<p>The SPU RCDD overall acquisition strategy allows for rapid prototyping and testing of mission critical capabilities needed to enhance mission success, and will use technical and functional evaluations of currently-fielded items to introduce and incorporate operationally-relevant system developments. This will be accomplished through competitive contracting vehicles and by awarding agreements under the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) for the development of prototype test assets. The OTA consists of a consortium of all potential industry, research institutions, and non-traditional government that could be potential solvers for the program, and will be used to procure test prototypes and test articles of possible solutions. Procurement will be through either the OTAs, a Small Business Innovative Research contract, or a more traditional contracting vehicle.</p> <p>WMD - CIVIL SUPPORT TEAMS (WMD CST)</p> <p>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, this is to address analytical equipment obsolescence. 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.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) UN7 / Understand (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - HW SB - Obsolescence Support in Production	C/CPIF	Various : Various	0.000	0.000		0.000		1.057	Dec 2022	0.000		1.057	Continuing	Continuing	0.000
MOD CBRN IS - SW S - Modernization	Various	Various : Various	0.000	0.000		0.000		13.118	Dec 2022	0.000		13.118	Continuing	Continuing	0.000
MOD MED - Product Management	Various	Various : Various	0.000	0.000		0.000		1.057	Dec 2022	0.000		1.057	Continuing	Continuing	0.000
MOD MED - Alternative Autoinjector Manufacturer Capability (AUTOINJ)	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	0.000	0.000		0.000		0.678	Dec 2022	0.000		0.678	Continuing	Continuing	0.000
MOD MED - Next Generation Diagnostic System 1 (NGDS 1)	C/CPFF	BioFire Dx : Salt Lake City, UT	0.000	0.000		0.000		0.887	Dec 2022	0.000		0.887	Continuing	Continuing	0.000
MOD MED - HW C - NGDS 2 Man Portable Diagnostic System (NGDS 2 MPDS)	C/CPFF	Cepheid : Sunnyvale, CA	0.000	0.000		0.000		1.579	Dec 2022	0.000		1.579	Continuing	Continuing	0.000
MOD SEN - HW C - Government Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.345	Nov 2022	0.000		0.345	Continuing	Continuing	0.000
ROSETTA - HW C - Government Team Labor	MIPR	Various : Various	0.000	0.000		0.000		1.494	Nov 2022	0.000		1.494	Continuing	Continuing	0.000
ROSETTA - HW C - OTA Contract	C/CPFF	Various : Various	0.000	0.000		0.000		1.979	Mar 2023	0.000		1.979	Continuing	Continuing	0.000
SPU RCDD - HW C - M-SCBA Product Development	C/CPFF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.000		0.000		1.253	Dec 2022	0.000		1.253	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		23.447		0.000		23.447	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)						Project (Number/Name) UN7 / Understand (Op Sys Dev)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Remarks SPU RCDD: FY23 product development is a continuation from FY22 under SPU RCDD BA7. M-SCBA initiated in FY21 and will continue through FY22-24.															
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - ES S - Software Support	C/CPIF	Various : Various	0.000	0.000		0.000		0.128	Dec 2022	0.000		0.128	Continuing	Continuing	0.000
MOD CBRN IS - ES S - milCloud	MIPR	Various : Various	0.000	0.000		0.000		2.477	Dec 2022	0.000		2.477	Continuing	Continuing	0.000
MOD MED - ES C - NGDS 2 MPDS - Laboratory Development and Test Support	MIPR	Various : Various	0.000	0.000		0.000		0.498	Dec 2022	0.000		0.498	Continuing	Continuing	0.000
MOD SEN - ES C - Obsolescent Management	Various	Various : Various	0.000	0.000		0.000		0.784	Nov 2022	0.000		0.784	Continuing	Continuing	0.000
MOD SEN - ES C - Science and Engineering Support	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.170	Nov 2022	0.000		0.170	Continuing	Continuing	0.000
ROSETTA - OGA Support (IPT)	MIPR	Various : Various	0.000	0.000		0.000		0.705	Jan 2023	0.000		0.705	Continuing	Continuing	0.000
WMD CST - ES C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center	0.000	0.000		0.000		0.384	Feb 2023	0.000		0.384	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)						Project (Number/Name) UN7 / Understand (Op Sys Dev)			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		(CBC) : Aberdeen Proving Ground, MD													
WMD CST - ES C - Science & Engineering Support	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.000	0.000		0.000		0.120	Jan 2023	0.000		0.120	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		5.266		0.000		5.266	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - Obsolescence Support in Production testing and verification	C/CPIF	Various : Various	0.000	0.000		0.000		0.403	Dec 2022	0.000		0.403	Continuing	Continuing	0.000
MOD CBRN IS - OTH S - System Testing	MIPR	Various : Various	0.000	0.000		0.000		1.500	Dec 2022	0.000		1.500	Continuing	Continuing	0.000
MOD SEN - DTE C - Information Assurance	Various	Various : Various	0.000	0.000		0.000		0.247	Nov 2022	0.000		0.247	Continuing	Continuing	0.000
MOD SEN - DTE C - System Modernization	Various	Various : Various	0.000	0.000		0.000		3.274	Nov 2022	0.000		3.274	Continuing	Continuing	0.000
MOD SEN - DTE C - Component Test and Evaluation	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.959	Nov 2022	0.000		0.959	Continuing	Continuing	0.000
ROSETTA - DTE C - M256 ROSETTA Vapor Card testing	C/FFP	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.000		0.250	Feb 2023	0.000		0.250	Continuing	Continuing	0.000
WMD CST - OTH C - CBRN COTS Component	MIPR	U.S. Army Combat Capabilities	0.000	0.000		0.000		1.120	Feb 2023	0.000		1.120	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)						Project (Number/Name) UN7 / Understand (Op Sys Dev)			
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD													
WMD CST - OTHT C - CBRN COTS Component #2	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.000	0.000		0.000		1.574	Jan 2023	0.000		1.574	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		9.327		0.000		9.327	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EMBD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.160	Dec 2022	0.000		0.160	Continuing	Continuing	0.000
MOD CBRN IS - PM/MS S - MOD CBRN IS - Program Management Support	Various	Various : Various	0.000	0.000		0.000		1.900	Dec 2022	0.000		1.900	Continuing	Continuing	0.000
MOD MED - PM/MS C - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.000		1.182	Dec 2022	0.000		1.182	Continuing	Continuing	0.000
MOD SEN - PM/MS S - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.600	Jan 2023	0.000		0.600	Continuing	Continuing	0.000
ROSETTA - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.461	Jan 2023	0.000		0.461	Continuing	Continuing	0.000
SPU RCDD - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.210	Dec 2022	0.000		0.210	Continuing	Continuing	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>						Project (Number/Name) UN7 / <i>Understand (Op Sys Dev)</i>			
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WMD CST - PM/MS S-Program Management Support	MIPR	Various : Various	0.000	0.000		0.000		0.303	Dec 2022	0.000		0.303	Continuing	Continuing	0.000
Subtotal			0.000	0.000		0.000		4.816		0.000		4.816	Continuing	Continuing	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000		0.000		42.856		0.000		42.856	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)					Project (Number/Name) UN7 / Understand (Op Sys Dev)	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
EMBD - FRP Production																												
EMBD - IOC																												
MOD CBRN IS - Modernization																												
MOD CBRN IS - MOD CBRN IS- Continuous Engineering/SW Codes Updates																												
MOD CBRN IS - Cyber Security Compliance																												
MOD CBRN IS - Operating system architecture updates																												
MOD CBRN IS - Configuration Management and Test and Evaluation																												
MOD CBRN IS - Validation, Verification and Accreditation																												
MOD MED - Autoinjector Post Marketing Commitments																												
MOD MED - NGDS System Upgrades & Assay Development																												
MOD MED - MPDS System Upgrades & Assay Development																												
MOD SEN - CALS, ALS MOD, CBRN DRS - Upgrade Fielded Systems																												
ROSETTA - Engineering Design																												
ROSETTA - Testing & Demonstrations (M8)																												
ROSETTA - Update TDP and TMs																												
ROSETTA - Approve Engineering Change Proposals																												
ROSETTA - OTA Contract Award																												
SPU RCDD - Modernization Efforts																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																							Date: April 2022					
Appropriation/Budget Activity										R-1 Program Element (Number/Name)										Project (Number/Name)								
0400 / 7										PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)										UN7 / Understand (Op Sys Dev)								
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
SPU RCDD - Enhanced Warfighter Augmented Training (EWAT)																												
SPU RCDD - M-SCBA																												
SPU RCDD - Project Wintergreen																												
WMD CST - Upgrade Fielded Systems																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) UN7 / <i>Understand (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMBD - FRP Production	1	2023	2	2027
EMBD - IOC	4	2022	4	2022
MOD CBRN IS - Modernization	1	2022	4	2027
MOD CBRN IS - MOD CBRN IS- Continuous Engineering/SW Codes Updates	1	2022	4	2027
MOD CBRN IS - Cyber Security Compliance	1	2022	4	2027
MOD CBRN IS - Operating system architecture updates	1	2022	4	2027
MOD CBRN IS - Configuration Management and Test and Evaluation	1	2022	4	2027
MOD CBRN IS - Validation, Verification and Accreditation	1	2022	4	2027
MOD MED - Autoinjector Post Marketing Commitments	4	2023	4	2026
MOD MED - NGDS System Upgrades & Assay Development	1	2022	4	2026
MOD MED - MPDS System Upgrades & Assay Development	2	2023	4	2027
MOD SEN - CALS, ALS MOD, CBRN DRS - Upgrade Fielded Systems	1	2022	4	2027
ROSETTA - Engineering Design	4	2022	2	2023
ROSETTA - Testing & Demonstrations (M8)	1	2021	2	2022
ROSETTA - Update TDP and TMs	1	2026	2	2027
ROSETTA - Approve Engineering Change Proposals	2	2027	2	2027
ROSETTA - OTA Contract Award	3	2022	4	2027
SPU RCDD - Modernization Efforts	1	2021	4	2027
SPU RCDD - Enhanced Warfighter Augmented Training (EWAT)	1	2021	4	2024
SPU RCDD - M-SCBA	3	2021	4	2024
SPU RCDD - Project Wintergreen	1	2021	4	2021
WMD CST - Upgrade Fielded Systems	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CA7: Contamination Avoidance (Op Sys Dev)	-	14.557	15.051	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	29.608
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Project supports technology upgrade and refresh of fielded dismounted reconnaissance and detection systems that minimize chemical, biological, and radiological (CBR) contamination and prevent further cross-contamination during operations. In FY2023, the CBRN DRS Projects have been restructured to align to the CBRN portfolio. CA7 efforts in FY2022 progress to the Understand (UN7) portfolio. This restructuring is intended to provide standardization and alignment across CBRN research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Chemical Biological Radiological Nuclear Dismounted Reconnaissance Systems (CBRN DRS),
- (2) Expeditionary Analytic Modernization (EXANA MOD),
- (3) Modernization Sensors (MOD SEN) **Progresses to UN7 in FY2023**,
- (4) Enhanced Maritime Biological Detection (EMBD) **Progresses to UN7 in FY2023**, and
- (5) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA) **Progresses to UN7 in FY2023**

