Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Chemical and Biological Defense Program	Date: March 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	368.151	358.608	384.047	-	384.047	293.026	225.919	191.500	192.958	Continuing	Continuing
CA5: *CONTAMINATION AVOIDANCE (EMD)*	-	95.134	111.781	131.985	-	131.985	75.093	53.146	38.807	38.987	Continuing	Continuing
CM5: *HOMELAND DEFENSE (EMD)*	-	15.513	6.000	12.646	-	12.646	0.000	0.000	0.000	0.000	0.000	34.159
CO5: *COLLECTIVE PROTECTION (EMD)*	-	8.833	11.307	7.322	-	7.322	6.918	1.497	0.000	0.000	0.000	35.877
DE5: *DECONTAMINATION SYSTEMS (EMD)*	-	10.162	14.049	8.267	-	8.267	10.260	11.094	19.285	17.769	Continuing	Continuing
IP5: *INDIVIDUAL PROTECTION (EMD)*	-	13.529	9.324	12.663	-	12.663	13.013	11.162	11.343	11.342	Continuing	Continuing
IS5: *INFORMATION SYSTEMS (EMD)*	-	21.789	22.215	22.111	-	22.111	17.935	13.781	7.695	7.694	Continuing	Continuing
MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	-	130.240	117.331	119.227	-	119.227	97.501	71.221	78.435	82.815	Continuing	Continuing
MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	-	58.419	57.545	62.051	-	62.051	64.331	56.641	28.559	26.976	Continuing	Continuing
TE5: *TEST & EVALUATION (EMD)*	-	14.532	9.056	7.775	-	7.775	7.975	7.377	7.376	7.375	Continuing	Continuing

A. Mission Description and Budget Item Justification

The projects in this PE support the development, build, and test of products to verify 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.

Individual projects include:
- Contamination Avoidance (CA5): system development of reconnaissance, detection, identification, and warning systems that minimize CBR contamination and prevent further cross-contamination during operations.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Chemical and Biological Defense Program	Date: March 2019
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)*

- Homeland Defense. (CM5): system development of common analytical laboratory system capabilities to conduct on-site analysis of any unknown sample and test potential life-threatening substances.

- Collective Protection. (CO5): system development of collectively protected 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.

- Decontamination Systems (DE5): system development of Contamination Mitigation (ConMit) systems utilizing solutions that will remove and/or detoxify contaminated material without damaging combat equipment, personnel, or the environment.

- Individual Protection (IP5): system development of the next generation protective ensembles (e.g., suits, boots, and gloves) and respiratory and ocular protection equipment (e.g., protective masks) which enable the Joint Force to operate in a contaminated CBR environment with little or no degradation to his/her performance.

- Information Systems (IS5): system development of information architectures, applications, and cybersecurity hardening for shaping the battlespace against CBR threats.

- Medical Biological Defense (MB5): product development of medical biological countermeasure platform technologies, medical biological countermeasures (vaccines and therapeutics), reagents, assays, and diagnostic equipment to provide an effective capability for medical defense against biological warfare agent threats facing U.S. Forces in the field.

- Medical Chemical Defense (MC5): product development of medical materiel and other medical equipment items (e.g., diagnostic equipment, prophylactic, pre-treatment, and therapeutic drugs, and individual/casualty decontamination compounds) necessary to provide an effective capability for medical defense against chemical warfare agent threats facing U.S. Forces in the field.

- Test and Evaluation (TE5): critical test capabilities, planning, and infrastructure improvements/modifications necessary to evaluate CBRN Defense systems in realistic operating environments.

The projects in this PE support the engineering and manufacturing development phase of the DoD acquisition system and are therefore correctly placed in Budget Activity 5.

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Chemical and Biological Defense Program	Date: March 2019
Appropriation/Budget Activity 0400: *Research, Development, Test & Evaluation, Defense-Wide* / BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	406.789	388.701	337.454	-	337.454
Current President's Budget	368.151	358.608	384.047	-	384.047
Total Adjustments	-38.638	-30.093	46.593	-	46.593
• Congressional General Reductions	-0.054	-0.093			
• Congressional Directed Reductions	-37.902	-44.000			
• Congressional Rescissions	-	-			
• Congressional Adds	7.000	14.000			
• Congressional Directed Transfers	0.000	-			
• Reprogrammings	-0.789	-			
• SBIR/STTR Transfer	-6.893	-			
• Other Adjustments	0.000	-	46.593	-	46.593

Change Summary Explanation

Funding: FY18: (-$0.054M) Congressional General Reductions and (-$37.902M) Congressional Directed Reductions.
FY18 (+$7.000M): Congressional Adds for Filtration Systems (+$2.000M) and Antiviral Prophylaxis Studies (+$5.000M).
FY18 (-$6.893M): Transfer of funding to support Small Business Innovative Research/Small Business Technology Transfer efforts.
FY18 (-$.789M): Program Reprogrammings.

FY19: (-$0.093M) Congressional General Reductions and (-$44.000M) Congressional Directed Reductions.
FY19 (+$14.000M): Congressional Adds for Filtration Systems (+$2.000M) and Antiviral Prophylaxis Studies (+$12.000M).

FY20 (+$10.000M): Program Increase for Advanced Development and Manufacturing (ADM) Capability Development .
FY20 (+$36.593M): Program adjustments to balance overall portfolio efforts and resource Services highest priority detection, protection, and MCM development efforts.

Schedule: N/A

Technical: N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program											Date: March 2019	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*				Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
CA5: *CONTAMINATION AVOIDANCE (EMD)*	-	95.134	111.781	131.985	-	131.985	75.093	53.146	38.807	38.987	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP) of an array of reconnaissance, detection and identification equipment, and warning systems.

Efforts included in this Project are:
(1) Aerosol & Vapor Chemical Agent Detector (AVCAD)
(2) Enhanced Maritime Biological Detection (EMBD)
(3) The Joint Handheld Bio-Agent Identifier (JHBI)
(4) Mounted Manned Platform Radiological Detection System (MMPRDS)
(5) Multi-Phase Chemical Agent Detector (MPCAD)
(6) Proximate Chemical Agent Detector (PCAD)
(7) Reactive Chemistry Orthogonal Surface and Environmental Threat Ticket Array (ROSETTA)
(8) Joint Nuclear Biological Chemical Radiological System (JNBCRS) 1, also known as Stryker Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite (NBCRV SS)
(9) Joint Biological Tactical Detection System (JBTDS)
(10) Next Generation Chemical Detector (NGCD 1,2,3,4)
(11) Non-Traditional Agent (NTA) Defense Support; (12) the Global Biosurveillance Technology Initiatives (GBTI)

In FY18, the Next Generation Chemical Detector (NGCD) funding line was broken out into NGCD 1, 2, 3, and 4. Starting in FY19, four program unique funding lines exist: AVCAD (formerly NGCD 1), PCAD (formerly NGCD 2), MPCAD (formerly NGCD 3), and WCAD (formerly NGCD 4). NGCD will detect and identify non-traditional agents, chemical warfare agents (CWA), toxic industrial chemicals (TICs) in the air and on surfaces. The NGCD will provide improved NTA/CWA/TIC selectivity and sensitivity in multiple environments. The sensors will improve detection, consequence management and reconnaissance, and weapons of mass destruction (WMD) interdiction capabilities. The scope of the project includes Presumptive detection (AVCAD, PCAD, WCAD) and field level Confirmation, Identification, and Quantification (MPCAD) detection of chemicals a few feet away from the detector as well as at the sampling point of the detector. Additional tasks will ruggedize and test a system for nontraditional agent detection for special purpose units. NGCD funded a USSOCOM effort to develop a modification kit to JCAD to address NTA and threats of interests going into the SP SKO and SPU units.

The AVCAD supports the Priority Objective to deny the effects of current and emerging threats. The AVCAD system will be the first chemical aerosol detector fielding by any military, worldwide. AVCAD will fill critical gaps in current chemical sensor capabilities in the areas of aerosol Chemical Warfare Agent detection, and detection

of specific advanced threat agents/Non-Traditional Agents (NTAs). The AVCAD will also detect residual vapors to prevent/mitigate health effects associated with low concentration exposures. The U.S. Military Departments view the AVCAD as a high-priority program and will use the system to support their missions, which include monitoring, collective protection, base defense, decontamination, unmasking, reconnaissance, and shipboard and aviation platform chemical detection. In FY20, AVCAD will support testing and continue development of the EMD phase.

The MPCAD provides all states of matter, to include chemical solids, liquids, aerosols and vapors, and will support the Commander's tactical and operational decisions regarding avoidance, protection, and decontamination measures and immediate treatment by providing real-time, near-laboratory grade sample analysis. The Army and Marine Corp 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 FY20, MPCAD is continuing testing to support EMD development.

The PCAD provides the Joint Services a handheld capability to locate and detect trace amounts of liquids and solids on surfaces. Efforts to mature technologies during Technology Maturation Risk Reduction (TMRR) phase resulted in systems that were too heavy and cumbersome to use. Program office is working with users and JSTO to identify technologies to mature that may meet the users' needs for a hand held, non-contact, areal detection system. Concurrently with the PCAD TMRR efforts, Edgewood Chemical and Biological Center (ECBC) was exploring the use of adapting the Joint Chemical Agent Detector (JCAD) to detect explosives. The project was called JCAD Chemical Explosive Detector (CED). The theory of operation is a JCAD is inserted into a cradle that has a heated inlet and modified library to detect explosives. An operator swabs a surface with a probe and inserts the probe into heated inlet and the resulting vapors are interrogated by the JCAD. The effort was expanded for the system to detect NTAs, and Pharmaceutical Based Agents (PBAs). The program changed its name to JCAD Solid/Liquid Adapter (SLA) kit to better match its true capabilities. The JCAD SLA kit is planned to be added to the M4A1 JCAD program as an Additional Authorized List (AAL) item. In FY20 the JCAD SLA will use the JCAD BA7 line.

The MMPRDS provides advanced platform-mounted radiological/nuclear (RN) crew monitoring/detection, reconnaissance, and surveillance for multiple manned and unmanned U.S. Army ground and rotary wing vehicles. The system, which can also be integrated into fixed site sensor payloads, provides both point (VIPER prototype) and standoff (MERLIN prototype) RN detection capabilities that replace AN/UDR-13 and AN/VDR-2 systems. Funding supports advanced development of MERLIN and VIPER prototypes for integration onto the Stryker NBCRV and medium-sized unmanned ground platforms. VIPER will also be integrated into the M1A2, Bradley, Black Hawk, and other major U.S. Army platforms (for point detection).

The EMBD is the Navy's automated biological point detection, collection and identification system. EMBD replaces/upgrades the 135 Joint Biological Point Detection Systems (JBPDS) currently fielded to the Navy and provides 40 systems for new construction ships. EMBD improves detection sensitivity providing the Navy the ability to "detect to inform" reducing the number of contaminated ships during a biological warfare agent attack, minimizing sailor casualties. EMBD reduces false alarm rates, modernizes the computing architecture and increases reliability and sailors confidence in the system. These improvements decrease fleet O&S costs, and reduces the obsolescence issues with current biological detection capability. The EMBD program will complete production and testing, integration and field a lower cost biological

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

point detection system. In FY20, EMBD will complete EMD (Engineering and Manufacturing Development) DT/OT (Developmental Testing/Operational Testing) and move to Milestone C.

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

The ROSETTA is a modernization effort to provide a higher confidence chemical liquid hazard detection ticket in the currently fielded M256A2 kit for the Warfighter to make timely decisions. These decisions will reduce casualties and improve the combat effectiveness of troops engaged in conflicts involving the use of chemical warfare agents. ROSETTA is based on colorimetric technology and will be eye-readable and ease the Warfighter from current training and operational burden. In addition, the ROSETTA ticket will provide improved hazard detection performance with reduced false alarm rate, potential for increased number of chemicals detected, reduced detection time especially for certain compounds of interest, and potential for integration onto unmanned platforms especially micro-sized unmanned aerial sensors. The ROSETTA funding will complete the development and testing of the new ROSETTA ticket as well as update the currently fielded M256A2 technical data package via an engineering change proposal (ECP) to create a new M256A3 kit that will be available to all Services. In FY20, ROSETTA will award contract(s) for technical data package testing.

The JNBCRS 1, including the Styker NBCRV SSU, 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 queuing system to accomplish desired standoff distances to keep the warfighter out of harm's way and reduce sustainment costs over the current system. A Chemical Surface Detector (CSD) will be developed to replace the Dual Wheel Sampling System to increase maneuver speed when conducting NBC missions and increase reliability. This schedule was accelerated from the previous schedule based on the maturity of the sensor and guidance from the Chief of Staff of the Army. In FY20, NBCRV SSU program will develop a prototype of integrated sensors for demonstration in Joint Warfighter Assessment 2020.

The JBTDS program is developing, integrating and testing the first lightweight, low-cost biological surveillance system to detect, collect, and identify Biological Warfare Agent (BWA) aerosols. JBTDS provides warning through the Joint Warning and Reporting Network (JWARN) and archives samples for follow-on analyses. JBTDS provides near real-time local audio and visual alarm and may be employed by any Military User. JBTDS components are man-portable, battery-operable and easy to employ. JBTDS provides notification of a hazard and enhances battle space awareness to protect and preserve the forces. 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.

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Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

The JBTDS provides surface sampling capability which interfaces with the JBTDS identifier to support sensitive site exploitation missions. In FY20, JBTDS will complete program record testing and prepare for a Milestone decision.

The NTA Defense Program is the Joint Project Executive Office of Chemical Biological Radiological and Nuclear Defense (JPEO CBRND) lead for DoD, Interagency, and international work pertaining to PBAs and other emerging threats. The NTA Defense program assesses existing and new portfolio capabilities against PBAs and other emerging threats to develop dedicated initiatives and projects to transition information, technologies, and capabilities into acquisition programs across all commodity areas. System prototyping and modification efforts serve to advance capabilities, reduce risk, and provide improved knowledge for decision making.