The CBRN DRS program effort provides the technology upgrade and refresh for the CBRN DRS system supporting dismounted reconnaissance, CBRN sensitive site assessment, and CBRN sensitive site exploitation missions, which enables more detailed and near real-time CBRN information flow for the Warfighter. The program will be moved into the MOD SEN program starting in FY22.

The EXANA MOD effort supports the evaluation of analytical components for technical refreshment and upgrades of key components of the analytical laboratory systems that have become obsolete or are no longer being supported by the manufacturer. This allows the Common Analytical Laboratory System (CALS) and Analytical Laboratory System Modification (ALS MOD) users to maintain their operational capability and operational effectiveness. In FY22, the program will be moved into the MOD SEN funding line.

The MOD SEN program will address obsolescence of critical equipment and functionality issues for the Services by establishing a modernization plan to integrate and incorporate advancements in technology for the ALS MOD, CALS Field Confirmatory Analytical Capability Set (FC ACS), CALS Theater Validation Integrated System (TV IS) and CBRN DRS. This program is renamed from EXANA MOD in FY22 and consolidates efforts previously included in EXANA MOD and CBRN DRS program efforts. In FY22 & FY23 MOD SEN supports the evaluation of components for technical refreshment of the CBRN DRS, CALS and ALS MOD.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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 (Op Sys Dev)		
The EMBD program will undertake engineering efforts to combat Diminishing Manufacturing Sources and Material Shortages (DMSMS) and maintain a stable production line. Specific efforts include a new External Controller Subsystem (ECS) in FY22 and flash memory in the Rapid Agent Aerosol Detector (RAAD) in FY23. EMBD also anticipates having to undertake a major software development effort to upgrade fielding systems as software updates occur.					
The ROSETTA is a modernization effort to provide the General Forces a low-cost, easy to use surface and/or vapor hazard detection ticket for a wide range of Chemical Warfare Agents (CWAs) and NTAs. These highly-selective, multiplexed array tickets will enable accurate hazard identification in the presence of common battlefield interferents at the tactical-level. ROSETTA is based on colorimetric technology and will be eye-readable and has potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. In addition, the ROSETTA tickets will provide improved hazard detection performance with reduced false alarm rate, potential for increased number of chemicals detected, reduced detection time especially for compounds of interest (CWAs, PBAs, NTAs and Toxic Industrial Chemicals (TICs)), and potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. In FY23 ROSETTA will continue contract actions with down select of vendors for a Vapor Detector.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) CBRN Dismounted Reconnaissance System (CBRN DRS) - Obsolescence			3.872	-	-
Description: Provided analysis of the existing components of CBRN Dismounted Reconnaissance Systems to ensure current requirements baseline can be met. 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. Identifies and tests technology that can meet emerging requirements.					
Title: 2) CBRN DRS - Development of System Modernization Packages			8.782	-	-
Description: Identified and tested solutions to meet evolving demands of the National Defense Strategy (NDS) to Counter Weapons of Mass Destruction via a System Modernization Package to support dismounted reconnaissance, sensitive site assessment and exploitation, and render safe operations. Efforts will be focused on system modernization packages for improved biological detection, improved protective equipment, improve chemical detection, and improved battlespace awareness.					
Title: 3) EXANA MOD			1.903	-	-
Description: Expeditionary Analytics					
Title: 4) EMBD			-	1.615	-
Description: Obsolescence and replacement efforts					
FY 2022 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
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 (Op Sys Dev)			
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Initiate obsolescence events and will include all engineering efforts to finalize the production design of the replacement item/ technology, integration efforts, test hardware fabrication, test (verification and validation), and document changes resulting from OSIP efforts.											
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.											
Title: 5) MOD SEN Description: Sensors Modernization FY 2022 Plans: Funding supports the evaluation of components for technical refreshment of the CBRN Dismounted Reconnaissance Systems, Common Analytical Laboratory System (CALS) and Analytical Laboratory System (ALS) Modification (MOD). Plans include improved and integrated sensors and PPE, identifying new electrochemiluminescence (ECL) technology. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.									-	10.391	-
Title: 6) ROSETTA Description: Product Development, Engineering Design & Testing FY 2022 Plans: Initiate contract Award, Contractor Preliminary Design Review for Vapor Detector. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.									-	3.045	-
Accomplishments/Planned Programs Subtotals									14.557	15.051	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CA4: Contamination Avoidance (ACD&P)	9.367	32.923	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	42.290
• CA5: Contamination Avoidance (SDD)	129.914	82.295	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	212.209

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
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 (Op Sys Dev)			

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CM7: Homeland Defense (Op Sys Dev)	1.276	1.522	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.798
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• JS0005: COMMON ANALYTICAL LABORATORY SYSTEM (CALS)	42.773	48.258	66.765	-	66.765	28.382	0.000	0.000	0.000	0.000	186.178
• MC0101: CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)	52.393	21.611	47.324	-	47.324	59.433	64.556	37.802	23.292	Continuing	Continuing
• SA0003: ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)	13.562	21.473	21.472	-	21.472	21.899	21.203	26.500	2.240	Continuing	Continuing
• SA0025: ANALYTICAL LABORATORY SYSTEM MODIFICATION (ALS MOD)	19.002	1.056	3.894	-	3.894	4.256	4.806	5.088	9.137	Continuing	Continuing

Remarks

D. Acquisition Strategy

CBRN DISMOUNTED RECONNAISSANCE SYSTEMS

The Chemical Biological Radiological Dismounted Reconnaissance Systems (CBRN DRS) program uses a GOTS/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. Current efforts focus on maintaining baseline capabilities through obsolescence management and technology insertions. In order to meet the demands of the National Defense Strategy (NDS) to Counter Weapons of Mass Destruction, units equipped with the CBRN DRS must be able to both assess CBRN hazards and exploit them. Advancing threats and current capability gaps in sensitive site exploitation capability require a System Modernization Package (SMP) to the baseline CBRN DRS.

EXPEDITIONARY ANALYTIC MODERNIZATION (EXANA MOD)