GBTI will research and characterize laboratory networks and develop algorithms to identify key nodes, having the greatest potential to compress the time between disease event initiation and the production of actionable data. In FY19, GBTI will close. The Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) will track projects of mutual interest, formerly under GBTI, with the Chemical Biological Defense Program. The Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) an initiative under Defense Biological Product Assurance Program (DBPAO) will leverage the investments made under GBTI. The (TARMAC) effort will transition to the Defense Biological Products Assurance Program (DBPAP) project MB5 line in FY20

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) Next Generation Chemical Detector (NGCD) ***Description:*** NGCD acceleration contract for USSOCOM and Special Purpose Sets, Kits, and Outfits (SP SKO) JCAD CED.	2.169	-	-
Title: 2) Next Generation Chemical Detector (NGCD) 1-3 ***Description:*** Program Management	6.086	-	-
Title: 3) NGCD 1 ***Description:*** NGCD 1 (AVCAD) EMD Contract	6.205	-	-
Title: 4) NGCD 3 ***Description:*** NGCD 3 (MPCAD)- EMD Contract	9.000	-	-
Title: 5) NGCD 1 ***Description:*** NGCD 1 (AVCAD) - Test	0.818	-	-
Title: 6) NGCD 2 ***Description:*** NGCD 2 (PCAD) - Test	0.565	-	-
Title: 7) NGCD 3	0.750	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: NGCD 3 (MPCAD) - Test			
Title: 8) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** EMD Contracts ***FY 2019 Plans:*** Continue EMD development and support risk reduction chamber testing for Production Qualification Test. ***FY 2020 Plans:*** Continue EMD development and support various EMD test events to include: Chemical Chamber, Explosive Atmosphere, Maintenance Demonstration, shipboard false alarm, shipboard verification operation, platform integrations, ship shock and vibration, rotary and fixed wing, battlefield contaminant, physical characteristics, MIL-STD 4061, Stryker on the move, coastal operational service life and MIL-STD 810G. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule. Schedule delay due to contract award	-	4.231	13.802
Title: 9) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** Test and Evaluation ***FY 2019 Plans:*** Initiate and conduct risk reduction testing and OGA test support. ***FY 2020 Plans:*** Continue and complete testing for: chemical chamber, explosive atmosphere, maintenance demonstration, shipboard false alarm, shipboard verification operations, platform integration, ship shock and vibration, rotatory and fixed wing integration, battlefield contaminants, physical characteristics, MIL-STD 461. Initiate tests for: Stryker on the move, coastal operational service life, and MIL-STD 810G. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	2.807	3.980
Title: 10) Aerosol & Vapor Chemical Agent Detector (AVCAD) ***Description:*** Program Management Support ***FY 2019 Plans:***	-	3.657	4.027

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 11) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** Product Development ***FY 2019 Plans:*** Initiate Two EMD contracts. Conduct Preliminary Design Review (PDR), purchase five test articles at 150K each for customer test. ***FY 2020 Plans:*** Continue up to two EMD contract(s), Government and contracted Integrated Product Development team, program management, systems engineering and IPT Support. Incorporate fixes and purchase 26 test articles at 150K each to conduct testing and operational assessment to support Milestone C decision. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	16.690	17.477
Title: 12) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** Testing ***FY 2019 Plans:*** Initiate and conduct Library Build and System Verification. ***FY 2020 Plans:*** Complete Library Build and system verification. Initiate and conduct DT Interoperability Test, Cyber Security Vulnerability Test, Chemical Biological Radiological Contamination Survivability (CBRCS) Test, DT Environmental (MIL-STD-810G) Test, DT Explosive Atmosphere Test, DT False (Positive) Alarm Test, DT Natural Desert Environmental Storage Test, DT Electromagnetic Survivability Test, DT/OT Chemicals Test, DT Chemical Chamber Test, DT Maintenance Demonstration,DT Post Field Test, and	-	4.289	13.166

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Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
OT Limited User Test. Continue OGA support of development and testing of MPCAD systems including development of logistics product, test plans, and conducting tradeoff discussions. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters. Late contract award in FY18 shifted program priorities			
Title: 13) Multi-Phase Chemical Agent Detector (MPCAD) ***Description:*** Program Management Support ***FY 2019 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	4.613	5.189
Title: 14) Proximate Chemical Agent Detector (PCAD) ***Description:*** EMD Contract & Test and Evaluation ***FY 2019 Plans:*** Complete EMD contract. Purchase 50 low rate production systems for Production Verification Testing. Initiate and complete development testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Advanced Technology Development technology will transition back to S&T for further maturity	-	6.025	-
Title: 15) Proximate Chemical Agent Detector (PCAD) ***Description:*** Program Management Support ***FY 2019 Plans:*** Initiate Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:***	-	2.524	-

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Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Program/project transitioned to Advanced Technology Development technology will transition back to S&T for further maturity			
Title: 16) EMBD ***Description:*** Product Development ***FY 2019 Plans:*** Continue Government system engineering, program/financial management, and costing in support of the EMBD program. Purchase ten systems ($550K ea.) for government DT/Operational Assessment (OA), ILS development, design and software finalization. Continue ARCA support and data analysis for RAAD Detector, TDP transfer to Prime Contractor from MIT, conduct obsolescence analysis and modify software (SW) algorithms. ***FY 2020 Plans:*** Continue Government system engineering, program/financial management, and costing in support of the EMBD program. Complete acquisition of systems support for contractor developmental testing (DT) and government DT/ Operational Assessment (OA). Finalize SW support for test and OA, and finalize SW support and transition to Prime Contractor. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase. EMD completes in FY20	9.074	10.439	5.947
Title: 17) EMBD ***Description:*** Program management support and Test & Evaluation ***FY 2019 Plans:*** Continue combat developer, test community and Service representation during EMD Phase. Initiate false alarm and component live agent testing and purchase consumables for testing. Continue program management support including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Continue combat developer, test community and service representation during EMD Phase. Continue program management support including Government system engineering, program/financial management, costing, personnel support, travel and overhead. Initiate and complete logistics demonstration and record testing. Initiate and complete Operation Assessment, Cooperative Vulnerability and Penetration Assessment(CVPA) and Operational Testing. Initiate and complete whole system live agent aerosol testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:***	3.041	4.575	7.220

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Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Minor change due to routine program adjustments. OT is only being conducted in FY20			
Title: 18) GBTI	3.575	2.108	-
Description: The Global Biosurveillance Technology Initiative (GBTI) will research and characterize laboratory networks and develop algorithms to identify key nodes, having the greatest potential to compress the time between disease event initiation and the production of actionable data. In FY19, GBTI will close. The Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) will track projects of mutual interest, formerly under GBTI, with the Chemical Biological Defense Program. The Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) an initiative under Defense Biological Product Assurance Program (DBPAO) will leverage the investments made under GBTI. The (TARMAC) effort will transition to the Defense Biological Products Assurance Program (DBPAP) project MB5 line in FY20			
FY 2019 Plans: Complete transition of support for Targeted Acquisition of Reference Materials Augmenting Capabilities (TARMAC) under GBTI to the Defense Biological Products Assurance Program (DBPAP) project MB5 line in FY20.			
FY 2019 to FY 2020 Increase/Decrease Statement: Program/project is entering completion and all activities will be closed.			
Title: 19) JBTDS: Product Development	13.464	9.356	6.319
Description: EMD Contract			
FY 2019 Plans: Continue Government system engineering, program/financial management, and costing in support of the JBTDS program. Continued EMD contract for product development, networking solution, program management support, and product team support. Continue development for on-the-move capability. Contractor will conclude delivery of Identifiers ($57.3K/ea.), Collectors ($17.5K/ea.) and Detector/Collectors ($28K/ea.). JBTDS will continue with the ARCA development efforts, live agent production and participation in the BPSA events and complete live agent testing to support multiple Chemical Biological Defense programs of record requirements.			
FY 2020 Plans: Continue Government system engineering, program/financial management, and costing in support of the JBTDS program. Complete EMD contract for product development, on-the-move capability testing and development, networking solution, program management support, and product team support.			
FY 2019 to FY 2020 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Minor change due to routine program adjustments.			
Title: 20) JBTDS: Program Support ***Description:*** Program Management Support and Test & Evaluation ***FY 2019 Plans:*** Continue sensor calibration, combat developer, test community and service representation support. Continued verification and validation of military utility model/CBACE. Continue developmental planning and testing to include MIL-STD phase II, interoperability test, shipboard ops test, chamber validation and accreditation, collector characterization tests, live agent test and operational assessment (OA). Continue production of Biological Warfare Agents (BWA) for live agent test, collector characterization test, and shelf-life assay test. Continue program management support including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Complete sensor calibration. Complete the verification and validation of military utility model/CBACE. Continue combat developer and test community support. Continue program management support including Government system engineering, program/financial management, costing, personnel support, travel and overhead. Complete production of BWA for testing. Complete live agent and collector characterization developmental testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments. Ramping down due to MS C in FY20	10.665	14.133	8.033
Title: 21) JHBI ***Description:*** JHBI system development, developmental testing, and operational assessment.	1.740	-	-
Title: 22) JNBCRS 1 (NBCRV SSU) ***Description:*** CBRN Sensor Development and Integration ***FY 2019 Plans:*** Continued CBRN sensor and integrated sensor suite prototype development, maturation, and procurement. Continued government strategic planning, systems engineering, logistics, training, test and evaluation, and technical support. Initiated NBCRV SSU acceleration effort with the bulk of integration product development occurring in FY20. ***FY 2020 Plans:***	22.387	18.230	24.587

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continued CBRN sensor and integrated sensor suite prototype development, maturation, and procurement. Continued government strategic planning, systems engineering, logistics, training, test and evaluation, technical support, and the bulk of integration product development for the acceleration of the program. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule.			
Title: 23) JNBCRS 1 (NBCRV SSU) ***Description:*** Program Management Support ***FY 2019 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	3.273	2.425	4.340
Title: 24) MMPRDS ***Description:*** The Mounted Manned Platform Radiological Detection System (MMPRDS) provides advanced platform-mounted radiological/nuclear (RN) crew monitoring/detection, reconnaissance, and surveillance for multiple manned and unmanned U.S. Army ground and rotary wing vehicles. The system, which can also be integrated into fixed site sensor payloads, provides both point (VIPER prototype) and standoff (MERLIN prototype) RN detection capabilities that replace AN/UDR-13 and AN/VDR-2 systems. Funding supports advanced development of MERLIN and VIPER prototypes for integration onto the Stryker NBCRV and medium-sized unmanned ground platforms. VIPER will also be integrated into the M1A2, Bradley, Black Hawk, and other major U.S. Army platforms (for point detection). ***FY 2019 Plans:*** Conduct Developmental Testing of delivered prototypes, modify to close performance gaps remaining following technology transition from Defense Threat Reduction Agency (DTRA). Conduct necessary cybersecurity activities per Risk Management Framework (RMF). ***FY 2020 Plans:***	-	2.500	10.140

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Execute developmental testing and begin operational testing on newly integrated systems received from OTA manufacturers to close test gaps remaining following technology transition, to support TEMP completion and to support a materiel release. Continue to evaluate and modify delivered prototypes to close performance gaps remaining following technology transition. Conduct necessary cybersecurity activities per Risk Management Framework (RMF). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 25) NTA Defense ***Description:*** NTA Defense program provides assessment, modification, and testing of detection, protection, and decontamination capabilities to protect the Joint Services against emerging threats, to include PBAs. Specific efforts include: purchase, test and assessment of COTS/GOTS equipment; test and assessment of prototype equipment for rapid fielding to the Joint Services; update detection equipment survey to include current devices and a web interface for information sharing; and integrate new equipment and techniques to provide improved sample collection and decontamination of PBAs. ***FY 2019 Plans:*** Update COTS detection equipment Market Survey for emerging technology, to include updates to web-based interface for interagency use. Purchase COTS equipment for lab testing against PBAs. Continuation of FY18 studies on the efficacy of protective equipment against various forms of PBAs. ***FY 2020 Plans:*** Update COTS detection market survey with new technologies and conduct user evaluation of web interface to provide improved customer usability. Purchase, test, and assess emerging COTS detection equipment and protective equipment materials against PBAs in many forms (solid/liquid/vapor/aerosol/dusty). Test prototype sampling device to allow users to safely handle and test chemical compounds in the field. Modify and test lightweight prototype detector that meets detection requirements while reducing burden on users. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	1.937	1.023	2.900
Title: 26) NTA Defense ***Description:*** Government Integrated Product Team program management and IPT Support to all JPEO programs and external partners ***FY 2019 Plans:***	0.385	0.177	0.794

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Initiate Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Initiate Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 27) ROSETTA ***Description:*** Contract Award for Development Effort ***FY 2019 Plans:*** Initiate award of OTA contract to fund vendors to develop and provide prototypes for testing and support technical data package development. ***FY 2020 Plans:*** Continue award of OTA to complete the development and testing of prototype effort. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase. ECP to existing M256A2 kit	-	1.979	4.064
Accomplishments/Planned Programs Subtotals	95.134	111.781	131.985

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• CA4: *CONTAMINATION AVOIDANCE (ACD&P)*	30.844	31.527	19.074	-	19.074	8.864	8.215	15.106	13.706	Continuing	Continuing
• JF0100: *JOINT CHEMICAL AGENT DETECTOR (JCAD)*	4.483	1.698	4.493	-	4.493	6.828	7.574	8.197	8.368	Continuing	Continuing
• MC0100: *JOINT NBC RECONNAISSANCE SYSTEM (JNBCRS)*	0.468	0.000	0.300	-	0.300	0.300	0.300	7.981	7.981	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• MC0101: *CBRN DISMOUNTED RECONNAISSANCE SYSTEMS (CBRN DRS)*	69.945	98.081	53.020	-	53.020	45.344	50.798	55.510	43.067	Continuing	Continuing
• MX0001: *JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)*	0.000	0.000	0.000	-	0.000	47.915	50.785	65.244	60.849	Continuing	Continuing

Remarks

D. Acquisition Strategy

NEXT GENERATION CHEMICAL DETECTOR (NGCD)

In FY19 NGCD program divides into separate three programs. Efforts will continue in FY19 under the separate programs, AVCAD, PCAD, MPCAD funding lines.