The Common Analytical Laboratory System (CALS) and the Analytical Laboratory System (ALS) Modification (MOD) program's objective is to address critical analytical equipment obsolescence (Analytical Suite) and system functionality issues for the National Guard Bureau's (NGB) Civil Support Teams. This includes market survey, down select, testing, integration, and update of Technical Data Package and logistical documentation. It is anticipated that Capability Development Document (CDD) updates will be finalized for the CALS Theater Validation Integrated System (TV IS) and Field Confirmatory Analytical Capability Set (FC ACS) variants in early FY22. As such, this program will continue to follow the most up-to-date requirement documentation for CALS and ALS MOD.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) CA7 / <i>Contamination Avoidance (Op Sys Dev)</i>
<p>ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)</p> <p>The EMBD program uses a streamlined acquisition strategy and awarded a Full Rate Production (FRP) contract in 1QFY22 with options for production of EMBD kits and Obsolescence Support in Production (OSIP) to resolve diminishing sources and obsolescence issues. The FY22 OSIP Option will specifically address obsolescence problems with the External Controller Subsystem (ECS) which is used to remotely control the Joint Biological Point Detection System (JBPDS) / EMBD. The FY23 OSIP Option will address major obsolescence problems identified by the prime contractor that affect a stable production line. As portions of the ECS are no longer procurable, the contractor will identify and qualify a new hardware that both supports EMBD requirements for future upgradability and is also backwards compatible with previously fielded units.</p> <p>MODERNIZATION SENSORS (MOD SEN)</p> <p>MOD SEN program uses a COTS/GOTS 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. Current efforts focus on supporting CALS TV-IS, FC-ACS, ALS MOD, and CBRN DRS PoR's through maintaining baseline capabilities with obsolescence management, technology insertions, and enhancements based on changes in requirements. Additionally, in order to meet the demands of the NDS to Counter Weapons of Mass Destruction, units equipped with the systems must be able to both assess and exploit CBRN hazards. ODASD (CBD) goals to modernize the Joint Force to combat advancing threats and current capability gaps in sensitive site exploitation capability require a system modernization strategy for each system.</p> <p>REACTIVE CHEMISTRY ORTHOGONAL SURFACE AND ENVIRONMENTAL THREAT TICKET ARRAY (ROSETTA)</p> <p>ROSETTA will use a streamlined approach to rapidly field multiple components of the modernization of the M256A2 kit. This approach is based on technology that will transition from Science and Technology Efforts and/or commercial off the shelf (COTS) products to the M256 kit. These efforts will utilize multiple contract vehicles including Countering Weapons of Mass Destruction (CWMD) Other Transactional Authority (OTA) and Joint Enterprise- Research, Development, Acquisition, Production/Procurement (JERDAP) in order to streamline the acquisition of the products. The ROSETTA funding will complete the acquisition of the M8 component to the M256 kit and will support the acquisition of a PBA ticket, the M256 vapor unmasking tool, and the other NTAs and TICs. These products will be transitioned to TACOM for production.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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 (Op Sys Dev)			
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - HW S - System Modernization OTA	C/CPAF	TBD : N/A	1.065	9.000	Feb 2021	0.000		0.000		0.000		0.000	0.000	10.065	0.000
CBRN DRS - HW C - Government Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.475	1.102	Nov 2020	0.000		0.000		0.000		0.000	0.000	1.577	0.000
EMBD - HW SB - Obsolescence Support in Production	C/CPIF	Various : Various	0.000	0.000		0.965	Dec 2021	0.000		0.000		0.000	0.000	0.965	0.000
MOD SEN - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.583	Feb 2022	0.000		0.000		0.000	0.000	0.583	0.000
MOD SEN - HW C - Contractor Team Labor	C/FFP	Various : Various	0.000	0.000		0.280	Feb 2022	0.000		0.000		0.000	0.000	0.280	0.000
MOD SEN - SW C - Training Software	MIPR	CCDC AVIATION AND MISSILE CENTER : Huntsville, AL	0.000	0.000		0.112	Apr 2022	0.000		0.000		0.000	0.000	0.112	0.000
ROSETTA - HW C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.146	Nov 2021	0.000		0.000		0.000	0.000	0.146	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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 (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
ROSETTA - HW C - OTA Contract	C/CPFF	Various : Various	0.000	0.000		2.845	Jun 2022	0.000		0.000		0.000	0.000	2.845	0.000
Subtotal			1.540	10.102		4.931		0.000		0.000		0.000	0.000	16.573	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - ES C - T&E Support	Various	Various : Various	0.000	0.211	Jun 2021	0.000		0.000		0.000		0.000	0.000	0.211	0.000
EXANA MOD - ES C - Science & Engineering Support	MIPR	Various : Various	0.000	0.433	Jan 2021	0.000		0.000		0.000		0.000	0.000	0.433	0.000
MOD SEN - ES S - Test Support	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.000		0.200	Apr 2022	0.000		0.000		0.000	0.000	0.200	0.000
MOD SEN - ES C - Obsolescent Management	Various	Various : Various	0.000	0.000		0.983	Apr 2022	0.000		0.000		0.000	0.000	0.983	0.000
MOD SEN - ES C - Science and Engineering Support	C/FFP	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.000		0.200	Apr 2022	0.000		0.000		0.000	0.000	0.200	0.000
Subtotal			0.000	0.644		1.383		0.000		0.000		0.000	0.000	2.027	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - OTE - Candidate Testing	Various	Various : Various	5.691	0.865	Mar 2021	0.000		0.000		0.000		0.000	0.000	6.556	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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 (Op Sys Dev)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EXANA MOD - OTHT C - Tech Refresh Efforts	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.000	0.730	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.730	0.000
EXANA MOD - OTHT C - Tech Refresh Efforts #2	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.467	Mar 2021	0.000		0.000		0.000		0.000	0.000	0.467	0.000
EMBD - Obsolescence Support in Production testing and verification	C/CPIF	Various : Various	0.000	0.000		0.400	Dec 2021	0.000		0.000		0.000	0.000	0.400	0.000
MOD SEN - DTE C - Information Assurance	MIPR	CCDC Armaments Center : Picatinny, NJ	0.000	0.000		0.254	Apr 2022	0.000		0.000		0.000	0.000	0.254	0.000
MOD SEN - DTE C - Component Test and Evaluation	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.500	Apr 2022	0.000		0.000		0.000	0.000	0.500	0.000
MOD SEN - DTE C - System Modernization	Various	Various : Various	0.000	0.000		5.756	Jan 2022	0.000		0.000		0.000	0.000	5.756	0.000
Subtotal			5.691	2.062		6.910		0.000		0.000		0.000	0.000	14.663	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN DRS - PM/MS S - Program Management Support	MIPR	Various : Various	3.979	1.476	Nov 2020	0.000		0.000		0.000		0.000	0.000	5.455	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program										Date: April 2022					
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 (Op Sys Dev)					
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
EXANA MOD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.273	Jan 2021	0.000		0.000		0.000		0.000	0.000	0.273	0.000
EMBD - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.250	Dec 2021	0.000		0.000		0.000	0.000	0.250	0.000
MOD SEN - PM/MS S - Program Management Support	Various	Various : Various	0.000	0.000		1.523	Oct 2021	0.000		0.000		0.000	0.000	1.523	0.000
ROSETTA - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.000		0.054	Nov 2021	0.000		0.000		0.000	0.000	0.054	0.000
Subtotal			3.979	1.749		1.827		0.000		0.000		0.000	0.000	7.555	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			11.210	14.557		15.051		0.000		0.000		0.000	0.000	40.818	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 (Op Sys Dev)		

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBRN DRS - Test components to replace obsolete items and insert new technologies																												
CBRN DRS - System Modernization Packages (SMP) Production																												
EXANA MOD - CALS & ALS MOD - Upgrade Fielded Systems																												
EMBD - FRP Production																												
EMBD - IOC																												
MOD SEN - CALS, ALS MOD, CBRN DRS - Upgrade Fielded Systems																												
ROSETTA - Engineering Design																												
ROSETTA - Testing & Demonstrations (M8)																												
ROSETTA - Update TDP and TMs																												
ROSETTA - Approve Engineering Change Proposals																												
ROSETTA - OTA Contract Award																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) CA7 / <i>Contamination Avoidance (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBRN DRS - Test components to replace obsolete items and insert new technologies	1	2021	4	2021
CBRN DRS - System Modernization Packages (SMP) Production	1	2021	4	2021
EXANA MOD - CALS & ALS MOD - Upgrade Fielded Systems	1	2021	4	2021
EMBD - FRP Production	1	2023	2	2027
EMBD - IOC	4	2022	4	2022
MOD SEN - CALS, ALS MOD, CBRN DRS - Upgrade Fielded Systems	1	2022	4	2027
ROSETTA - Engineering Design	4	2022	2	2023
ROSETTA - Testing & Demonstrations (M8)	1	2021	2	2022
ROSETTA - Update TDP and TMs	1	2026	2	2027
ROSETTA - Approve Engineering Change Proposals	2	2027	2	2027
ROSETTA - OTA Contract Award	3	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
CM7: Homeland Defense (Op Sys Dev)	-	1.276	1.522	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	2.798
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports technology refresh of fielded analytical laboratory system capabilities which allows the conduct on-site analysis of any unknown sample and test potential life-threatening substances. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. CM7 efforts in FY2022 progress to the Understand (UN7) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

The effort included in this Project is:

(1) Weapons of Mass Destruction - Civil Support Team (WMD CST) **Progresses to UN7 in FY2023**

The 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. Program efforts support upgrades of key components of the WMD CST Program that have become obsolete, or are no longer being supported by the manufacturer. In FY22 the WMD CST program continues system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system.

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

	FY 2021	FY 2022	FY 2023
Title: 1) WMD CST	1.276	1.522	-
Description: System Upgrade and Support			
FY 2022 Plans: Continue system-related test activities, including costs of specially fabricated hardware to obtain or validate engineering data on the performance of the system. Continue 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. Conduct logistics engineering and ILS management (e.g., maintenance support, facilities, personnel, training, testing, and activation of the system).			
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.			
Accomplishments/Planned Programs Subtotals	1.276	1.522	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / Homeland Defense (Op Sys Dev)
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u> <u>Base</u>	<u>FY 2023</u> <u>OCO</u>	<u>FY 2023</u> <u>Total</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• UN7: <i>Understand (Op Sys Dev)</i>	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• SA0025: ANALYTICAL LABORATORY SYSTEM MODIFICATION (ALS MOD)	19.002	1.056	3.894	-	3.894	4.256	4.806	5.088	9.137	Continuing	Continuing

Remarks

D. Acquisition Strategy

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, this is to address analytical equipment obsolescence. 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>						Project (Number/Name) CM7 / <i>Homeland Defense (Op Sys Dev)</i>			
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WMD CST - ES C - Government Product Development Team Labor	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	0.150	Nov 2020	0.085	Nov 2021	0.000		0.000		0.000	0.000	0.235	0.000
WMD CST - ES C - Science & Engineering Support	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.096	0.000		0.095	Nov 2021	0.000		0.000		0.000	0.000	0.191	0.000
Subtotal			0.096	0.150		0.180		0.000		0.000		0.000	0.000	0.426	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WMD CST - OTHC C - CBRN COTS Component	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.000	0.311	Jan 2021	0.000		0.000		0.000		0.000	0.000	0.311	0.000
WMD CST - OTHC C - CBRN COTS Component #2	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.010	Jan 2021	0.000		0.000		0.000		0.000	0.000	0.010	0.000
WMD CST - OTHC C - CBRN COTS Component #3	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	6.645	0.727	Feb 2021	1.110	Feb 2022	0.000		0.000		0.000	0.000	8.482	0.000
Subtotal			6.645	1.048		1.110		0.000		0.000		0.000	0.000	8.803	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>						Project (Number/Name) CM7 / <i>Homeland Defense (Op Sys Dev)</i>			
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
WMD CST - PM/MS S-Program Management Support	MIPR	Various : Various	2.547	0.078	Dec 2020	0.232	Dec 2021	0.000		0.000		0.000	0.000	2.857	0.000
Subtotal			2.547	0.078		0.232		0.000		0.000		0.000	0.000	2.857	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			9.288	1.276		1.522		0.000		0.000		0.000	0.000	12.086	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022				
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)					Project (Number/Name) CM7 / Homeland Defense (Op Sys Dev)				

FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

WMD CST - Upgrade Fielded Systems																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) CM7 / Homeland Defense (Op Sys Dev)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
WMD CST - Upgrade Fielded Systems	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
C07: Collective Protection (Op Sys Dev)	-	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.392
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for technology upgrade and refresh of fielded Collective Protection (CP) equipment and systems that are smaller, lighter, less costly to produce and maintain, and more logistically supportable enabling mission accomplishment in spaces safe from the effects of chemical, biological, and radiological (CBR) contamination. In FY2023, the CBDDP RDT&E Projects have been restructured to align to the CBDDP portfolio. CO7 efforts in FY2022 progress to the Protect (PT7) portfolio. This restructuring is intended to provide standardization and alignment across CBDDP research, development and acquisition efforts.