AEROSOL VAPOR CHEMICAL AGENT DETECTOR (AVCAD)

Aerosol & Vapor Chemical Agent Detector (AVCAD) awarded MS B Engineering and Manufacturing Development (EMD) contracts with production options. The AVCAD program will conduct risk reduction testing with prototypes prior to full EMD DT Testing to support the MSC/LRIP decision.

MULTI-PHASE CHEMICAL AGENT DETECTOR (MPCAD)

The Multi-Phase Chemical Agent Detector (MPCAD) (formerly NGCD 3) is using a streamlined acquisition strategy. The MPCAD EMD contract(s) are utilizing the Combating Weapons of Mass Destruction (CWMD) Other Transaction Authority (OTA) for EMD items. The MPCAD will procure production items through a follow-on CWMD OTA or Federal Acquisition Regulation based contract. The program will develop and validate the systems during EMD.

PROXIMATE CHEMICAL AGENT DETECTOR (PCAD)

The Proximate Chemical Agent Detector (PCAD) (formerly NGCD 2) supports the efforts associated with the PCAD Analysis of Alternatives (AoA). The AoA is reassessing the PCAD Capability requirements with each of the Joint Services and determining the state of technologies necessary to meet the users capability needs. It is believed that technology will need to transition back to S&T to further mature. In the interim the program office will support the JCAD SLA kit design finalization by continuing to fund the JCAD manufacturer, Smith's Detection Inc. to complete its addition of an NTA and opioid libraries, test and evaluate the system and to incorporate the JCAD SLA kit as an Additional Authorized List (AAL) item to the M4A1 JCAD program. The production decision is the approval of the Engineering Change Proposal (ECP) that adds the JCAD SLA as an AAL item to the M4A1 JCAD.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

ENHANCED MARITIME BIOLOGICAL DETECTION (EMBD)

The Enhanced Maritime Biological Detection (EMBD) program uses a streamlined acquisition strategy and acquired a Milestone B decision in June 2018. EMBD will replace/upgrade 135 Joint Biological Point Detection Systems (JBPDS) in the Navy and provide 40 systems for new construction ships. In July 2018 EMBD awarded a contract through Joint Enterprise Research, Development, Acquisition and Production/Procurement (JE-RDAP) contract for Engineering and Manufacturing Development (EMD) with options for Low Rate Initial Production (LRIP).

GLOBAL BIO TECH INITIATIVE (GBTI)

The Global Biosurveillance Technology Initiative (GBTI) strategy establishes a robust data stream that directly supports existing programs of record in their development of biological defense countermeasures through the characterization of laboratory networks and augmentation of key nodes within those networks. This will be accomplished through the use of a University of Affiliated Research Center (Johns Hopkins University) to characterize laboratory networks and develop decision-making tools for evaluating potential augmentation of key nodes prior to investment. The GBTI program is sun-setting. FY19 will be the last year of funding.

JOINT BIO TACTICAL DETECTION SYSTEM (JBTDS)

The Joint Biological Tactical Detection System (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). JBTDS is funding and participating in the Biological Point System Assessment (BPSA). BPSA provides an assessment of all biological detection, collection, and identification alternative technologies to assess system maturity, suitability and effectiveness to meet JBTDS requirements.

JOINT HANDHELD BIO-AGENT IDENTIFIER (JHBI)

The JHBI program will pursue a collaborative accelerated acquisition strategy to incrementally deliver capability to USSOCOM. JHBI will use commercial items to procure candidate systems from two vendors for further development and fielding. JHBI is co-managed and co-executed through an acquisition partnership between the Joint Program Executive Office for Chemical and Biological Defense (JPEO-CBD) and USSOCOM to expand the relationship between JPEO-CBD and USSOCOM and leverage acquisition and subject matter expertise on both sides to reduce acquisition timelines and improve customer satisfaction. Specifically, JHBI is using the USSOCOM requirement validation and test and evaluation resources from program inception through Milestone C, awarded 3Q18. Developmental Testing (DT) was completed in 2QFY18. Full Rate Production (FRP) will begin 4QFY18. The JHBI program acquired test-articles of a single commercial-off-the-shelf (COTS) platform with relevant assays for the JHBI Combat Evaluation (CV), which served as the decision gate for the completion of the Technology Maturation and Risk Reduction (TMRR) phase. To mitigate risk, additional technologies were identified and inserted into the JHBI program.

JOINT NBC RECONNAISSANCE SYSTEM - STRYKER (JNBCRS)

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Joint Nuclear Biological Chemical Radiological System (JNBCRS), includes the Stryker Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU). The acquisition strategy for the Stryker NBCRV SSU is to integrate mature sensors into the Stryker NBCRV to support Joint Warfighter Assessment 2019 and system level testing. Following the testing and demonstration, the hardware and software will be fixed and updated for Joint Warfighter Assessment 2020 and test. The Joint Warfighter Assessments will provide user feedback and operational data to support programmatic and technical decisions. An In Progress Review will be held after Joint Warfighter Assessment 2020 and system testing to approve a Modification Work Order for fielding. This schedule was accelerated from the previous schedule based on the maturity of the sensor and guidance from the Chief of Staff of the Army.

MOUNTED MANNED PLATFORM RADIOLOGICAL DETECTION SYSTEM (MMPRDS)

The Mounted Manned Platform Radiological Detection System (MMPRDS) is a Modified Work Order of the Stryker Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade's radiological sensor system. MMPRDS includes interior-mounted (VIPER) to detect and protect the crew and exterior-mounted (MERLIN) vehicle sensors to facilitate radiological reconnaissance. This is a rapid development of an enhanced radiological sensor system using rapid prototypes transitioned from Defense Threat Reduction Agency-Nuclear Technologies (DTRA/NT) in September 2018. The MMPRDS is utilizing the Combating Weapons of Mass Destruction (CWMD) Other Transaction Authority (OTA) for the production ready test assets. The MMPRDS will procure production items through a Federal Acquisition Regulation based contract.

NON TRADITIONAL AGENT DEFENSE (NTA DEFENSE)