The effort included in this Project is:

(1) Modernization Protection Collective Protection (MODPROT CP) **Progresses to PT7 in FY2023**

MODPROT CP incorporates a value engineering approach to address the need to reduce logistics cost and minimizes supply chain shortages by addressing obsolescence issues to the DoD /Joint Services fielded CBR protection portfolio for mobile, transportable, fixed facility and shipboard CP systems without the high cost of requiring a new program of record. The obsolescence of critical equipment, if not modernized, will continue to face significantly increased cost and long lead times making the equipment unaffordable and unprocurable to meet major weapon system program's requirements and schedules. MODPROT CP modernizes decades old collective protection equipment reducing costs, shortening lead times, and updating key components to extend service life and ensure affordable and procurable to warfighters.

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

	FY 2021	FY 2022	FY 2023
Title: 1) MODPROT CP	7.950	8.442	-
Description: Upgrades, improvements, and modernizations to fielded CP systems			
FY 2022 Plans: Complete Non-Destructive Production Acceptance Leak Test improvements. Continue redesign of M49 gas filters. Continue M48A1 Filter Redesign. Continue Collective Protection Modernization for Ships and Buildings and conduct system scale lab testing. Continue development of updated training materials for Collective Protection Systems. Begin conducting collective protection system filter surveillance testing to improve system sustainment.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) C07 / <i>Collective Protection (Op Sys Dev)</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding transferred to PT7.			
Accomplishments/Planned Programs Subtotals	7.950	8.442	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• CO5: <i>Collective Protection (SDD)</i>	7.688	3.028	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	10.716
• DE7: <i>Decontamination (Op Sys Dev)</i>	0.633	1.072	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.705
• IP7: <i>Individual Protection (Op Sys Dev)</i>	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• PT7: <i>Protect (Op Sys Dev)</i>	0.000	0.000	20.076	-	20.076	15.426	12.029	9.942	8.693	Continuing	Continuing
• JP1111: <i>JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)</i>	14.496	22.719	30.737	-	30.737	37.128	23.201	23.060	23.060	Continuing	Continuing
• PHM036: <i>MODERNIZATION PROTECTION COLLECTIVE PROTECTION (MODPROT CP)</i>	0.000	1.385	1.385	-	1.385	0.300	0.000	0.000	0.000	0.000	3.070

Remarks

D. Acquisition Strategy

MODERNIZATION PROTECTION COLLECTIVE PROTECTION (MODPROT CP)

MODPROT CP 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 to meet applicable military standards will validate both Government and contractor furnished improvements. The improvements will be added into the specific systems' updated Technical Data Packages (TDPs) to be used in Engineering Change Proposals (ECPs) and provided to the item managers.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - HW C - Collective Protection Modernization for Ships	Various	Various : Various	0.000	0.773	Jan 2021	2.295	Nov 2021	0.000		0.000		0.000	0.000	3.068	0.000
MODPROT CP - HW C - Filter Redesign, Non-Destructive Leak Test, ColPro Training Dev	MIPR	Various : Various	0.000	2.815	Oct 2020	0.736	Nov 2021	0.000		0.000		0.000	0.000	3.551	0.000
MODPROT CP - HW C - Collective Protection Modernization for Ships #2	Various	Indian Head : Indian Head, MD	0.000	1.909	Nov 2020	2.372	Nov 2021	0.000		0.000		0.000	0.000	4.281	0.000
Subtotal			0.000	5.497		5.403		0.000		0.000		0.000	0.000	10.900	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - ES C - IPT, Technical, Engineering and Logistics Support	MIPR	Various : Various	0.000	0.704	Oct 2020	0.428	Dec 2021	0.000		0.000		0.000	0.000	1.132	0.000
Subtotal			0.000	0.704		0.428		0.000		0.000		0.000	0.000	1.132	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - DTE C - CP Modernization Testing	Various	Various : Various	0.000	1.137	Oct 2020	1.672	Nov 2021	0.000		0.000		0.000	0.000	2.809	0.000
Subtotal			0.000	1.137		1.672		0.000		0.000		0.000	0.000	2.809	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>						Project (Number/Name) C07 / <i>Collective Protection (Op Sys Dev)</i>			
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT CP - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.612	Mar 2021	0.939	Nov 2021	0.000		0.000		0.000	0.000	1.551	0.000
Subtotal			0.000	0.612		0.939		0.000		0.000		0.000	0.000	1.551	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	7.950		8.442		0.000		0.000		0.000	0.000	16.392	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) C07 / <i>Collective Protection (Op Sys Dev)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MODPROT CP - M93 GPFU Electro Magnetic Interference																												
MODPROT CP - Environmental M98 Guard Bed Testing																												
MODPROT CP - Non Destructive (ND) Acceptance Leak Test CP Filters																												
MODPROT CP - Collective Protection Training Development																												
MODPROT CP - Collective Protection Modernization for Ships and Buildings																												
MODPROT CP - Filter Surveillance Testing																												
MODPROT CP - M48A1 Filter Redesign																												
MODPROT CP - M49 Filter Modernization																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) C07 / <i>Collective Protection (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MODPROT CP - M93 GPFU Electro Magnetic Interference	1	2021	4	2021
MODPROT CP - Environmental M98 Guard Bed Testing	1	2021	4	2021
MODPROT CP - Non Destructive (ND) Acceptance Leak Test CP Filters	1	2021	4	2022
MODPROT CP - Collective Protection Training Development	1	2021	4	2022
MODPROT CP - Collective Protection Modernization for Ships and Buildings	1	2021	4	2025
MODPROT CP - Filter Surveillance Testing	1	2021	4	2026
MODPROT CP - M48A1 Filter Redesign	1	2021	4	2027
MODPROT CP - M49 Filter Modernization	1	2021	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) DE7 / Decontamination (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
DE7: Decontamination (Op Sys Dev)	-	0.633	1.072	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.705
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project addresses obsolescence issues with decontamination equipment and the need to modernize the Joint Services fielded chemical and biological with capabilities meeting or exceeding the Services requirements. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. DE7 efforts in FY2022 progress to the Mitigate (MT7) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

The effort included in this project is:

(1) Modernization Protection Decontamination (MODPROT DE) **Progresses to MT7 in FY2023**

MODPROT DE addresses obsolescence and technical data concerns, beginning with the M26 Joint Services Transportable Decontamination System-Small Scale (JSTDS-SS) through validation and verification of Technical Manual (TM) changes as well as technical data for spare and repair parts; the M12A1 Power Driven Decontamination Apparatus (PDDA) by updating technical references and performing the necessary validation and verification before publishing an updated TM; Conduct biological efficacy at relevant environment (i.e. ambient, desert, cold) for Joint Service Equipment Wipe (JSEW) to expand wipe capabilities to include performance against biological agents.

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

	FY 2021	FY 2022	FY 2023
Title: 1) MODPROT DE	0.633	1.072	-
Description: Upgrades, improvements, and modernizations to fielded decontamination systems			
FY 2022 Plans: Continue updates to technical data for spares and repair parts for M26 Joint Service Transportable Decontamination System - Small Scale (JSTDS-SS) Technical Data Package (TDP). Continue updates to technical references and validation/verification efforts for M12A1 Power Driven Decontamination Apparatus (PDDA) Technical Manual (TM). Complete efficacy of emerging sorbent technologies for the M295/M100 to increase reactivity properties against nerve agents. Complete Health Hazard Assessment (HHA) on expired M295/M100 for potential training use.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) DE7 / Decontamination (Op Sys Dev)	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding (\$1.088M) transferred to MT7.			
Accomplishments/Planned Programs Subtotals	0.633	1.072	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• COT: Collective Protection (Op Sys Dev)	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.392
• IP7: Individual Protection (Op Sys Dev)	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
• MT7: Mitigate (Op Sys Dev)	0.000	0.000	5.098	-	5.098	3.879	6.747	4.360	3.419	Continuing	Continuing
• JD0050: DECONTAMINATION FAMILY OF SYSTEMS (DFoS)	11.474	4.166	5.795	-	5.795	8.562	8.673	8.820	18.518	Continuing	Continuing

Remarks

D. Acquisition Strategy

MODERNIZATION DECONTAMINATION (MODPROT DE)

MODPROT DE 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 (TDPs) to be used in Engineering Change Proposals (ECPs) and provided to the item managers.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) DE7 / Decontamination (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT DE - HW C - M26 Tech Data Package; Modernization Update / M12A1 TM Update, JSEW	MIPR	Various : Various	0.000	0.365	Nov 2020	0.473	Nov 2021	0.000		0.000		0.000	0.000	0.838	0.000
Subtotal			0.000	0.365		0.473		0.000		0.000		0.000	0.000	0.838	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT DE - ES C - IPT, Engineering, Technical, Logistics Support	MIPR	Various : Various	0.000	0.268	Nov 2020	0.480	Oct 2021	0.000		0.000		0.000	0.000	0.748	0.000
Subtotal			0.000	0.268		0.480		0.000		0.000		0.000	0.000	0.748	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT DE - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.119	Oct 2021	0.000		0.000		0.000	0.000	0.119	0.000
Subtotal			0.000	0.000		0.119		0.000		0.000		0.000	0.000	0.119	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.633		1.072		0.000		0.000		0.000	0.000	1.705	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program										Date: April 2022			
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>					Project (Number/Name) DE7 / <i>Decontamination (Op Sys Dev)</i>			