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

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

ROSETTA will use a streamlined approach. This approach is based on technology that will transition from Science and Technology Efforts and industry. It will be developed using the Countering Weapons of Mass Destruction (CWMD) OTA to award multiple development contracts. The M256A3 Production Contract will use Army Working Capital Funds (AWCF) to purchase the new kits. The ROSETTA funding will complete the development and testing of the new ROSETTA ticket as well as update the currently fielded M256A2 technical data package via an engineering change proposal (ECP) to create a new M256A3 kit that will be available to all Services.The M256A3 kit will replace the M256A2 kit by attrition.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - HW C - HW S - NGCD 3	C/CPIF	Signature Science : Austin, TX	0.000	4.500	Sep 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW C - HW-NGCD1	C/CPIF	Smiths Detection : Edgewood, MD	0.000	3.839	Sep 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - Prototype Build JCAD-CED	C/CPIF	Smiths Detection : Edgewood, MD	8.297	2.169	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 1	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	0.000	2.366	Sep 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - HW S - NGCD 3	C/CPIF	FLIR Systems Inc. : West Lafayette, IN	0.000	4.500	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - HW C - In-house labor and contract support	MIPR	Various : Various	0.000	0.000		1.592	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - HW S - Aerosol & Vapor Chemical Agent Detector EMD Contract	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	0.000	0.000		1.059	Jan 2019	6.901	Oct 2019	-		6.901	Continuing	Continuing	0.000
AVCAD - HW S - Aerosol & Vapor Chemical Agent Detector EMD Contract #2	C/CPIF	Smiths Detection : Edgewood, MD	0.000	0.000		3.172	Jan 2019	6.901	Oct 2019	-		6.901	Continuing	Continuing	0.000
MPCAD - HW S - EMD Contract - Sig Sci	C/CPFF	Signature Science : Austin, TX	0.000	0.000		11.959	Mar 2019	5.994	Mar 2020	-		5.994	Continuing	Continuing	0.000
MPCAD - PM/MS S - Inhouse Labor and Contract Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		1.418	Nov 2018	3.041	Jan 2020	-		3.041	Continuing	Continuing	0.000
MPCAD - HW S - EMD Contract - FLIR	C/CPFF	FLIR Systems Inc. : West Lafayette, IN	0.000	0.000		4.731	Mar 2019	8.442	Mar 2020	-		8.442	Continuing	Continuing	0.000
PCAD - HW C - PM/MS S - Inhouse Labor and Contract Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO,	0.000	0.000		1.081	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
PCAD - HW S - JCAD SLA Kit finalization	SS/CPIF	Smiths Detection : Edgewood, MD	0.000	0.000		4.250	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
EMBD - Product Development Support	MIPR	Various : Various	0.000	1.680	Jan 2018	1.181	Feb 2019	1.152	Mar 2020	-		1.152	Continuing	Continuing	0.000
EMBD - Product Contractor development team	C/FFP	Patricio Enterprises : Inc., Woodbridge, VA	0.000	0.081	Feb 2018	0.128	Feb 2019	0.130	Feb 2020	-		0.130	Continuing	Continuing	0.000
EMBD - Prototype Development	SS/FFP	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.600	1.180	Jul 2018	1.290	Feb 2019	1.000	Feb 2020	-		1.000	Continuing	Continuing	0.000
EMBD - HW - Prototype Development and Manufacturing	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	0.000	5.557	Jul 2018	7.840	Feb 2019	3.665	Feb 2020	-		3.665	Continuing	Continuing	0.000
EMBD - Hardware Development and Integration	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.750	0.576	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - HW - EMD Contract Award	C/CPIF	Chemring Detection Systems : Inc., Charlotte, NC	23.688	5.051	Dec 2017	2.000	Jan 2019	1.850	Nov 2019	-		1.850	Continuing	Continuing	0.000
JBTDS - Product Cotractor Support Team	C/FFP	Patricio Enterprises : Inc., Woodbridge, VA	0.964	0.234	Feb 2018	0.278	Feb 2019	0.280	Feb 2020	-		0.280	Continuing	Continuing	0.000
JBTDS - Product Contractor Cost Support Team	C/FFP	Tecolote Research Inc : Arlington, VA	0.463	0.153	Feb 2018	0.155	Feb 2019	0.157	Jan 2020	-		0.157	Continuing	Continuing	0.000
JBTDS - Product Development Support - Labor, Travel, & GPC	MIPR	Various : Various	16.812	2.318	Jan 2018	3.751	Nov 2018	4.032	Nov 2019	-		4.032	Continuing	Continuing	0.000
JHBI - JHBI - Product Development	SS/FFP	Biomeme : Philadelphia, PA	0.000	1.110	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW C - AGENTASE LLC (FLIR),	C/CPFF	AGENTASE : LLC, Elkridge, MD	0.000	1.978	Nov 2017	1.700	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Elkridge MD - CSD Contract															
JNBCRS 1 - HW C - L-3 Communications - CSD Contract	C/CPFF	L-3 Communications : Santa Rosa, CA	0.000	1.959	Nov 2017	1.850	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - SW C Software Integration	C/CPFF	TBD : TBD	0.000	0.000		0.958	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW C - Hamilton Sundstrand (UTAS) - CSD Contract	C/CPFF	Hamilton Sundstrand Corp. : Pomona, CA	0.000	1.058	Feb 2018	0.295	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW C - iMCAD	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	1.752	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW-Sensor Suite Development	C/CPIF	Various : Various	0.000	6.282	Nov 2017	5.354	Feb 2019	12.075	Nov 2019	-		12.075	Continuing	Continuing	0.000
JNBCRS 1 - HW C - Platform	C/FFP	General Dynamics Land Systems : Detroit, MI	0.000	0.800	Jul 2018	0.400	May 2019	0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW C - ECBC (Matrix) - Reimbursable Labor	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	1.592	Jan 2018	1.855	Nov 2018	2.292	Nov 2019	-		2.292	Continuing	Continuing	0.000
JNBCRS 1 - HW C - JHU-APL (NAVSEA) (LIDAR)	C/FFP	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	1.000	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - HW C - VIPER / MERLIN	C/CPFF	Advanced Technologies International : Summerville, SC	0.000	2.570	Nov 2017	3.155	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
MMPRDS - HW C - MMPRDS - Product Refinement	C/CPFF	TBD : TBD	0.000	0.000		2.186	Dec 2018	5.200	Dec 2019	-		5.200	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NTA DEFENSE - HW S - Capabilities Assessments	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.301	Mar 2018	0.101	Dec 2018	0.300	Dec 2019	-		0.300	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Capabilities Assessments #2	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		0.400	Jan 2020	-		0.400	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Capabilities Assessment	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.047	Jun 2018	0.100	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - HW S - System Protoype and Modification	C/CPFF	Various : Various	0.000	0.000		0.050	Apr 2019	1.500	Dec 2019	-		1.500	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Government SE & Technical Management Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.097	Nov 2017	0.000		0.240	Dec 2019	-		0.240	Continuing	Continuing	0.000
NTA DEFENSE - HW S - Fielded Equipment Characterization	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.763	0.455	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
ROSETTA - Technical Data Package	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.400	Apr 2020	-		0.400	Continuing	Continuing	0.000
ROSETTA - Technical Manuals	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.400	Apr 2020	-		0.400	Continuing	Continuing	0.000
ROSETTA - HW C-Contract Award	C/FFP	TBD : TBD	0.000	0.000		1.357	Jul 2019	0.400	Jul 2020	-		0.400	Continuing	Continuing	0.000
		Subtotal	53.337	55.205		65.246		66.752		-		66.752	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - ES S - Joint Service T&E/SE IPT	MIPR	Various : Various	2.477	0.818	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - Non-test OGA support	MIPR	Various : Various	0.000	0.000		0.000		4.027	Nov 2019	-		4.027	Continuing	Continuing	0.000
PCAD - ES C - PM/MS S - OGA Support PCAD - Test Planning	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.000		0.150	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
EMBD - ES - OTA/OGA USN Variant Support	MIPR	Various : Various	0.000	0.000		0.175	Feb 2019	0.025	Mar 2020	-		0.025	Continuing	Continuing	0.000
EMBD - ES S - Software support	MIPR	Armament Research : Development and Engineering Center, Piccatinny, NJ	0.000	0.093	Feb 2018	0.075	Feb 2019	0.075	Feb 2020	-		0.075	Continuing	Continuing	0.000
EMBD - ES S - Test Planning Support	MIPR	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.000	0.208	Feb 2018	0.200	Feb 2019	0.200	Feb 2020	-		0.200	Continuing	Continuing	0.000
EMBD - ILS S - Logistics Support	MIPR	TACOM : Warren, MI	0.000	0.000		0.100	Feb 2019	0.100	Feb 2020	-		0.100	Continuing	Continuing	0.000
EMBD - ES C - Navy Service Support	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.859	Feb 2018	0.600	Feb 2019	0.606	Feb 2020	-		0.606	Continuing	Continuing	0.000
EMBD - ES S - Test Planning Support #2	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.100	Feb 2019	0.100	Feb 2020	-		0.100	Continuing	Continuing	0.000
JBTDS - ES - ECBC - DPG	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.450	Jan 2019	0.750	Nov 2019	-		0.750	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - ES - Engineering Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	2.139	0.286	Dec 2017	0.565	Jan 2019	0.170	Nov 2019	-		0.170	Continuing	Continuing	0.000
JBTDS - ES - Reliability Growth Model/CBACE	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.043	0.270	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - ES - Biosensor Calibration Effort	MIPR	Naval Research Lab (NRL) : Washington, DC	2.463	0.159	Mar 2018	0.318	Jan 2019	0.150	Nov 2019	-		0.150	Continuing	Continuing	0.000
JBTDS - ES - OTA/OGA Service Representation	MIPR	Various : Various	6.690	2.348	Mar 2018	2.549	Jan 2019	2.735	Nov 2019	-		2.735	Continuing	Continuing	0.000
JHBI - ES S - Technical Support	Various	Various : Various	0.000	0.256	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - ES - Engineering Support	MIPR	Various : Various	0.000	2.222	Nov 2017	0.000		2.750	Nov 2019	-		2.750	Continuing	Continuing	0.000
NTA DEFENSE - ES S - Capabilities Assessment	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.033	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	13.812	7.552		5.282		11.688		-		11.688	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - JCAD CED - Customer Testing	MIPR	Various : Various	0.000	0.565	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NGCD - Customer Testing	MIPR	Various : Various	0.000	0.750	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - DTE C - V&V efforts	MIPR	Various : Various	0.000	0.000		0.675	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - DTE C - Risk Reduction Chamber Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.950	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - DTE C - OGA Test Support	MIPR	Various : Various	0.000	0.000		0.190	Dec 2018	0.600	Nov 2020	-		0.600	Continuing	Continuing	0.000
AVCAD - DTE C - Accreditation & Chemicals	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.200	Mar 2019	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - DTE C - Radio RFI and test	MIPR	Various : Various	0.000	0.000		0.692	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - DTE C - DT/OT Chemical Chamber, MIL-STD-810G, Stryker OTM, Physical Characteristics	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.000		1.118	Feb 2020	-		1.118	Continuing	Continuing	0.000
AVCAD - DTE C - DT/ OT Cyber Security Vulnerability	MIPR	Armament Research : Development and Engineering Center, Piccatinny, NJ	0.000	0.000		0.100	Apr 2019	0.400	May 2020	-		0.400	Continuing	Continuing	0.000
AVCAD - DTE C - DT False (Positive) Alarm, Interoperability, Platform Integration	MIPR	Various : Various	0.000	0.000		0.000		0.790	Dec 2019	-		0.790	Continuing	Continuing	0.000
AVCAD - DTE C - DT Coastal Operational Service Life	MIPR	Naval Research Laboratory : Key West, FL	0.000	0.000		0.000		0.210	Apr 2020	-		0.210	Continuing	Continuing	0.000
AVCAD - DTE C - DT Explosive Atmosphere Test	MIPR	Electronic Proving Ground : Fort Huachuca, AZ	0.000	0.000		0.000		0.053	Feb 2020	-		0.053	Continuing	Continuing	0.000
AVCAD - DTE C - DT Rotary Wing Compatibility Test	MIPR	Naval Air Warfare Center (Aircraft Division) : Patuxent River, MD	0.000	0.000		0.000		0.053	Jan 2020	-		0.053	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AVCAD - DTE C - DT Shipboard Operation Verification	MIPR	Potomac Test Range : Potomac Mills, VA	0.000	0.000		0.000		0.315	Feb 2020	-		0.315	Continuing	Continuing	0.000
AVCAD - DTE C - DT MIL-STD 901D - Ship Shock; MIL-STD 167-1 Vibration	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.053	Feb 2020	-		0.053	Continuing	Continuing	0.000
AVCAD - DTE C - DT Battlefield Contaminant/ Maintenance Demo	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.183	Feb 2020	-		0.183	Continuing	Continuing	0.000
AVCAD - DTE C - DT Electromagnetic Survivability	MIPR	White Sand Missile Range : Mesa, AZ	0.000	0.000		0.000		0.180	Feb 2020	-		0.180	Continuing	Continuing	0.000
AVCAD - DTE C - DT Fixed Wing Compatibility	MIPR	Edwards Air Force Base : Lancaster, CA	0.000	0.000		0.000		0.025	Feb 2020	-		0.025	Continuing	Continuing	0.000
MPCAD - DTE C - Various	MIPR	Various : Various	0.000	0.000		0.000		0.797	Feb 2020	-		0.797	Continuing	Continuing	0.000
MPCAD - DTE - DT Library Build and System Verification	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		4.289	Jan 2019	9.219	Feb 2020	-		9.219	Continuing	Continuing	0.000
MPCAD - DTE C - DT Interoperability	MIPR	Eglin AFB : Eglin Air Force Base, FL	0.000	0.000		0.000		0.400	Jan 2020	-		0.400	Continuing	Continuing	0.000
MPCAD - DTE C - DT Cyber Security Vulnerability	MIPR	Joint Interoperability Test Command (JITC) : Fort Huachuca, AZ	0.000	0.000		0.000		0.100	Feb 2020	-		0.100	Continuing	Continuing	0.000
MPCAD - DTE C - DT Explosive Atmosphere	MIPR	Electronic Proving Ground : Fort Huachuca, AZ	0.000	0.000		0.000		0.050	Feb 2020	-		0.050	Continuing	Continuing	0.000
MPCAD - DTE C - DT False (Positive) Alarm, DT Logistics Demonstration	MIPR	TBD : TBD	0.000	0.000		0.000		0.300	Feb 2020	-		0.300	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MPCAD - DTE C - DT Natural Desert Environmental Storage	MIPR	Yuma Proving Ground : Yuma, AZ	0.000	0.000		0.000		0.100	Mar 2020	-		0.100	Continuing	Continuing	0.000
MPCAD - DTE C - DT Electromagnetic Survivability	MIPR	White Sand Missile Range : Mesa, AZ	0.000	0.000		0.000		0.400	Jan 2020	-		0.400	Continuing	Continuing	0.000
MPCAD - DTE C - OT Limited Users Test	MIPR	Operational Test Command (OTC) : Ft. Hood, TX	0.000	0.000		0.000		1.800	Jun 2020	-		1.800	Continuing	Continuing	0.000
PCAD - DTE C - PQT DT Customer Chamber Test	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		1.775	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
EMBD - DTE C - Referee equipment procurement	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.280	Dec 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EMBD - DTE S - DT/OT Live Agent Aerosol Testing	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.000		1.000	Feb 2020	-		1.000	Continuing	Continuing	0.000
EMBD - DTE S - DT LOG DEMO	MIPR	20th Support Command : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.050	Feb 2020	-		0.050	Continuing	Continuing	0.000
EMBD - DTE C - DT/OT - OA/CVPA/RAM	MIPR	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.000	0.000		0.000		0.720	Feb 2020	-		0.720	Continuing	Continuing	0.000
EMBD - OTE S - Operational Test & Evaluation & Adverserial Assessment	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.000		0.000		0.750	Feb 2020	-		0.750	Continuing	Continuing	0.000
EMBD - OTE S - DT - MIL-STD	MIPR	Aberdeen Test Center (ATC) :	0.000	0.000		0.000		0.250	Feb 2020	-		0.250	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
EMBD - DTE - Live Agent Testing	C/CPFF	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.323	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
EMBD - DTE - Consumable Procurement	MIPR	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.163	0.000		0.400	Jan 2019	0.600	Dec 2019	-		0.600	Continuing	Continuing	0.000
EMBD - DTE - DT Testing - False Alarm	MIPR	Various : Various	0.000	0.000		0.250	Feb 2019	0.350	Feb 2020	-		0.350	Continuing	Continuing	0.000
GBTI - Test and Evaluation of Technology Refresh Candidates	MIPR	Various : Various	0.059	1.284	Dec 2017	0.000	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE - Developmental Testing	MIPR	Various : Various	3.131	2.040	Mar 2018	2.263	Jan 2019	0.675	Nov 2019	-		0.675	Continuing	Continuing	0.000
JBTDS - DTE - GSA WIBS Purchase	C/FFP	General Services Administration : Boston, MA	0.000	0.914	Aug 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE - JHU-APL Special Projects	C/FFP	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.380	Apr 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE - ARCA Chamber and Record Test Support	C/FFP	Battelle Memorial Institute : Columbus, OH	0.000	0.000		1.929	Nov 2019	0.850	Nov 2019	-		0.850	Continuing	Continuing	0.000
JBTDS - DTE - V&V of JBTDS Military Utility Model	FFRDC	Institute for Defense Analysis (IDA) : Alexandria, VA	0.000	0.000		0.000		0.125	Nov 2019	-		0.125	Continuing	Continuing	0.000
JBTDS - DTE - Operational Assessment	MIPR	Various : Various	0.000	0.000		1.100	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - DTE - BPSA Test and Support	MIPR	Various : Various	0.000	2.642	Feb 2018	3.172	May 2019	0.000		-		0.000	Continuing	Continuing	0.000
JBTDS - DTE - BPSA and Other Test Events	C/FFP	Battelle Memorial Institute : Columbus, OH	0.000	3.066	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JHBI - OTHT S - JHBI Test and Evaluation	MIPR	Army Materiel Systems Analysis Activity : Aberdeen Proving Ground, MD	0.000	0.012	Apr 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JHBI - DTE S - Test and Evaluation Support	MIPR	Johns Hopkins University - Applied Physics Lab : Laurel, MD	0.000	0.203	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - DTE - Test and Evaluation	MIPR	Various : Various	0.000	1.174	Nov 2017	2.663	Nov 2018	7.470	Nov 2019	-		7.470	Continuing	Continuing	0.000
MMPRDS - DTE S - MMPRDS - Production Qualification Test	MIPR	White Sand Missile Range : Mesa, AZ	0.000	0.000		0.000	Apr 2019	2.359		-		2.359	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Capabilities Assessment	C/CPFF	MA Institute of Tech - Lincoln Labs (MIT-LL) : Lexington, MA	0.000	0.536	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Capability Assessments	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.602	Mar 2018	0.669	Dec 2018	0.700	Dec 2019	-		0.700	Continuing	Continuing	0.000
NTA DEFENSE - DTE S - Analysis and Evaluation	C/CPFF	Defense Logistics Agency : Philadelphia, PA	0.919	0.000		0.103	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
ROSETTA - DTE C - Development Testing	MIPR	Various : Various	0.000	0.000		0.387	Dec 2018	2.300	Oct 2019	-		2.300	Continuing	Continuing	0.000
		Subtotal	4.272	14.771		21.807		35.345		-		35.345	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGCD - PM/MS C - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	9.968	6.086	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AVCAD - PM/MS C - Management Support	MIPR	Various : Various	0.000	0.000		2.065	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
MPCAD - PM/MS S - JPEO CBRN and JPM NBC CA Management Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		3.195	Nov 2018	5.189	Dec 2019	-		5.189	Continuing	Continuing	0.000
PCAD - PM/MS S - PCAD	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		1.293	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
EMBD - JPEO Program Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.878	Feb 2018	1.892	Feb 2019	1.659	Feb 2020	-		1.659	Continuing	Continuing	0.000
EMBD - JPM CA Program Support and Core Labor	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	2.200	0.400	Dec 2017	0.783	Oct 2018	0.735	Nov 2019	-		0.735	Continuing	Continuing	0.000
GBTI - PM/MS C - Program Management Support	Allot	JPM Guardian : Aberdeen Proving Ground, MD	0.970	0.885	Jan 2018	2.108	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
GBTI - PM/MS S - Network Analysis and Characterization	MIPR	Various : Various	0.216	1.406	Jun 2018	0.000	Jun 2019	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBTDS - JPEO Program Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	10.466	3.751	Nov 2017	3.639	Nov 2018	1.808	Nov 2019	-		1.808	Continuing	Continuing	0.000
JBTDS - JPM CA Program Support & Core Labor	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	2.809	0.517	Aug 2018	1.320	Jan 2019	0.770	Jan 2020	-		0.770	Continuing	Continuing	0.000
JHBI - PM/MS S - Program Management Support	Various	Various : Various	0.000	0.159	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JNBCRS 1 - PM - Program Management and System Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	3.273	Nov 2017	2.425	Nov 2018	4.340	Nov 2019	-		4.340	Continuing	Continuing	0.000
MMPRDS - PM/MS C - MMPRDS Program Management Matrix	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.314	Nov 2018	1.060	Nov 2019	-		1.060	Continuing	Continuing	0.000
MMPRDS - PM/MS C - MMPRDS Program Management Support	MIPR	JPM Guardian : Aberdeen Proving Ground, MD	0.000	0.000		0.000	Nov 2018	1.521	Nov 2019	-		1.521	Continuing	Continuing	0.000
NTA DEFENSE - PM/MS S - IPT Support/Program Management	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	6.012	0.251	Dec 2017	0.177	Dec 2018	0.554	Dec 2019	-		0.554	Continuing	Continuing	0.000
ROSETTA - PM/MS C - Program Management and Systems Engineering Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO,	0.000	0.000		0.235	Dec 2018	0.564	Oct 2019	-		0.564	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Aberdeen Proving Ground, MD													
		Subtotal	32.641	17.606		19.446		18.200		-		18.200	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	104.062	95.134		111.781		131.985		-		131.985	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