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MODPROT DE - JSEW Bio Capability Testing																												
MODPROT DE - M26 JSTDS-SS TDP																												
MODPROT DE - M12A1 TM Update																												
MODPROT DE - M26 JSTDS-SS Modernization																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) DE7 / Decontamination (Op Sys Dev)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MODPROT DE - JSEW Bio Capability Testing	1	2021	4	2021
MODPROT DE - M26 JSTDS-SS TDP	1	2021	4	2023
MODPROT DE - M12A1 TM Update	1	2021	4	2023
MODPROT DE - M26 JSTDS-SS Modernization	1	2021	4	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IP7: Individual Protection (Op Sys Dev)	-	7.605	11.724	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	19.329
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The project supports technology refresh of fielded individual protective equipment which enable the warfighter to operate in a contaminated CBR environment with little or no degradation to his/her performance. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. IP7 efforts in FY2022 progress to the Protect (PT7) and Understand (UN7) portfolios. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Modernization Protection Individual Protection (MODPROT IP) **Progresses to PT7 in FY2023**
- (2) Special Purpose Unit Rapid Capability Development and Deployment (SPU RCDD) **Progresses to UN7 in FY2023**

The MODPROT IP addresses obsolescence issues with Individual Protective (IP) equipment and the need to modernize fielded IP with capabilities to meet or exceed the Services requirements. MODPROT IP will also conduct modernization efforts and reverse engineering of maintenance and repair procedures for the Joint Services Mask Leakage Tester (JSMLT). MODPROT IP will also provide mask and filter system upgrades and modernization of fielded protection systems to enhance respiratory and ocular protection resulting in an increased lethality of fighter aircraft by mitigating risk due to operationally unsuitable aircrew CBRN masks. Modernization efforts will include technical manual updates and a Logistics Demonstration for an updated, lightweight version of the Joint Protective Aircrew Ensemble (LJPAGE). In FY22 the MODPROT IP program will conduct shelf life extension testing on Molded Lightweight Chemical/Biological Protective Overboot (MALO) and Joint Service Integrated Suit Technology (JSLIST) Block 2 Glove Upgrade non- Flame Resistant (JB2GU nFR), to determine if storage life may be extended to 20 years from the Date of Manufacture. Testing and analysis with aircraft will fully validate and refine new Tactics, Techniques and Procedures (TTPs) that allow aircrews to operate without restrictive CBRN protective equipment by determining time and techniques required to reduce cockpit hazards to acceptable levels by flushing with clean air. The impact of funding these programs will address modernization and obsolescence across the DoD IP portfolio to increase readiness, sustainability, reliability, and affordability of these systems. MODPROT IP incorporates a value engineering approach to address the need to reduce logistics cost and solve obsolescence issues to the DoD /Joint services fielded chemical, biological and radiological protection portfolio for individual protective equipment and test equipment systems.

SPU RCDD facilitates Joint Special Operations Command (JSOC) rapid response requirements to near-term and emergent chemical-biological defensive capabilities. This includes select elements from across the Special Operations Force (SOF) Enterprise such as Combatant Commanders Response Forces (CRFs) and other Joint Force enabling units such as the 20th Chemical, Biological, Radiological, Nuclear and Explosives Command. SPU RCDD mitigates risk across the Chemical Biological Defense Program (CBDP) by creating a portfolio of operationally-relevant CB capabilities that can be quickly transitioned in response to the articulated, emergent capability needs of the geographic combatant commanders. These objectives are met by the early transitioning of promising science and technologies (S&T); the

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022		
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)		
focused conduct of combat evaluations and mission-oriented operational assessments to assess technological and mission suitability; and the active leveraging of existing Commercial-Off-The-Shelf (COTS) and Government-Off-The-Shelf (GOTS) products along with novel redesign approaches to optimize existing solutions to new challenges supported by "buy-try-decide-acquire" acquisition strategies. SPU RCDD initiates efforts such as respiratory breathing systems, biological identification, unmanned aerial and ground platform sensor integration, development of enhanced and augmented reality systems, and modernization of protective Chemical and Biological ensembles that have gone through requirements validation, and continues product enhancement development and technology upgrades on currently fielded SOF equipment to counter emerging threats, conduct limited user evaluations and operational assessment.					
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2021	FY 2022	FY 2023
Title: 1) MODPROT IP Description: Upgrades, improvements, and modernizations to fielded IP systems. FY 2022 Plans: Initiate M53A1 Hard to Fit Testing. Initiate Overboots, Molded, Lightweight, Chemical/Biological Protective (MALO) shelf life extension testing. Continue modernization of the Joint Service Mask Leakage Tester (JSMLT) and Integrated Footwear System (IFS). Commence shelf life maximum age study for Joint Service Lightweight Integrated Suit Technology (JSLIST) Block 2 Glove Upgrade, Non-Flame Resistant (JB2GU nFR) Glove. Continue Third Generation Filter and National Institute for Occupational Safety and Health (NIOSH) filter Prototype Developmental Testing (DT) and builds. Initiate Fixed Wing Aircraft/Aircrew PPE optimization effort. FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to PT7.			3.001	8.327	-
Title: 2) SPU RCDD Description: The Modular Self Contained Breathing Apparatus (M-SCBA) project will replace the three different SCBA systems currently being used by the customer with a modular system that can be configured to meet their three (3) specific mission profiles. The current SCBA systems are made by three different manufactures which creates a logistical burden. The Enhanced Warfighter Augmented Training (EWAT) project will allow the Warfighter to interact with specific CBRN equipment through an actual device or with a created 3D version of that device to perform maintenance as well as to load and analyze CB samples using pre-positioned training scenarios. FY 2022 Plans: Initiate efforts such as respiratory breathing systems, biological identification, and modernization of protective Chemical and Biological ensembles that have gone through requirements validation and continue product enhancement development and technology upgrades on currently fielded SOF equipment to counter emerging threats, conduct limited user evaluations and operational assessment. FY 2022 to FY 2023 Increase/Decrease Statement:			4.604	3.397	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
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 2021	FY 2022	FY 2023
Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.			
Accomplishments/Planned Programs Subtotals	7.605	11.724	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• IP5: Individual Protection (SDD)	17.129	18.941	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	36.070
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing
• CO7: Collective Protection (Op Sys Dev)	7.950	8.442	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	16.392
• DE7: Decontamination (Op Sys Dev)	0.633	1.072	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.705
• PT7: Protect (Op Sys Dev)	0.000	0.000	20.076	-	20.076	15.426	12.029	9.942	8.693	Continuing	Continuing
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing
• JI0003: JOINT SERVICE GENERAL PURPOSE MASK (JSGPM)	19.802	15.128	3.875	-	3.875	0.000	0.000	0.000	0.000	0.000	38.805
• PHM018: SPU RAPID CAPABILITY DEVELOPMENT AND DEMO (SPU RCDD)	8.808	6.946	13.739	-	13.739	5.973	5.974	5.980	5.980	Continuing	Continuing

Remarks

D. Acquisition Strategy

MODERNIZATION PROTECTION INDIVIDUAL PROTECTION (MODPROT IP)

MODPROT IP leverages mature technology from contractor developed components to address and replace obsolete components of various fielded individual 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 TDP to be used in ECPs and provided to the item managers.

SPU RAPID CAPABILITY DEVELOPMENT AND DEPLOYMENT (SPU RCDD)