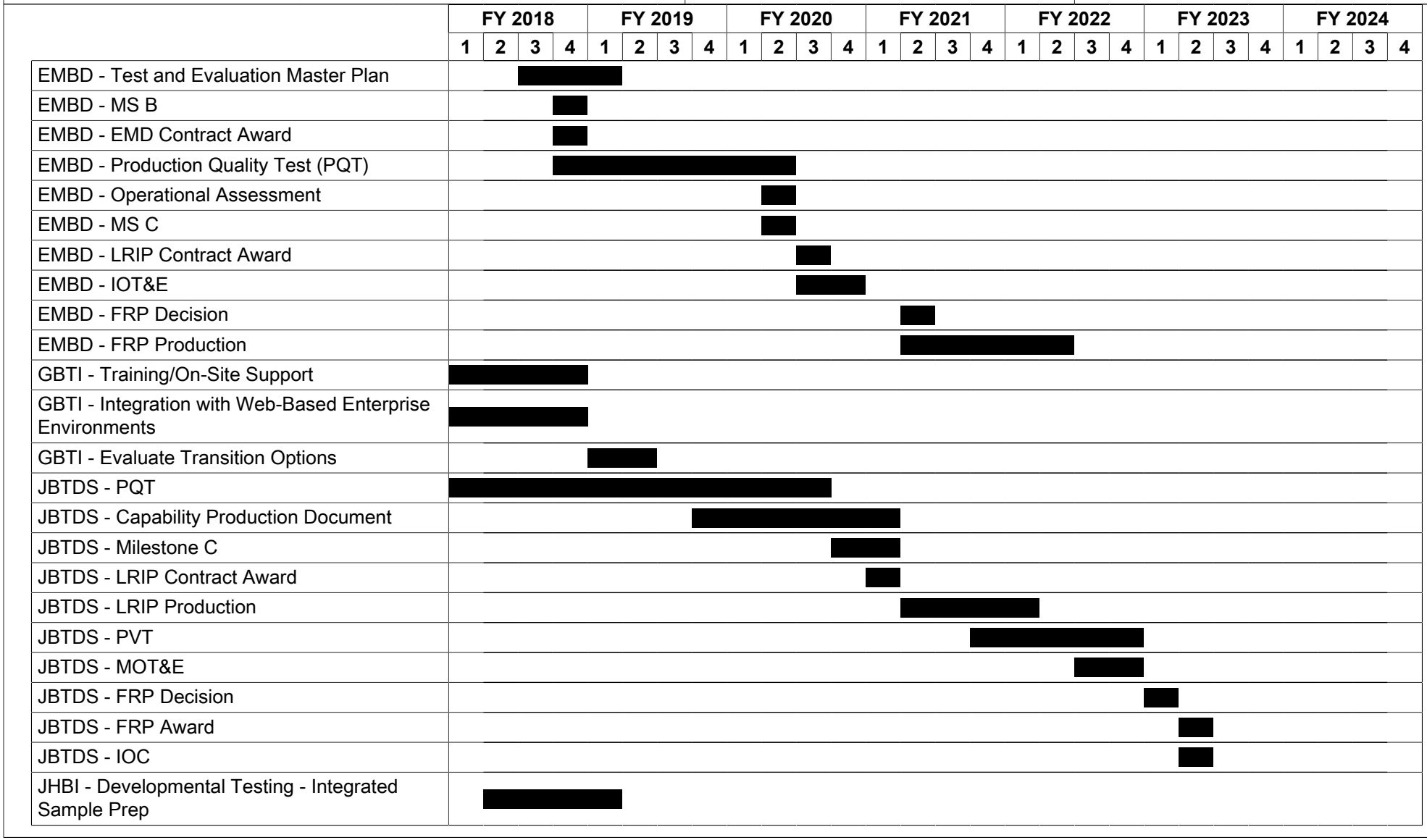

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

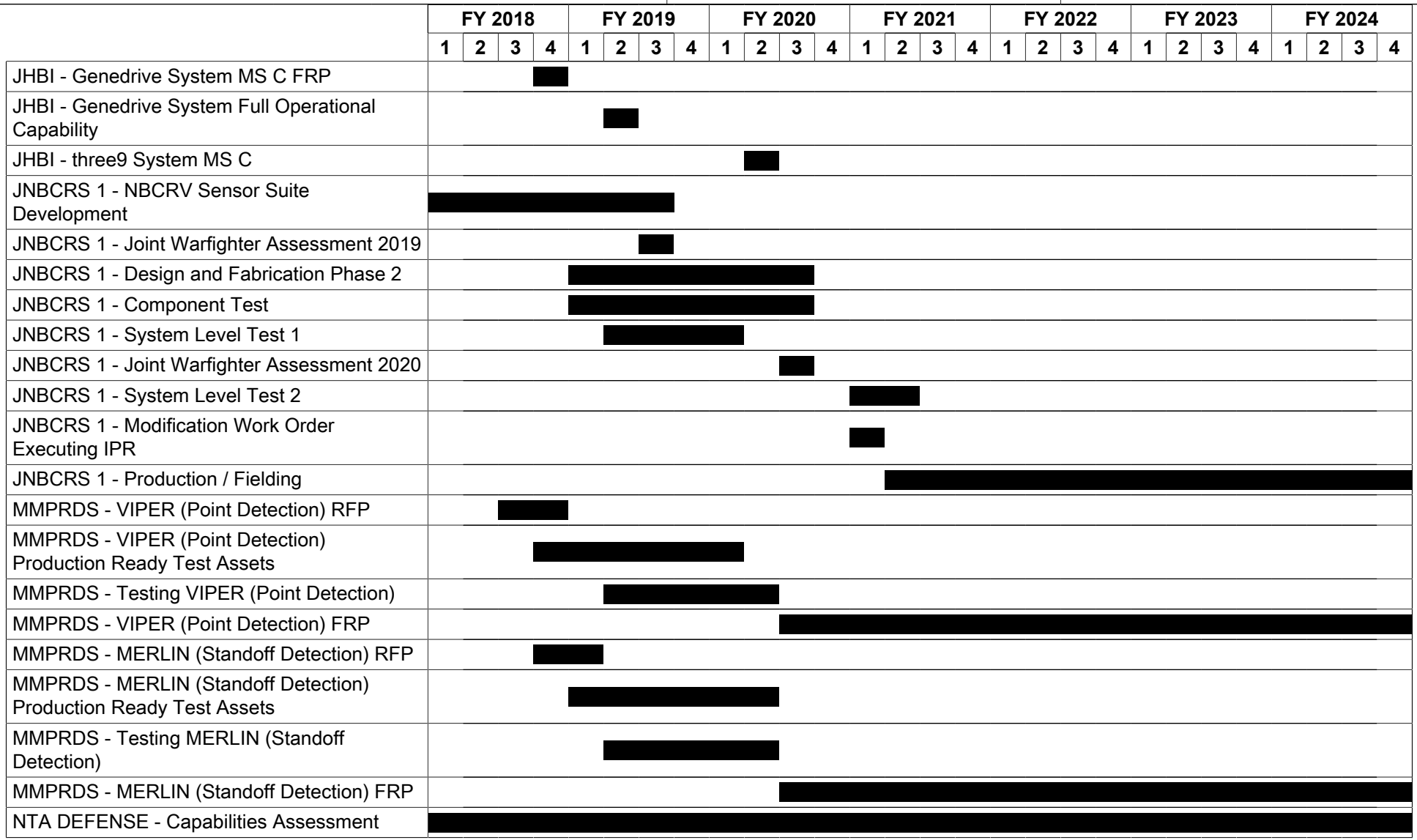

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

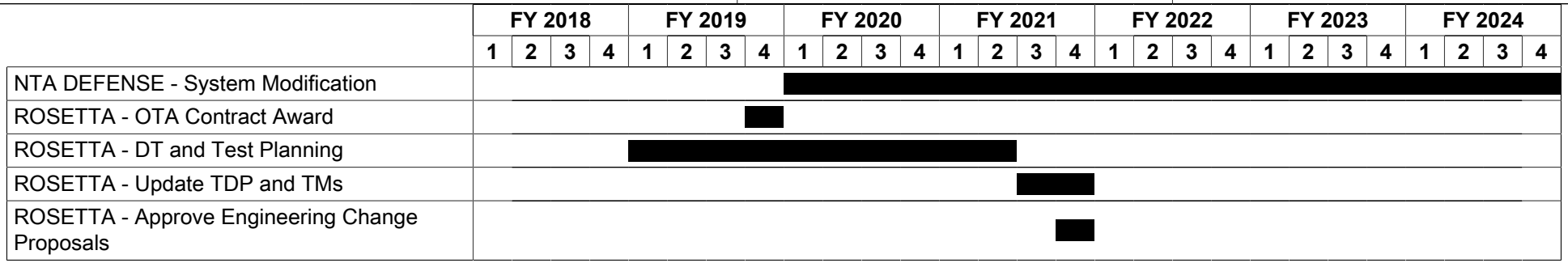

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NGCD - Acceleration	1	2018	4	2018
NGCD - AVCAD - Milestone B	2	2018	2	2018
NGCD - AVCAD - EMD Contract	4	2018	3	2020
NGCD - AVCAD - Milestone C	2	2020	2	2020
NGCD - AVCAD - LRIP	3	2020	3	2021
NGCD - AVCAD - FRP Decision	4	2021	4	2021
NGCD - MPCAD - Milestone B	4	2018	4	2018
NGCD - MPCAD - EMD Contract	3	2018	1	2021
NGCD - MPCAD - Milestone C	2	2021	2	2021
NGCD - MPCAD - LRIP	3	2021	3	2023
NGCD - MPCAD - FRP	4	2023	4	2024
AVCAD - MS B (NGCD 1)	2	2018	2	2018
AVCAD - EMD Contract (NGCD 1)	4	2018	4	2021
AVCAD - MS C	4	2021	4	2021
AVCAD - LRIP	4	2021	1	2023
AVCAD - FRP Decision	1	2023	1	2023
MPCAD - MS B (NGCD 3)	4	2018	4	2018
MPCAD - EMD Contract (NGCD 3)	4	2018	3	2021
MPCAD - MS C	3	2021	3	2021
MPCAD - LRIP	4	2021	3	2023
MPCAD - FRP	4	2023	4	2024
PCAD - JCAD SLA Kit decision	1	2021	1	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
EMBD - TEMP	1	2018	1	2019
EMBD - CPD	2	2018	1	2019
EMBD - Test and Evaluation Master Plan	3	2018	1	2019
EMBD - MS B	4	2018	4	2018
EMBD - EMD Contract Award	4	2018	4	2018
EMBD - Production Quality Test (PQT)	4	2018	2	2020
EMBD - Operational Assessment	2	2020	2	2020
EMBD - MS C	2	2020	2	2020
EMBD - LRIP Contract Award	3	2020	3	2020
EMBD - IOT&E	3	2020	4	2020
EMBD - FRP Decision	2	2021	2	2021
EMBD - FRP Production	2	2021	2	2022
GBTI - Training/On-Site Support	1	2018	4	2018
GBTI - Integration with Web-Based Enterprise Environments	1	2018	4	2018
GBTI - Evaluate Transition Options	1	2019	2	2019
JBTDS - PQT	1	2018	3	2020
JBTDS - Capability Production Document	4	2019	1	2021
JBTDS - Milestone C	4	2020	1	2021
JBTDS - LRIP Contract Award	1	2021	1	2021
JBTDS - LRIP Production	2	2021	1	2022
JBTDS - PVT	4	2021	4	2022
JBTDS - MOT&E	3	2022	4	2022
JBTDS - FRP Decision	1	2023	1	2023
JBTDS - FRP Award	2	2023	2	2023
JBTDS - IOC	2	2023	2	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JHBI - Developmental Testing - Integrated Sample Prep	2	2018	1	2019
JHBI - Genedrive System MS C FRP	4	2018	4	2018
JHBI - Genedrive System Full Operational Capability	2	2019	2	2019
JHBI - three9 System MS C	2	2020	2	2020
JNBCRS 1 - NBCRV Sensor Suite Development	1	2018	3	2019
JNBCRS 1 - Joint Warfighter Assessment 2019	3	2019	3	2019
JNBCRS 1 - Design and Fabrication Phase 2	1	2019	3	2020
JNBCRS 1 - Component Test	1	2019	3	2020
JNBCRS 1 - System Level Test 1	2	2019	1	2020
JNBCRS 1 - Joint Warfighter Assessment 2020	3	2020	3	2020
JNBCRS 1 - System Level Test 2	1	2021	2	2021
JNBCRS 1 - Modification Work Order Executing IPR	1	2021	1	2021
JNBCRS 1 - Production / Fielding	2	2021	4	2024
MMPRDS - VIPER (Point Detection) RFP	3	2018	4	2018
MMPRDS - VIPER (Point Detection) Production Ready Test Assets	4	2018	1	2020
MMPRDS - Testing VIPER (Point Detection)	2	2019	2	2020
MMPRDS - VIPER (Point Detection) FRP	3	2020	4	2024
MMPRDS - MERLIN (Standoff Detection) RFP	4	2018	1	2019
MMPRDS - MERLIN (Standoff Detection) Production Ready Test Assets	1	2019	2	2020
MMPRDS - Testing MERLIN (Standoff Detection)	2	2019	2	2020
MMPRDS - MERLIN (Standoff Detection) FRP	3	2020	4	2024
NTA DEFENSE - Capabilities Assessment	1	2018	4	2024
NTA DEFENSE - System Modification	1	2020	4	2024
ROSETTA - OTA Contract Award	4	2019	4	2019
ROSETTA - DT and Test Planning	1	2019	2	2021

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CA5 / *CONTAMINATION AVOIDANCE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ROSETTA - Update TDP and TMs	3	2021	4	2021
ROSETTA - Approve Engineering Change Proposals	4	2021	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CM5 / *HOMELAND DEFENSE (EMD)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
CM5: *HOMELAND DEFENSE (EMD)*	-	15.513	6.000	12.646	-	12.646	0.000	0.000	0.000	0.000	0.000	34.159
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development of common analytical laboratory system capabilities to conduct on-site analysis of any unknown sample and test potential life-threatening substances.