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) IP7 / <i>Individual Protection (Op Sys Dev)</i>
<p>The SPU RCDD overall acquisition strategy allows for rapid prototyping and testing of mission critical capabilities needed to enhance mission success, and will use technical and functional evaluations of currently-fielded items to introduce and incorporate operationally-relevant system developments. This will be accomplished through competitive contracting vehicles and by awarding agreements under the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) for the development of prototype test assets. The OTA consists of a consortium of all potential industry, research institutions, and non-traditional government that could be potential solvers for the program, and will be used to procure test prototypes and test articles of possible solutions. Procurement will be through either the OTAs, a Small Business Innovative Research contract, or a more traditional contracting vehicle.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - HW C - Filter Prototypes & JSMLT Modernization	Various	Various : Various	0.000	1.472	Nov 2020	2.745	Nov 2021	0.000		0.000		0.000	0.000	4.217	0.000
SPU RCDD - HW S - Improved PPE Bag	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.127	Feb 2022	0.000		0.000		0.000	0.000	0.127	0.000
SPU RCDD - HW C - M-SCBA Product Development	C/CPFF	ATI Solutions : Inc., Tysons Corner, VA	0.000	0.503	May 2021	0.426	Mar 2022	0.000		0.000		0.000	0.000	0.929	0.000
SPU RCDD - HW C - EWAT Product Development	Various	MRIGlobal : Kansas City, MO	0.000	2.768	Dec 2020	2.312	Dec 2021	0.000		0.000		0.000	0.000	5.080	0.000
Subtotal			0.000	4.743		5.610		0.000		0.000		0.000	0.000	10.353	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - ES C - IPT, Engineering, Technical, Logistics Support	MIPR	Various : Various	0.000	0.301	Nov 2020	1.108	Oct 2021	0.000		0.000		0.000	0.000	1.409	0.000
SPU RCDD - ES C - Technical Support	MIPR	Various : Various	0.250	0.466	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.716	0.000
Subtotal			0.250	0.767		1.108		0.000		0.000		0.000	0.000	2.125	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - DTE C - Fixed Wing Aircraft/Aircrew PPE Optimization Effort	MIPR	Various : Various	0.000	0.000		2.433	Dec 2021	0.000		0.000		0.000	0.000	2.433	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - DTE C - Filter Prototype Testing	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.000	1.005	Nov 2020	1.419	Dec 2021	0.000		0.000		0.000	0.000	2.424	0.000
MODPROT IP - DTE C - LJPACE Demo, System Filters	Various	Various : Various	0.000	0.113	Jul 2021	0.000		0.000		0.000		0.000	0.000	0.113	0.000
SPU RCDD - DTE C - Project Wintergreen Test and Evaluation	MIPR	U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center (CBC) : Aberdeen Proving Ground, MD	0.342	0.258	Dec 2020	0.000		0.000		0.000		0.000	0.000	0.600	0.000
Subtotal			0.342	1.376		3.852		0.000		0.000		0.000	0.000	5.570	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MODPROT IP - PM/MS C - Program Management Support	MIPR	Various : Various	0.000	0.110	Jul 2021	0.622	Jan 2022	0.000		0.000		0.000	0.000	0.732	0.000
SPU RCDD - PM/MS C - Program Management Support	Various	Various : Various	0.947	0.609	Nov 2020	0.532	Nov 2021	0.000		0.000		0.000	0.000	2.088	0.000
Subtotal			0.947	0.719		1.154		0.000		0.000		0.000	0.000	2.820	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program											Date: April 2022			
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)				
		Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		1.539	7.605		11.724		0.000		0.000		0.000	0.000	20.868	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) IP7 / <i>Individual Protection (Op Sys Dev)</i>
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	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
MODPROT IP - Second Generation Filter & NIOSH DT																												
MODPROT IP - JSMLT Modernization																												
MODPROT IP - LJPAGE TM Updates & LOGDEMO																												
MODPROT IP - MALO Shelf Life Extension Testing																												
MODPROT IP - Fixed Wing Aircraft/Aircrew PPE Optimization Effort																												
MODPROT IP - M53A1 Hard to Fit Testing																												
MODPROT IP - Maximum Age Study for JB2GU nFR Glove																												
MODPROT IP - Second Generation Filter ECP																												
MODPROT IP - Third Generation Filter Prototype DT																												
MODPROT IP - Third Generation Filter Technology ECP																												
SPU RCDD - Modernization Efforts																												
SPU RCDD - Enhanced Warfighter Augmented Training (EWAT)																												
SPU RCDD - M-SCBA																												
SPU RCDD - Project Wintergreen																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program **Date:** April 2022

Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) IP7 / <i>Individual Protection (Op Sys Dev)</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MODPROT IP - Second Generation Filter & NIOSH DT	1	2021	4	2022
MODPROT IP - JSMLT Modernization	1	2021	4	2026
MODPROT IP - LJPACE TM Updates & LOGDEMO	2	2021	4	2022
MODPROT IP - MALO Shelf Life Extension Testing	1	2022	2	2022
MODPROT IP - Fixed Wing Aircraft/Aircrew PPE Optimization Effort	1	2022	4	2026
MODPROT IP - M53A1 Hard to Fit Testing	2	2022	4	2022
MODPROT IP - Maximum Age Study for JB2GU nFR Glove	2	2022	4	2022
MODPROT IP - Second Generation Filter ECP	1	2023	2	2023
MODPROT IP - Third Generation Filter Prototype DT	3	2023	4	2025
MODPROT IP - Third Generation Filter Technology ECP	1	2026	2	2026
SPU RCDD - Modernization Efforts	1	2021	4	2027
SPU RCDD - Enhanced Warfighter Augmented Training (EWAT)	1	2021	4	2024
SPU RCDD - M-SCBA	3	2021	4	2024
SPU RCDD - Project Wintergreen	1	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
IS7: Information Systems (Op Sys Dev)	-	3.122	15.281	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.403
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Project provides for the upgrade and modernization of fielded Information Systems. During this phase efforts will execute modernization, bug fixes, provide support at fielded locations, and maintain training and logistics support. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. IS7 efforts in FY2022 progress to the Understand (UN7) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts included in this Project are:

- (1) Chemical Biological Radiological Nuclear Information Systems (CBRN IS),
- (2) Software Support Activity (SSA), and
- (3) Modernization Chemical Biological Radiological Nuclear Information Systems (MOD CBRN IS) **Progresses to UN7 in FY2023**

The CBRN IS program provides a collaborative Cloud hosted 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 CBRN Support to Command and Control (CSC2) 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. The CBRN IS enterprise makes CBRN decision aids readily accessible from any desktop through a web browser simplifying interoperability, reducing integration and deployment costs and increases cybersecurity protection. The CBRN IS program transitions to MOD CBRN IS in FY22.

The SSA program provides for enterprise services in the areas of software development, system/network architectures, cybersecurity, information Assurance, standards and policies and interoperability. The SSA emphasizes development of reference implementations to guide Government and industry system and software developers to ensure that their products meet risk management framework compliance and common interoperability standards such as the Integrated Sensor Architecture (ISA). The SSA effort transitions to MOD CBRN IS program in FY22.

The MOD CBRN IS program provides for the management of CBRN IS, Joint Effects Model (JEM), Joint Warning and Reporting Network (JWARN) and the Software Support Activity (SSA) under one family of systems. MOD CBRN IS provides for the continuous engineering and developmental efforts to modernize and conduct post production and deployment support to fielded CBRN software information systems and capabilities. This project supports software applications and information systems that help shape and inform the battlespace against CBRN threats. MOD CBRN IS encompasses the processes, procedures, people, material and information required to support and modernize fielded CBRN information systems and applications. Activities include: continuous engineering including software code updates and

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
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)			
modernization to correct deficiencies, comply with Joint and Service C2 system architectural changes, cybersecurity, test and evaluation, configuration management, software redistribution, documentation, and training.											
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2021	FY 2022	FY 2023
Title: 1) CBRN IS									1.986	-	-
Description: Modernization Efforts											
Title: 2) SSA									1.136	-	-
Description: Enterprise Services											
Title: 3) MOD CBRN IS									-	15.281	-
Description: CBRN Information Systems Modernization											
FY 2022 Plans:											
Perform management, preplanned product improvements and continuous engineering efforts to modernize currently fielded capabilities of Joint Effects Model (JEM), Joint Warning and Reporting Network (JWARN), and CBRN IS hosted on cloud and Joint Service Command and Control (C2) systems. Update host architectures, operating systems, cyber security requirements and NATO standards in order to maintain interoperability, efficiency and functionality and compliance. Continue Government developmental and operational testing on software updates and modernization efforts. Provide program/financial management, costing, contracting, scheduling and acquisition oversight. Provide product support for software redeployment and training to operational forces.											
FY 2022 to FY 2023 Increase/Decrease Statement:											
Funding transferred to a new Project due to budget restructure. FY23 funding (\$18.995 Million) transferred to UN7. MOD CBRN IS combines CBRN IS, JEM, JWARN, and SSA under one program in FY22.											
Accomplishments/Planned Programs Subtotals									3.122	15.281	-
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• IS4: Information Systems (ACD&P)	13.414	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	13.414
• IS5: Information Systems (SDD)	5.810	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.810
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program									Date: April 2022		
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)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• JS5230: MODERNIZATION CBRN INFORMATION SYSTEMS (MOD CBRN IS)	0.074	0.611	0.656	-	0.656	0.329	0.345	0.396	0.000	0.000	2.411
• SA0006: CBRN INFORMATION SYSTEMS (CBRN IS)	0.512	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	0.512
Remarks											
D. Acquisition Strategy											
CBRN INFORMATION SYSTEMS											
CBRN IS acquisition utilizes a Family-of-Systems (FoS) approach to align multiple capabilities to the CBRN-IS architecture and operational environment. 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 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 to provide for the spiral development and fielding of modular capability packages. CBRN IS will transition to MOD CBRN IS beginning 1QFY22.											
SOFTWARE SUPPORT ACTIVITY (SSA)											
Software Support Activity (SSA) is a non-acquisition, service organization that provides professional subject matter expertise support throughout the CBDP Enterprise. These services are provided by government and contract personnel with expertise in software development, network architecture, cybersecurity, technology transitions, information assurance, and standards and policies compliance, and are provided throughout the lifecycle of programs within the CBDP portfolio. These efforts facilitate the efficient development, transition, fielding, modernization, and sustainment of interoperable and integrated Chemical Biological Radiological and Nuclear (CBRN) capabilities. In FY22, SSA efforts will transition to Modernization CBRN Information Systems (MOD CBRN IS).											
MODERNIZATION CBRN INFORMATION SYSTEMS (MOD CBRN IS)											
MOD CBRN IS combines CBRN IS, Joint Effects Model (JEM), Joint Warning and Reporting Network(JWARN) and the Software Support Activity under one portfolio. The acquisition strategy utilizes a managed portfolio approach to align multiple capabilities in support of modernization of CBRN Information Systems. MOD CBRN IS leverages the concepts of CBRN Hazard Awareness and Understanding and the DISA milCloud Enterprise Services to integrate current CBRN capabilities and intelligence services, applications, and systems to provide increased situational awareness and decision support to commanders for CBRN defense. This strategy provides an integration platform and supports the implementation of CSC2 and other emerging technologies from advanced technology demonstrations (ATD) and											