The effort included in this project is:
(1) Common Analytical Laboratory System capability (CALS)

The CALS will provide common analytical capabilities packaged to meet the specific CONOPS and mission of the gaining unit to detect and identify Chemical Warfare Agents (CWAs), Toxic Industrial Chemicals (TICs), Toxic Industrial Materials (TIMs) and Biological Warfare Agents (BWAs). Users of the system will include the National Guard Bureau, the Army 20th Support Command, the Army Medical Laboratory, the Air Force, and the Navy. There will be two variants of CALS, the Theater Validation Integrated System (TV-IS) and the Field Confirmatory Analytical Capability Sets (FC-ACS). The TV-IS is currently in the EMD phase, with proto-types built and testing that begins in February 2019 and concludes in FY2020.

Theater Validation Integrated System (TV-IS) Variant - Army User - A lab with a high level of confidence in analytical results through the use of orthogonal (complimentary) technologies and an expanded analytical suite that employs multiple standardized ISO containers, which will be integrated onto one Family of Medium Tactical Vehicles (FMTV) and two trailers.

Field Confirmatory Analytical Capability Sets (FC-ACS) Variant - Army, Navy, Air Force and NGB User - A transportable equipment subset that allows them to be loaded into transport cases and palletized if required. FC-ACS is post Milestone C and is not a RDTE funded part of CALS, it is in the production phase.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) CALS	15.513	6.000	12.646
Description: Theater Validation Integrated System (TV-IS) Variant - Army User - A lab with a high level of confidence in analytical results through the use of orthogonal (complimentary) technologies and an expanded analytical suite that employs multiple standardized ISO containers, which will be integrated onto one Family of Medium Tactical Vehicles (FMTV) and two trailers.			
FY 2019 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue engineering changes and refurbishment of variant prototypes ensuring integration and connectivity between modules. Completed System Level Testing and engineering changes / refurbishment of variant prototypes ensuring integration and connectivity between modules. Continue the pursuit of safety release for TV IS in preparation for Logistics Demonstration. ***FY 2020 Plans:*** Complete Logistics and User Demonstrations, Quantification, Humidity and Decontamination developmental tests to include other government agency support and oversight for the theater validation variant. Continue the pursuit of safety release for TV IS in preparation for Logistics Demonstration. Develop NGDS food and water assay panel associated with Bio Detection capability to include sample processing protocols. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Accomplishments/Planned Programs Subtotals	15.513	6.000	12.646

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• JS0005: *COMMON ANALYTICAL LABORATORY SYSTEM (CALS)*	13.964	48.317	4.293	-	4.293	56.581	69.741	69.481	69.475	Continuing	Continuing

Remarks

D. Acquisition Strategy

COMMON ANALYTICAL LABORATORY SYSTEM (CALS)

The Common Analytical Laboratory System (CALS) will be developed leveraging both Commercial Off the Shelf (COTS) and Government Off the Shelf (GOTS) analytical components to support the identification of Chemical, Biological, Radiological and Non-traditional agent materials in environmental samples technology. CALS will consist of (2) variants which will be fielded, in accordance with mission need, to components of the Air Force, Army, Marines, Navy and National Guard Bureau requiring CBRN field confirmatory analytical detection capability. A theatre validation variant will be designed and built for a longer duration mission and for semi-permanent applications. An analytical capability suite variant will be designed for shorter duration field confirmatory missions.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - HW S Prototype System Manufacturing	C/CPIF	Battelle Memorial Institute : Columbus, OH	29.472	4.079	Dec 2017	2.568	Nov 2018	0.000		-		0.000	0.000	36.119	0.000
CALS - HW S - NGDS Tactical Variant Alpha Prototype	C/CPFF	BioFire Dx : Salt Lake City, UT	1.501	0.354	Mar 2018	0.000		2.083	Nov 2019	-		2.083	0.000	3.938	0.000
		Subtotal	30.973	4.433		2.568		2.083		-		2.083	0.000	40.057	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - ES S - Engineering Support System	C/FFP	Various : Various	9.921	3.308	Feb 2018	0.000		1.822	Feb 2020	-		1.822	0.000	15.051	0.000
CALS - ES C - Other Government Agencies Services	MIPR	Various : Various	0.000	0.946	Jan 2018	0.237	Jan 2019	1.347	Jan 2020	-		1.347	0.000	2.530	0.000
CALS - ES S - System Integration Laboratory Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.336	0.642	Jan 2018	0.000		0.000		-		0.000	0.000	1.978	0.000
CALS - TD/D S - Safety Internal Review Board	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.182	0.100	Mar 2018	0.100	Mar 2019	0.100	Mar 2020	-		0.100	0.000	0.482	0.000
		Subtotal	11.439	4.996		0.337		3.269		-		3.269	0.000	20.041	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - DTE S - DT/OT and LOGDEMO	C/CPIF	Battelle Memorial Institute : Columbus, OH	0.000	1.267	Jan 2018	0.000		0.000		-		0.000	0.000	1.267	0.000
CALS - DTE C - Other Government Agencies (Test Support)	MIPR	Various : Various	0.000	0.000		0.000		2.361	Jan 2020	-		2.361	0.000	2.361	0.000
CALS - DTE C - BMI Test Support	C/CPIF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.150	Jan 2019	0.802	Dec 2019	-		0.802	0.000	0.952	0.000
CALS - DTE S - System DT/OT and LOGDEMO	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	3.182	1.818	Jan 2018	1.100	Jul 2019	0.000		-		0.000	0.000	6.100	0.000
CALS - OTHT C - Operation Test Agencies	MIPR	Aberdeen Test Center (ATC) : Aberdeen Proving Ground, MD	0.150	1.977	Jan 2018	0.200	Feb 2019	1.808	Dec 2019	-		1.808	0.000	4.135	0.000
		Subtotal	3.332	5.062		1.450		4.971		-		4.971	0.000	14.815	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CALS - PM/MS HW - Program Office - Planning and Programming	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	7.888	1.022	Jan 2018	1.645	Nov 2018	2.323	Nov 2019	-		2.323	0.000	12.878	0.000
		Subtotal	7.888	1.022		1.645		2.323		-		2.323	0.000	12.878	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	53.632	15.513		6.000		12.646		-		12.646	0.000	87.791	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) CM5 / *HOMELAND DEFENSE (EMD)*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

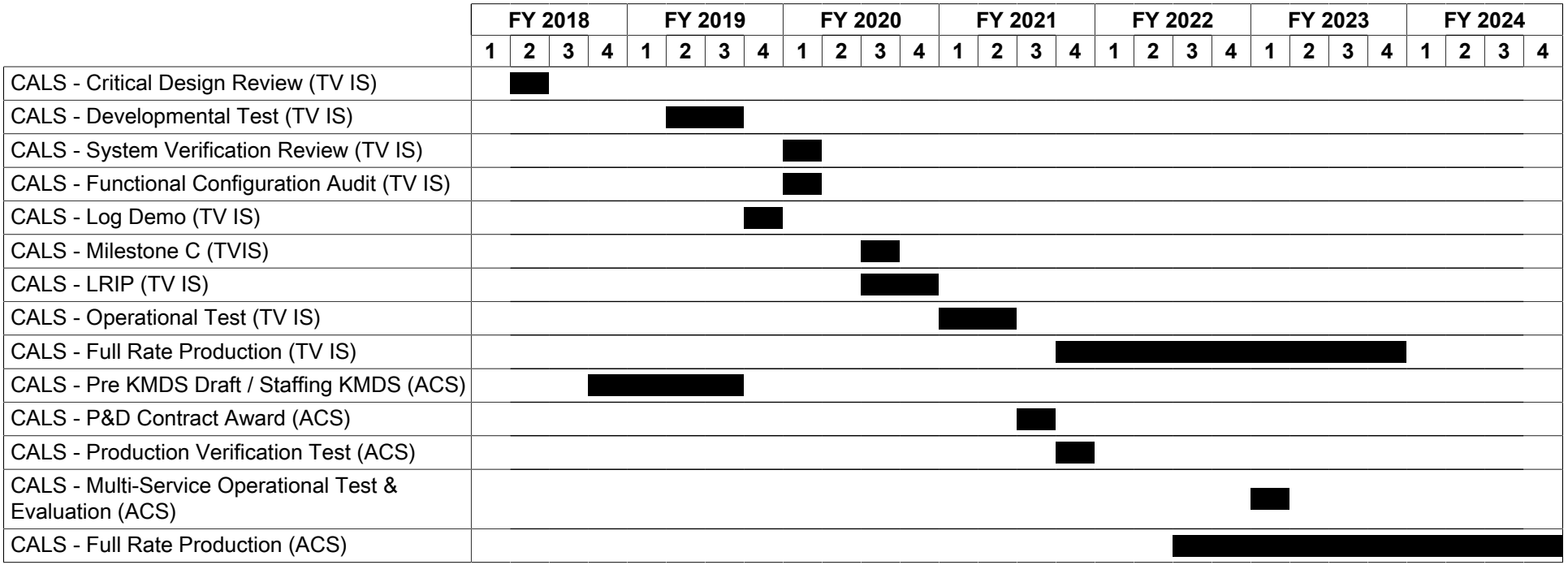

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CM5 / *HOMELAND DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CALS - Critical Design Review (TV IS)	2	2018	2	2018
CALS - Developmental Test (TV IS)	2	2019	3	2019
CALS - System Verification Review (TV IS)	1	2020	1	2020
CALS - Functional Configuration Audit (TV IS)	1	2020	1	2020
CALS - Log Demo (TV IS)	4	2019	4	2019
CALS - Milestone C (TVIS)	3	2020	3	2020
CALS - LRIP (TV IS)	3	2020	4	2020
CALS - Operational Test (TV IS)	1	2021	2	2021
CALS - Full Rate Production (TV IS)	4	2021	4	2023
CALS - Pre KMDS Draft / Staffing KMDS (ACS)	4	2018	3	2019
CALS - P&D Contract Award (ACS)	3	2021	3	2021
CALS - Production Verification Test (ACS)	4	2021	4	2021
CALS - Multi-Service Operational Test & Evaluation (ACS)	1	2023	1	2023
CALS - Full Rate Production (ACS)	3	2022	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program											Date: March 2019	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*				Project (Number/Name) CO5 / *COLLECTIVE PROTECTION (EMD)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
CO5: *COLLECTIVE PROTECTION (EMD)*	-	8.833	11.307	7.322	-	7.322	6.918	1.497	0.000	0.000	0.000	35.877
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 enabling mission accomplishment in CBR environments.

The systems included in this project are:
(1) Chemical-Biological Aircraft Survivability Barrier (CASB)
(2) Joint Expeditionary Collective Protection (JECP) Family of Systems, to include Collective Protection Filters a Congressional add.

The CASB will provide a lightweight, low-cost, expendable, negative-pressure enclosure that will protect the interior of multi-service aircraft (MH-47, CV22, MC-130) capable of airlifting/exfiltrating chemically or biologically contaminated personnel, equipment, and cargos while preserving the aircraft for continued unrestricted operations without need for extensive decontamination. CASB will field a capability that will support the overall intent of the (Aircraft CBRN Contamination Survivability ACCS) Initial Capabilities Development (ICD) in the areas of barriers, aircraft containment systems, modular Collective Protection (ColPro) for aircraft interiors, and disposable ColPro. CASB is one member of a family of systems that will support the ICD. It will protect the interior of DoD airlift assets (MH-47, CV-22, and MC-130s) from incidental cross-contamination by CB-contaminated personnel and equipment and cargos under transport.

JECP provides the Joint Expeditionary Forces a CP capability which is lightweight, compact, modular, and affordable. JECP is a family of systems, developed in two phases, that will allow the application of CP to transportable soft-side shelters, enclosed spaces of opportunity, and in remote austere locations as a standalone resource. Phase 1 includes standalone CP systems and kits to provide existing host platforms and structures with CBRN protection. Phase 2 includes kits to provide CBRN protection to other host platforms and structures that were not explicitly designed in Phase 1. JECP will be capable of protecting personnel groups of varying size, unencumbered by Individual Protective Equipment (IPE), from the effects of CB agents, Toxic Industrial Materials (TIMs), radiological particles, heat, dust, and sand. The employment of JECP is a strategic deterrence against enemy use of CBR agents or TIMs, and will reduce the need for personnel and equipment decontamination.