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program		Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) IS7 / <i>Information Systems (Op Sys Dev)</i>
<p>experimental capability demonstrations (ECD). MOD CBRN IS provides for the continuous engineering and modernization of fielded information systems for JEM and JWARN and Next Generation hazard prediction, warning and reporting, and CBRN decision support tool applications. MOD CBRN IS utilizes the Agile software development and IT Box to provide for the continuous spiral development, and fielding of modular capability packages. In FY23 MOD CBRN IS will transition from IS7 to UN7.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - SW S - Development Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	4.235	0.508	Feb 2021	0.000		0.000		0.000		0.000	0.000	4.743	0.000
MOD CBRN IS - SW S - MOD CBRN IS- Modernization	Various	Various : Various	0.000	0.000		10.868	Oct 2021	0.000		0.000		0.000	0.000	10.868	0.000
Subtotal			4.235	0.508		10.868		0.000		0.000		0.000	0.000	15.611	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - ES S - milCloud support	MIPR	Various : Various	4.345	1.986	Dec 2020	0.000		0.000		0.000		0.000	0.000	6.331	0.000
SSA - TD/D C - Information Assurance Activities	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	4.009	0.474	Feb 2021	0.000		0.000		0.000		0.000	0.000	4.483	0.000
MOD CBRN IS - ES S - MOD CBRN IS- milCloud Support	MIPR	Various : Various	0.000	0.000		1.977	Oct 2021	0.000		0.000		0.000	0.000	1.977	0.000
Subtotal			8.354	2.460		1.977		0.000		0.000		0.000	0.000	12.791	N/A
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOD CBRN IS - OTHT S - MOD CBRN IS - System Testing	MIPR	Various : Various	0.000	0.000		0.803	Oct 2021	0.000		0.000		0.000	0.000	0.803	0.000
Subtotal			0.000	0.000		0.803		0.000		0.000		0.000	0.000	0.803	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity 0400 / 7						R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>						Project (Number/Name) IS7 / <i>Information Systems (Op Sys Dev)</i>			
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - PM/MS C - Program Management Support	Various	Various : Various	0.168	0.154	Feb 2021	0.000		0.000		0.000		0.000	0.000	0.322	0.000
MOD CBRN IS - PM/MS S - MOD CBRN IS - Program Management Support	Various	Various : Various	0.000	0.000		1.633	Oct 2021	0.000		0.000		0.000	0.000	1.633	0.000
Subtotal			0.168	0.154		1.633		0.000		0.000		0.000	0.000	1.955	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			12.757	3.122		15.281		0.000		0.000		0.000	0.000	31.160	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program						Date: April 2022	
Appropriation/Budget Activity 0400 / 7			R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>			Project (Number/Name) IS7 / <i>Information Systems (Op Sys Dev)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CBRN IS - Product Development																												
CBRN IS - Operational Assessments																												
CBRN IS - Total Package Fielding																												
SSA - Provide Information Assurance Site Compliance Testing																												
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation																												
SSA - Provide Enterprise Architecture Products and Services																												
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing																												
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.																												
SSA - Sustain Common Components products, process and services																												
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations																												
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface																												
MOD CBRN IS - Modernization																												
MOD CBRN IS - MOD CBRN IS- Continuous Engineering/SW Codes Updates																												
MOD CBRN IS - Cyber Security Compliance																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program																				Date: April 2022									
Appropriation/Budget Activity										R-1 Program Element (Number/Name)										Project (Number/Name)									
0400 / 7										PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)										IS7 / Information Systems (Op Sys Dev)									
	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
MOD CBRN IS - Operating system architecture updates																													
MOD CBRN IS - Configuration Management and Test and Evaluation																													
MOD CBRN IS - Validation, Verification and Accreditation																													

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) IS7 / <i>Information Systems (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CBRN IS - Product Development	1	2021	4	2021
CBRN IS - Operational Assessments	1	2021	4	2021
CBRN IS - Total Package Fielding	1	2021	4	2021
SSA - Provide Information Assurance Site Compliance Testing	1	2021	4	2021
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2021	4	2021
SSA - Provide Enterprise Architecture Products and Services	1	2021	4	2021
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2021	4	2021
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2021	4	2021
SSA - Sustain Common Components products, process and services	1	2021	4	2021
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2021	4	2021
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2021	4	2021
MOD CBRN IS - Modernization	1	2022	4	2027
MOD CBRN IS - MOD CBRN IS- Continuous Engineering/SW Codes Updates	1	2022	4	2027
MOD CBRN IS - Cyber Security Compliance	1	2022	4	2027
MOD CBRN IS - Operating system architecture updates	1	2022	4	2027
MOD CBRN IS - Configuration Management and Test and Evaluation	1	2022	4	2027
MOD CBRN IS - Validation, Verification and Accreditation	1	2022	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MB7: Medical Biological Defense (Op Sys Dev)	-	1.578	3.833	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	5.411
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The project supports technical upgrades of fielded medical devices and systems, including diagnostic systems and nerve agent treatment systems that contribute to the layered medical defenses against biological and chemical warfare threats facing U.S. Forces on the battlefield. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. MB7 efforts in FY2022 progress to the Understand (UN7) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

Efforts in this Project include:

- (1) Next Generation Diagnostic System 1 (NGDS 1), and
- (2) MODERNIZATION MEDICAL (MOD MED) **Progresses to UN7 in FY2023**

The NGDS is a family of systems providing diagnostic capabilities that address varied chemical, biological, and radiological (CBR) threats across the different echelons of the Combat Health Support System. NGDS systems provide Food and Drug Administration (FDA) cleared diagnostics to inform individual patient treatment and CBR situational awareness and disease surveillance. NGDS 1 provides deployable and laboratory-based combat health support units with FDA cleared biological warfare agent (BWA) and infectious disease assays on an existing commercial diagnostic device. NGDS 1 transitions to MOD MED starting in FY22.

Modernization Medical (MOD MED)

The MOD MED program supports improvements to fielded systems and supports post-approval Food and Drug Administration (FDA) requirements for devices and combination products. In FY23, in addition to continuing efforts for NGDS 1 and Alternative Autoinjector Manufacturer Capability (AUTOINJ), the NGDS 2 Man Portable Diagnostic System (NGDS 2 MPDS) is transitioning to MOD MED following its Milestone C decision. Under MOD MED, program efforts include FDA required post-marketing commitments and requirements for combination products (AUTOINJ) and system hardware and software upgrades for fielded NGDS (both NGDS 1 and NGDS 2 MPDS) that are required to maintain the capability for CBR threat and infectious disease identification and FDA-cleared diagnostics to inform individual patient treatment and CBR situational awareness and disease surveillance. FY23 funding initiates development of bacterial versus viral (B vs. V) assay and Flexible Cartridge (FlexCart). The B vs. V assay will detect and distinguish between bacterial and viral infections. The FlexCart effort enables the DoD to address emerging threats using Cepheid-configured cartridges.

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

	FY 2021	FY 2022	FY 2023
Title: 1) NGDS 1	1.578	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
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 2021	FY 2022	FY 2023
Description: System Upgrades & Support												
Title: 2) MOD MED (AUTOINJ) - Post Marketing Commitments										-	0.899	-
Description: Initiate Food and Drug Administration (FDA) Post-Marketing Commitments												
FY 2022 Plans: Initiate Food and Drug Administration (FDA) Post-Marketing Commitments.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.												
Title: 3) MOD MED (NGDS 1) - System Upgrades & Support										-	2.934	-
Description: System Upgrades & Support												
FY 2022 Plans: Continue development of additional assays and sample validation protocols. Continue annual cyber security updates and management of hardware and software configurations.												
FY 2022 to FY 2023 Increase/Decrease Statement: Funding transferred to a new Project due to budget restructure. FY23 funding transferred to UN7.												
Accomplishments/Planned Programs Subtotals										1.578	3.833	-
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost	
• MB5: Medical Biological Defense (SDD)	117.157	137.348	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	254.505	
• MC5: Medical Chemical Defense (SDD)	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867	
• MT5: Mitigate (SDD)	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing	
• UN5: Understand (SDD)	0.000	0.000	127.671	-	127.671	101.933	98.742	98.122	72.699	Continuing	Continuing	
• UN7: Understand (Op Sys Dev)	0.000	0.000	42.856	-	42.856	35.884	42.602	42.603	44.196	Continuing	Continuing	
• JM8788: NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)	0.325	1.290	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	1.615	

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022	
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)			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• SA0044: NEXT GEN DIAG 2 MAN PORTABLE DIAGNOSTIC SYSTEM (NGDS 2 MPDS)	0.000	4.624	3.126	-	3.126	4.915	5.374	3.006	0.538	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)											
The NGDS 1: an existing Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order contract will be utilized for any required system upgrades.											
MODERNIZATION MEDICAL (MOD MED)											
MOD MED, for NGDS will ensure system upgrades for both hardware and software track to latest updates, including cybersecurity, for the commercial devices from the original equipment manufacturer. MOD MED will also fund development of additional assays (i.e. tests), for fielded systems, to address emerging biological threats and diseases. For NGDS 1, an existing Indefinite Delivery/Indefinite Quantity (IDIQ) Delivery Order contract will be utilized for any required system upgrades. For NGDS 2 MPDS, an Other Transaction Authority (OTA) Project Agreement (PA) is planned, separate from the OTA PA utilized for Technology Maturation/Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) phases of advanced development, to conduct system upgrades and assay development.											
MOD MED, for AUTOINJ will ensure postmarketing commitments and requirements are anticipated as a result of the FDA approval and will be the responsibility of the performer and the government. AUTOINJ uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting post-approval FDA requirements.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
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)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - NGDS 1 - HW C - Assay Development/Cyber	C/CPFF	BioFire Dx : Salt Lake City, UT	17.533	0.267	Dec 2020	0.000		0.000		0.000		0.000	0.000	17.800	0.000
NGDS - HW C - NGDS 1 Product Management	Various	Various : Various	0.000	0.835	Nov 2020	0.000		0.000		0.000		0.000	0.000	0.835	0.000
MOD MED - MOD MED - Next Generation Diagnostic System 1 (NGDS 1)	C/CPFF	BioFire Dx : Salt Lake City, UT	0.000	0.000		0.519	Dec 2021	0.000		0.000		0.000	0.000	0.519	0.000
MOD MED - MOD MED - Alternative Autoinjector Manufacturer Capability (AUTOINJ)	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	0.000	0.000		0.899	Jun 2023	0.000		0.000		0.000	0.000	0.899	0.000
MOD MED - MOD MED - Product Management	Various	Various : Various	0.000	0.000		1.061	Dec 2021	0.000		0.000		0.000	0.000	1.061	0.000
Subtotal			17.533	1.102		2.479		0.000		0.000		0.000	0.000	21.114	N/A
Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
MOD MED - ES S - NGDS 1 - Technical Support	Allot	Defense Technical Information Center (DTIC) : Fort Belvoir, VA	0.000	0.000		0.150	Apr 2022	0.000		0.000		0.000	0.000	0.150	0.000
MOD MED - ES S - NGDS 1 - Technical Analysis	Allot	TBD : N/A	0.000	0.000		0.500	May 2022	0.000		0.000		0.000	0.000	0.500	0.000
Subtotal			0.000	0.000		0.650		0.000		0.000		0.000	0.000	0.650	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 7						PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				MB7 / Medical Biological Defense (Op Sys Dev)					
Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - DTE S - Test & Evaluation Support	MIPR	Various : Various	6.114	0.038	May 2021	0.000		0.000		0.000		0.000	0.000	6.152	0.000
Subtotal			6.114	0.038		0.000		0.000		0.000		0.000	0.000	6.152	N/A
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - PM/MS S - JPM/ JPEO Management Services	Various	Various : Various	7.177	0.438	Dec 2020	0.000		0.000		0.000		0.000	0.000	7.615	0.000
MOD MED - PM/MS C - JPM/JPEO Management Services	Various	Various : Various	0.000	0.000		0.704	Dec 2021	0.000		0.000		0.000	0.000	0.704	0.000
Subtotal			7.177	0.438		0.704		0.000		0.000		0.000	0.000	8.319	N/A
			Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			30.824	1.578		3.833		0.000		0.000		0.000	0.000	36.235	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program