Congressional Interest Item -The Collective Protection Filters for Gas-Phase Contaminants project will develop and test innovative filters which do not require any adjustments to an existing heating, ventilation, and air conditioning (HVAC) unit to provide a level of chemical protection. The development of a prototype filter will be used in retrofitting buildings to enhance protection capabilities while reducing the installation costs. The Mobile Platform Collective Protection Filter Design Modernization project will develop and test a new filter system design that will reduce the number of filters in the mobile collective protection portfolio from 4 to 1, provide a universal air handling system for all mobile platforms, and use modern materials and manufacturing techniques to update 1950s era designs.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) Chemical and Biological Aircraft Survivability Barrier (CASB) ***Description:*** Initiated developmental testing ***FY 2019 Plans:*** Complete Developmental Test and Evaluation (DT&E), conduct an Operational Assessment (OA), and complete operational test and evaluation needed to support Airworthiness (AWR) Certification. ***FY 2020 Plans:*** Complete testing and prepare all required documentation in support of MS C. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	1.470	3.335	0.877
Title: 2) Chemical Biological Aircraft Survivability Barrier (CASB) ***Description:*** CASB Prototype Development	1.280	-	-
Title: 3) JECP - Joint Expeditionary Collective Protection ***Description:*** Preparations for Phase 1 FRP Decision and Type Classification/Materiel Release (TC/MR).	1.167	-	-
Title: 4) JECP - Joint Expeditionary Collective Protection ***Description:*** Phase 2 system development and demonstration events. ***FY 2019 Plans:*** Initiate design and development of Phase 2 tent kits to address emerging service requirements for collective protection to new host platforms. Conduct Design Review, initiate prototyping for Low Rate Initial Production (LRIP) test articles, changes to logistic support products, and updates to the Government owned Technical Data Package. Begin test planning and initiate developmental testing. Manufacture Phase 2 LRIP test articles for Government developmental testing. (Tent Kit Single Skin, Qty 2 @ ~ unit cost $195K, Tent Kit 1, Qty 3 @ ~unit cost $180K, Tent Kit 3, Qty 1 ~ unit cost $205K, Structure Kit Unimproved, Qty 2 @ ~ unit cost $80K). ***FY 2020 Plans:*** Continue updates/development of logistics products. Conduct logistics demonstration, provisioning conference and begin logistics assessment. Complete Phase 2 test article manufacturing for Government developmental and operational testing. (Tent Kit Single Skin, Qty 4 @ unit cost $195K, Tent Kit 1, Qty 3 @ unit cost $180K, Tent Kit 3, Qty 1 unit cost $205K, Structure Kit Unimproved, Qty 4 @ unit cost $80K). Conduct manufacturing readiness and production readiness assessments. Complete	2.916	5.972	6.445

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Government developmental testing and begin detailed planning for Multi- Operational Test and Evaluation event and Technical Manual Verification. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Title: 5) Prototype Filtration Systems Development (Congressional Interest Item) ***Description:*** Filtration System Development & Reviews ***FY 2019 Plans:*** Draft Statement of Objectives for projects to conduct reviews on filtration requirements and review existing collective protection system parameters, develop prototype filtration systems, test filtration systems and deliver reports on requirements, prototypes and testing results for the Collective Protection Filters for Gas-Phase Contaminants project and the Mobile Platform Collective Protection Filter Design Modernization project. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project is entering completion and all activities will be closed.	2.000	2.000	-
Accomplishments/Planned Programs Subtotals	8.833	11.307	7.322

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• JP1111: *JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)*	9.607	22.752	13.570	-	13.570	20.182	24.238	32.625	39.196	Continuing	Continuing

Remarks

D. Acquisition Strategy

CHEMICAL BIOLOGICAL AIRCRAFT SURVIVABILITY BARRIER (CASB)

The Chemical-Biological Aircraft Survivability Barrier (CASB) overall strategy is to utilize primary materials (air filtration and flexible barrier material) currently in use by other programs in the CB defense portfolio in a negative pressure system specifically designed for airframe use. CASB will review existing materials and technology as well as designs, configurations, and test data from legacy systems developed for ColPro applications. Using this information, systems will be developed to meet the broader range of airframes and airframe specific requirements, chemical biological protection and logistic supportability that are now required. Based on commonality between the requirements of the CASB and the requirements of similar programs (i.e. Joint Expeditionary Collective Protection, TIS, and Aeromedical Biological

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Containment System), CASB will be initiated at MS B EMD phase to meet these expanded requirements within the various airframes. CASB will leverage an IDIQ contract to pursue a Commercial-of-the-Shelf (COTS) development strategy using full and open competition for awards following MS B and MS C. During the EMD phase, CASB intends to award a Cost Plus Incentive Fee (CPIF) delivery order for the development and delivery of prototypes for airworthiness certification within two years. During the Production phase, CASB intends to pursue a Fixed Price Incentive Fee (FPIF) delivery order to reduce the logistical burden and sustainment costs.

JOINT EXPEDITIONARY COLLECTIVE PROTECTION (JECP)

JECP Family of Systems (FoS) (Phase 1 and Phase 2) involves multiple contract types throughout the Engineering and Manufacturing Development and Production and Deployment Phases of the program. Having achieved a Full Rate Production (FRP) decision for Phase 1 Systems in December 2016, the program exercised Fixed Price Incentive production options in FY17 & FY18 through the now expired contract with Leidos in support of Initial Operational Capability (IOC). A competitive build-to-print follow-on production delivery order under the Joint Enterprise Research, Development, Acquisition, and Production (JE-RDAP) Contract will be awarded to 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 JE-RDAP competitive delivery order and undergo limited developmental and operational testing in pursuit of a FRP decision. Production options are included in the delivery order to meet FOC for Phase 2 systems. Additionally, BA7 funding will develop incremental improvements to fielded JECP FoS. BA7 efforts include a range of improvements intended to enhance filtration protection, provide a field leakage test capability and update various fielded environmental control unit interface types for use with collective protection. These efforts involve a simplified acquisition procurement contract and exploitation of commercial off-the-shelf items.

CONGRESSIONAL INTEREST ITEMS

CONGRESSIONAL INTEREST ITEM #229
FILTRATION - COLLECTIVE PROTECTION FILTERS FOR GAS-PHASE CONTAMINANTS: The Collective Protection Filters for Gas-Phase Contaminants project will use the Combatting Weapons of Mass Destruction Other Transaction Authority to award filtration development work to a single vendor. The vendor will work in conjunction with the Army Corps of Engineers and the Edgewood Chemical and Biological Center to develop specifications used for future competitive procurements of filters developed under the project. The Mobile Collective Protection Filter Design Modernization Project will utilize the Combatting Weapons of Mass Destruction Other Transaction Authority to develop designs and construct prototypes for testing and evaluation to a single vendor. A specification will be developed as a result of the project to support competitive follow-on procurements through the Joint Enterprise Research, Development, Acquisition, and Production contract.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - HW S - Prototype Development, TRA, MRA	C/FFP	Integrated Solutions for Systems (IS4S) : Huntsville, AL	0.000	1.279	Apr 2018	0.160	Dec 2018	0.000		-		0.000	0.000	1.439	0.000
JECP - HW S - Phase 2 System Product Development	C/FPIF	TBD : TBD	0.000	0.845	Dec 2018	0.764	Jan 2019	0.745	Jan 2020	-		0.745	0.000	2.354	0.000
JECP - HW S - Phase 2 Prototype Manufacturing	C/FPIF	TBD : TBD	0.000	0.000		1.295	Jan 2019	1.845	Jan 2020	-		1.845	0.000	3.140	0.000
JECP - HW S - Non-recurring Engineering	C/FPIF	Leidos : Abingdon, MD	5.970	0.147	Feb 2018	0.000		0.000		-		0.000	0.000	6.117	0.000
CONG - HW C - Hardware and Support Equipment for Collective Protection Filtration Systems	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	1.600	Jun 2018	1.500	Dec 2018	0.000		-		0.000	0.000	3.100	0.000
		Subtotal	5.970	3.871		3.719		2.590		-		2.590	0.000	16.150	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - ES S - IPT and Technical Support	MIPR	Various : Various	0.000	0.584	Nov 2017	0.687	Nov 2018	0.252	Nov 2019	-		0.252	0.000	1.523	0.000
JECP - ES S - Systems Engineering Oversight	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	1.446	0.590	Oct 2017	0.221	Dec 2018	0.526	Nov 2019	-		0.526	0.000	2.783	0.000
JECP - ES S - Systems Engineering IPT	MIPR	Various : Various	7.265	0.606	Oct 2017	0.103	Dec 2018	0.103	Nov 2019	-		0.103	0.000	8.077	0.000
JECP - ILS S - Integrated Logistics IPT	MIPR	Various : Various	6.745	0.715	Oct 2017	0.609	Dec 2018	0.609	Nov 2019	-		0.609	0.000	8.678	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CONG - ES S - Engineering and IPT Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.300	Jun 2018	0.300	Dec 2018	0.000		-		0.000	0.000	0.600	0.000
		Subtotal	15.456	2.795		1.920		1.490		-		1.490	0.000	21.661	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - OTE S - Operational Testing	MIPR	National Assessment Group : Kirkland, NM	0.000	0.000		0.650	Apr 2019	0.520	Apr 2020	-		0.520	0.000	1.170	0.000
CASB - DTE S - Developmental Testing	MIPR	Various : Various	0.000	0.552	Jul 2018	1.145	Nov 2018	0.000		-		0.000	0.000	1.697	0.000
JECP - OTHT SB - Test & Evaluation IPT	MIPR	Various : Various	7.616	0.223	Dec 2017	0.359	Dec 2018	0.359	Nov 2019	-		0.359	0.000	8.557	0.000
JECP - DTE S - Phase 2 Systems Developmental Testing	MIPR	Various : Various	0.000	0.000		1.186	Dec 2018	0.950	Nov 2019	-		0.950	0.000	2.136	0.000
CONG - DTE S - Developmental Testing	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.100	Aug 2018	0.200	Dec 2018	0.000		-		0.000	0.000	0.300	0.000
		Subtotal	7.616	0.875		3.540		1.829		-		1.829	0.000	13.860	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CASB - PM/MS S - Program Management Support	MIPR	Various : Various	0.000	0.335	Nov 2017	0.693	Nov 2018	0.105	Nov 2019	-		0.105	0.000	1.133	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JECP - PM/MS S - Program Management Support	MIPR	Various : Various	10.863	0.957	Nov 2017	1.435	Dec 2018	1.308	Nov 2019	-		1.308	0.000	14.563	0.000
		Subtotal	10.863	1.292		2.128		1.413		-		1.413	0.000	15.696	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	39.905	8.833		11.307		7.322		-		7.322	0.000	67.367	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