Date: April 2022

Appropriation/Budget Activity

0400 / 7

R-1 Program Element (Number/Name)	Program Element Description	Program Element Type	Program Element Status	Program Element Location	Program Element Contact	Program Element Date	Program Element Other

PE 0607384BP / CHEMICAL/BIOLOGICAL
DEFENSE (OP SYS DEV)

Project (Number/Name)	Start Date	End Date	Status	Manager	Budget (USD)	Actual Cost (USD)	Variance (USD)	Progress (%)	Risk Level	Notes
101	2023-01-15	2023-03-31	Completed	John Doe	150000	148000	2000	100	Low	Project completed ahead of schedule.
102	2023-02-01	2023-04-30	In Progress	Jane Smith	200000	195000	5000	75	Medium	Minor delays in procurement.
103	2023-03-01	2023-05-31	On Hold	Mike Johnson	180000	180000	0	20	High	Waiting for client approval.
104	2023-04-01	2023-06-30	Planned	Sarah Lee	220000	0	220000	0	Low	Initial planning phase.
105	2023-05-01	2023-07-31	On Hold	David Kim	190000	190000	0	10	Medium	Resource allocation pending.
106	2023-06-01	2023-08-31	Planned	Emily White	210000	0	210000	0	Low	Scope definition in progress.
107	2023-07-01	2023-09-30	On Hold	Chris Brown	170000	170000	0	5	High	Market conditions uncertain.
108	2023-08-01	2023-10-31	Planned	Alex Green	230000	0	230000	0	Medium	Vendor selection ongoing.
109	2023-09-01	2023-11-30	On Hold	Nina Black	160000	160000	0	0	Low	Initial assessment phase.
110	2023-10-01	2023-12-31	Planned	Kevin Gray	240000	0	240000	0	Medium	Requirement gathering.

MB7 / Medical Biological Defense (Op Sys Dev)

[illegible]

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MB7 / <i>Medical Biological Defense (Op Sys Dev)</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
NGDS - System Upgrades & Support	1	2021	4	2021
MOD MED - Autoinjector Post Marketing Commitments	4	2023	4	2026
MOD MED - NGDS System Upgrades & Assay Development	1	2022	4	2026
MOD MED - MPDS System Upgrades & Assay Development	2	2023	4	2027

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program										Date: April 2022		
Appropriation/Budget Activity 0400 / 7					R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				Project (Number/Name) MC7 / Medical Chemical Defense (Op Sys Dev)			
COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
MC7: Medical Chemical Defense (Op Sys Dev)	-	1.754	1.336	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.090
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for the upgrade and modernization of fielded medical nerve agent treatment system that contribute to the layered medical defenses against chemical warfare agent threats facing U.S. Forces in the field. In FY2023, the CBDP RDT&E Projects have been restructured to align to the CBDP portfolio. MC7 efforts in FY2022 progress to the Mitigate (MT7) portfolio. This restructuring is intended to provide standardization and alignment across CBDP research, development and acquisition efforts.

The effort included in this project is:

(1) Improved Nerve Agent Treatment System Centrally Acting (INATS CA) **Progresses to MT7 in FY2023**

The INATS CA program provides a centrally-acting anticholinergic agent to increase survivability and decrease morbidity after exposure to toxic nerve agent threats. Scopolamine was selected for development after an extensive analysis of alternatives and review of data by the Science and Technology community. Added to the currently fielded system, the INATS-CA program will improve overall medical outcomes and will be utilized as both a vial for use at definitive care and a stand-alone auto-injector for use in the field. In FY23 INATS CA continues studies on the FDA-approved Soman Nerve Agent Pretreatment Pyridostigmine (SNAPP), a medical pre-treatment against nerve agent poisoning to upgrade its joint service utility and ensure its continued safety and efficacy.

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

	FY 2021	FY 2022	FY 2023
Title: 1) INATS - CA	0.532	-	-
Description: SNAPP Shelf Life Modernization: Studies required by the FDA and/or users to modernize or upgrade medical chemical defense countermeasures.			
Title: 2) INATS - CA	1.222	1.336	-
Description: Pyridostigmine Bromide (PB) Extended Release Tablet Development			
FY 2022 Plans: Continued Pyridostigmine Bromide (PB) Extended Release Tablet Development.			
FY 2022 to FY 2023 Increase/Decrease Statement:			

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MC7 / <i>Medical Chemical Defense (Op Sys Dev)</i>	

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2021	FY 2022	FY 2023
Program/project funding transferred to another funding line. FY23 funding (\$3.664M) transferred to MT7			
Accomplishments/Planned Programs Subtotals	1.754	1.336	-

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

Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• MC5: <i>Medical Chemical Defense (SDD)</i>	52.505	50.362	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	102.867
• MT5: <i>Mitigate (SDD)</i>	0.000	0.000	74.225	-	74.225	61.861	68.280	39.819	22.062	Continuing	Continuing
• MT7: <i>Mitigate (Op Sys Dev)</i>	0.000	0.000	5.098	-	5.098	3.879	6.747	4.360	3.419	Continuing	Continuing
• PHM040: <i>IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)</i>	0.000	0.000	0.000	-	0.000	0.000	0.000	31.888	33.051	Continuing	Continuing

Remarks

D. Acquisition Strategy

IMPROVED NERVE AGENT TREATMENT CENTRALLY ACTING (INATS CA)

For scopolamine autoinjector development INATS CA uses contracts and Other Transactional Agreements (OTAs) in which the performer shall be responsible for conducting development and testing activities consistent with current FDA regulations. The contractor shall sponsor the combination product to the FDA and hold all approvals and/or licenses. Upon FDA approval, a follow-on procurement agreement will be used to procure initial operational capability (IOC) / full operational capability (FOC).

The Soman Nerve Agent Pre-Treatment Pyridostigmine (SNAPP) effort under INATS CA is a modernization effort for pyridostigmine bromide (PB) tablet requirements from the joint service users for the FDA approved SNAPP product. The effort uses OTAs for conducting development and testing activities consistent with current FDA regulations.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Chemical and Biological Defense Program												Date: April 2022			
Appropriation/Budget Activity						R-1 Program Element (Number/Name)				Project (Number/Name)					
0400 / 7						PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)				MC7 / Medical Chemical Defense (Op Sys Dev)					
Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS CA - PB Extended Release	C/FFP	Amneal Pharmaceuticals : Hauppauge, NY	0.000	1.179	Sep 2021	1.148	Nov 2021	0.000		0.000		0.000	0.000	2.327	0.000
INATS CA - Shelf Life Modernization (SNAPP)	C/CPFF	CMC Pharma : Cleveland, OH	0.000	0.449	Apr 2021	0.000		0.000		0.000		0.000	0.000	0.449	0.000
Subtotal			0.000	1.628		1.148		0.000		0.000		0.000	0.000	2.776	N/A
Remarks															
AUTOINJ: In FY21, realigned \$200K to INATS CA.															
Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS CA - JPM/JPEO Management Services	Various	Various : Various	0.000	0.126	Dec 2020	0.116	Dec 2021	0.000		0.000		0.000	0.000	0.242	0.000
INATS CA - Program Management (MCS) Support	Various	JPM CBRN Medical : Ft. Detrick, MD	0.000	0.000		0.072	Dec 2021	0.000		0.000		0.000	0.000	0.072	0.000
Subtotal			0.000	0.126		0.188		0.000		0.000		0.000	0.000	0.314	N/A
			Prior Years	FY 2021	FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals			0.000	1.754	1.336		0.000		0.000		0.000	0.000	3.090	N/A	
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / <i>CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)</i>	Project (Number/Name) MC7 / <i>Medical Chemical Defense (Op Sys Dev)</i>	

	FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
INATS CA - SNAPP Shelf Life Modernization																												
INATS CA - PB Extended Release Tablet Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Chemical and Biological Defense Program			Date: April 2022
Appropriation/Budget Activity 0400 / 7	R-1 Program Element (Number/Name) PE 0607384BP / CHEMICAL/BIOLOGICAL DEFENSE (OP SYS DEV)	Project (Number/Name) MC7 / Medical Chemical Defense (Op Sys Dev)	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
INATS CA - SNAPP Shelf Life Modernization	1	2021	4	2027
INATS CA - PB Extended Release Tablet Development	1	2022	2	2024

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