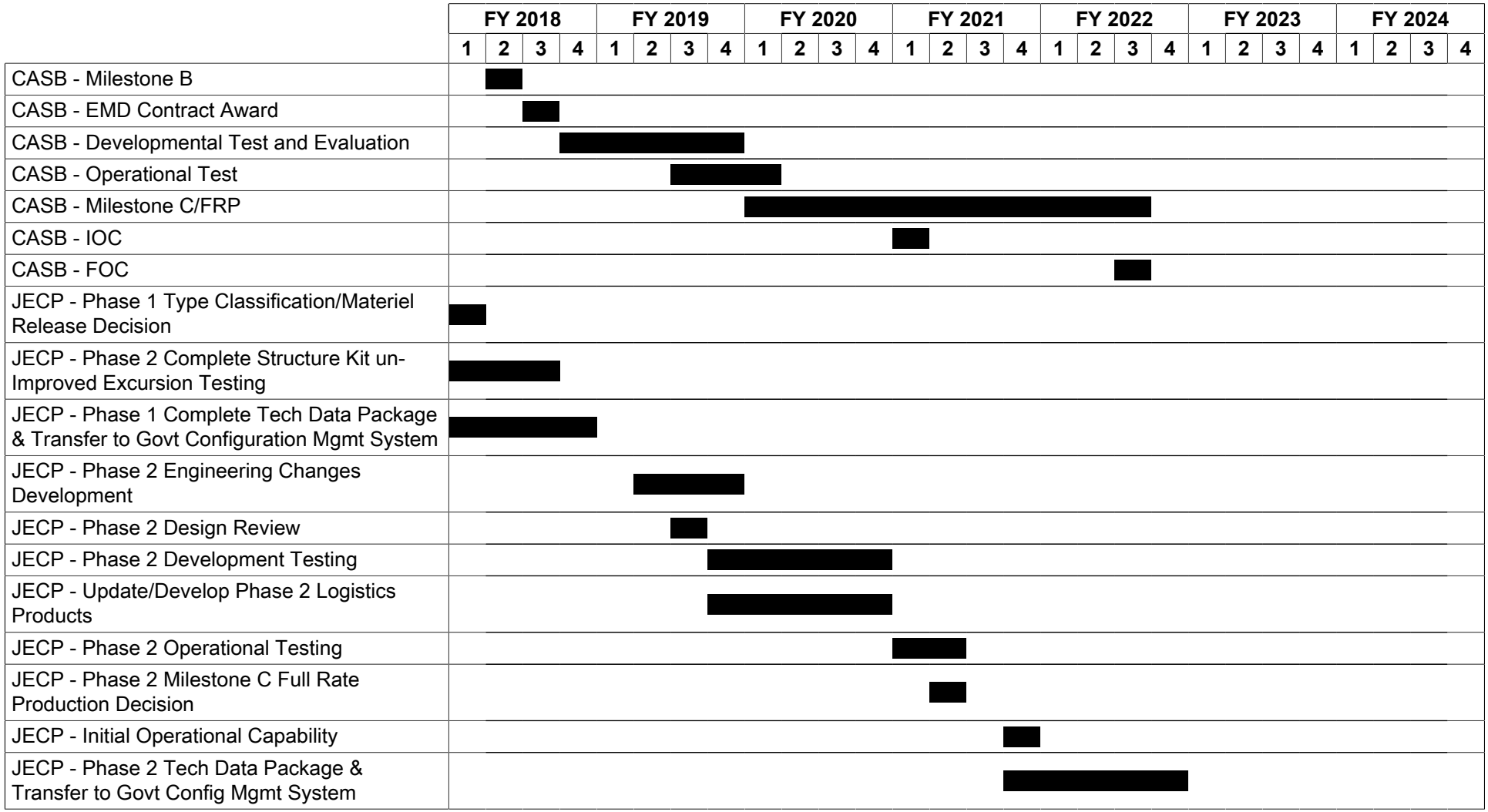

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

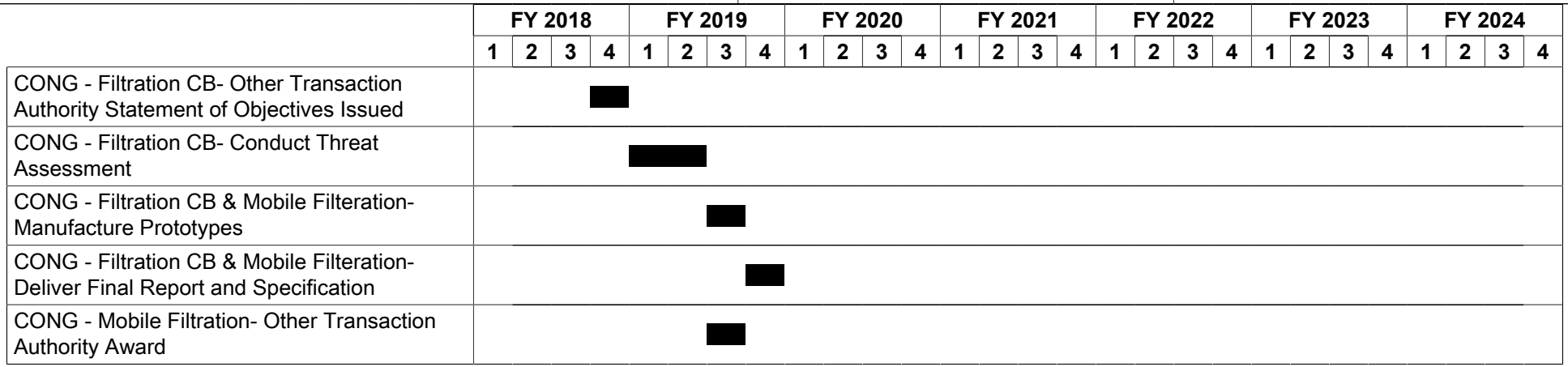

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CASB - Milestone B	2	2018	2	2018
CASB - EMD Contract Award	3	2018	3	2018
CASB - Developmental Test and Evaluation	4	2018	4	2019
CASB - Operational Test	3	2019	1	2020
CASB - Milestone C/FRP	1	2020	3	2022
CASB - IOC	1	2021	1	2021
CASB - FOC	3	2022	3	2022
JECP - Phase 1 Type Classification/Materiel Release Decision	1	2018	1	2018
JECP - Phase 2 Complete Structure Kit un-Improved Excursion Testing	1	2018	3	2018
JECP - Phase 1 Complete Tech Data Package & Transfer to Govt Configuration Mgmt System	1	2018	4	2018
JECP - Phase 2 Engineering Changes Development	2	2019	4	2019
JECP - Phase 2 Design Review	3	2019	3	2019
JECP - Phase 2 Development Testing	4	2019	4	2020
JECP - Update/Develop Phase 2 Logistics Products	4	2019	4	2020
JECP - Phase 2 Operational Testing	1	2021	2	2021
JECP - Phase 2 Milestone C Full Rate Production Decision	2	2021	2	2021
JECP - Initial Operational Capability	4	2021	4	2021
JECP - Phase 2 Tech Data Package & Transfer to Govt Config Mgmt System	4	2021	4	2022
CONG - Filtration CB- Other Transaction Authority Statement of Objectives Issued	4	2018	4	2018
CONG - Filtration CB- Conduct Threat Assessment	1	2019	2	2019
CONG - Filtration CB & Mobile Filteration- Manufacture Prototypes	3	2019	3	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** CO5 / *COLLECTIVE PROTECTION (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CONG - Filtration CB & Mobile Filteration- Deliver Final Report and Specification	4	2019	4	2019
CONG - Mobile Filtration- Other Transaction Authority Award	3	2019	3	2019

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program											Date: March 2019	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*				Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
DE5: *DECONTAMINATION SYSTEMS (EMD)*	-	10.162	14.049	8.267	-	8.267	10.260	11.094	19.285	17.769	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

Efforts included in this Project are:
(1) Contaminated Human Remains System (CHRS)
(2) Major Defense Acquisition Program (MDAP)
(3) Decontamination Family of Systems (DFoS) Contamination Indicator Decontamination Assurance System (CIDAS)
(4) DFoS General Purpose Decontaminant (GPD)
(5) Joint Biological Agent Decontamination System (JBADS).

The CHRS Program is based on capability gaps identified within both the Contamination Mitigation Initial Capabilities Document (ICD), dated March 2011, and the Mortuary Affairs ICD, dated October 2008. The program will provide a Contaminated Human Remains Transfer Case (CHRT) packaging solution to safely repatriate chemical, biological, or radiological contaminated human remains to the Continental United States, a gap identified within the Contamination Mitigation (ConMit) Initial Capabilities Document. The CHRT is a containment system that will protect personnel from the hazards associated with transporting human remains that are potentially contaminated with chemical, biological or radiological agents and Toxic Industrial Materials (TIM) without posing additional risk to the handlers or the environment in accordance with federal and international transportation standards.

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

DFoS CIDAS is a contamination indicator/decontamination assurance technology. It will consist of an indicator and an applicator, for which there will be three applicator configurations (small-scale, tactical large scale, and reusable large scale applicators) and three indicator formulations (nerve training, nerve and blister indicators). The indicator will be sprayed on tactical vehicles, aircraft, ships, crew-served weapons, and individual weapons that may have been exposed to traditional and non-

traditional chemical contamination. DFoS CIDAS is a new capability for the Joint Forces that will reduce the logistics burden of decontamination by indicating presence and location of traditional (Nerve and Blister) and non-traditional chemical agents on militarily relevant surfaces pre- and post-decontamination.

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

The JBADS will provide the capability to conduct biological agent decontamination of the interior and exterior of the C-130 aircraft. The JBADS is a capability set that will include a shelter to encapsulate an airframe, a decontamination delivery system (e.g. hot-humid air-blower, etc.), environmental control and monitoring system(s), and other ancillary components required to ensure efficacious biological agent decontamination. It will provide the capability to decontaminate biologically contaminated aircraft to safe levels and allow more rapid return to service. Future capability may address biological decontamination of vehicles and additional aircraft.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) CHRS ***Description:*** Contaminated Human Remains Transfer Case (CHRT) Development and Support ***FY 2020 Plans:*** Complete Operational Test Agency Evaluation Report (OER), Technology and Manufacturing Readiness Assessments and Physical Configuration Audit. Update Technical Manuals, Life Cycle Sustainment Plan and other documentation in preparation for Milestone C/Full Rate Production decision. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	2.118
Title: 2) MDAP ***Description:*** CBRN Survivability support ***FY 2019 Plans:*** Conduct CBRN survivability compliance reviews for Armored Multi-Purpose Vehicle, Combat Rescue Helicopter, Huey Replacement Program, Large Executive Aircraft Recapitalization, Littoral Combat Ship Fast Frigate, European Reassurance Initiative CBRN equipment, in preparation for various program acquisition milestones, system and sub-system test events, design reviews and low rate initial production reviews. ***FY 2020 Plans:*** Continue to ensure CBR survivability requirements are met for MDAP's by reviewing compliance documents, cross walking documented CBR survivability requirements listed in requirements documents with program execution plans, attending meetings to address integration needs and present CBR system and hardware options. Provide subject matter expertise in the execution of	0.157	1.125	1.035

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
CBR survivability requirements for both material solutions and non-material solutions. Review and assist in document preparation for milestones and programs reviews. Conducting CBRN survivability compliance reviews for Littoral Combat Ship. Supporting CBRN requirements for, Armored Multi-Purpose Vehicle, Combat Rescue Helicopter, European Reassurance Initiative CBRN equipment, CBR survivability system integration in preparation for various program acquisition milestones, system and sub-system test events, design reviews and low rate initial production reviews. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 3) DFoS CIDAS ***Description:*** Small Scale Applicators (SSA) - Nerve Indicator Kit ***FY 2019 Plans:*** Prepare for Material Release and Full Rate Production (FRP) Decision for Small Scale Applicators - Nerve Indicator kits. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	3.842	0.100	-
Title: 4) DFoS CIDAS ***Description:*** Small Scale Applicators (SSA) - Blister Indicator Kit ***FY 2019 Plans:*** Procure 100 Small Scale Applicator - Blister Indicator Kits ($347.97 ea.) for developmental testing (DT). Begin DT and prepare for System Verification Review (SVR) of blister indicator. Work to reduce the sustainment unit cost of the blister indicator through qualifying alternate sources of raw materials and changing manufacturing processes to increase efficiencies. ***FY 2020 Plans:*** Procure 62 Small Scale Applicator - Blister indicator kits ($347.97 ea.) for DT and associated Contract Data Requirements Lists (CDRLs) for Contractor's Progress, Status and Management Report, Program Schedule, etc. Complete DT to include level of indication (LOI) testing, material, industrial plant equipment, and detector compatibility, and shelf-life testing to prepare for production decision and fielding. Conduct technical reviews to include SVR, Functional Configuration Audit, and Environment, Safety, Occupational, Health (ESOH) analysis. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	-	1.922	4.514
Title: 5) DFoS CIDAS	2.769	2.735	0.378

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: Large Scale Applicators (Nerve and Blister kits) ***FY 2019 Plans:*** Award option on nerve indicator contract to procure 150 Large Scale Applicator (LSA) Nerve Kits ($1170.61 ea.), 150 Large Scale Training Kits ($536.29 ea.) as Operational Test articles and associated CDRLS for the Large Scale Applicator (LSAs) Initial Operational Test & Evaluation (IOT&E). Procure 75 Large Scale Applicator - Blister Indicator kits ($3,488.68 ea.) for DT. Conduct testing on LSAs to include Reliability, Availability and Maintainability (RAM) and LOI testing. ***FY 2020 Plans:*** Procure 50 Large Scale Applicator - Blister Indicator kits ($3,488.68 ea.) for DT and associated CDRLs. Conduct DT and prepare for LSA production decision and fielding. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 6) DFoS GPD ***Description:*** DFoS GPD Support	0.545	-	-
Title: 7) JBADS ***Description:*** JBADS Development and Testing ***FY 2019 Plans:*** Award the JBADS Delivery Order. Procure 2 Aircraft Decontamination Units, control module, and scaled down Aircraft Enclosure at a cost of $2.2M. Initiate Contractor Specification Testing. Conduct/complete MIL-STD 810-G testing on the test articles. ***FY 2020 Plans:*** Complete Contractor Specification Testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	2.849	8.167	0.222
Accomplishments/Planned Programs Subtotals	10.162	14.049	8.267

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• JD0050: *DECONTAMINATION FAMILY OF SYSTEMS (DFoS)*	3.447	13.035	17.050	-	17.050	10.851	9.063	11.692	16.815	Continuing	Continuing

Remarks

D. Acquisition Strategy

CONTAMINATED HUMAN REMAINS SYSTEM (CHRS)

The CHRS Program will leverage existing efforts under a Joint Urgent Operational Needs Statement which has accelerated the CHRT project. Additional minor design modifications, developmental and operational testing is planned as part of the overall acquisition strategy. Product development will consist of the design and prototyping of a CHRT. The contracting strategy will make use of The Combatting Weapons of Mass Destruction (CWMD) Other Transaction Agreement (OTA) to procure prototype units, followed by Developmental Testing (DT).

Following DT completion, an Operational Test Agency Assessment report will be prepared and an In Process Review will be conducted to determine readiness to proceed to production and Operational Testing. A Logistics Demonstration and Operational Testing will be conducted. An Operational Test Agency Evaluation Report will be written, and technical reviews will be conducted, in preparation for a Milestone C/Full Rate Production decision.

MAJOR DEFENSE ACQUISITION PROGRAM (MDAP)

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

DFoS CONTAMINATION INDICATOR DECONTAMINATION ASSURANCE SYSTEM (DFoS CIDAS)

The DFoS CIDAS program will follow an evolutionary acquisition strategy in consonance with user developed capability documents. Following MS A, the program office collaborated with external efforts, including the Hazard Mitigation, Materiel and Equipment Restoration (HaMMER) Advanced Technology Development Operational Demonstration and Extended User Evaluations, and conducted technology demonstrations on candidate indicator and applicator technologies to mitigate risk and identify affordable mature technologies that meet requirements. The DFoS CIDAS program determined the need for and initiated Government designed reusable and tactical large scale applicators to provide affordable solutions to meet specific User requirements. Following MS B, the program used full and open competition to award a performance based indefinite quantity contract with fixed price incentive successive target contract line items, with options for Low Rate Initial Production (LRIP) and Full Rate Production (FRP) for nerve indicator and small scale applicator systems. The DFoS CIDAS program will award a sole source, performance based indefinite

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

delivery indefinite quantity contract for a blister technology. The program will integrate the Contractor and Government designed indicator and applicators and conduct developmental and operational testing.

DFoS GENERAL PURPOSE DECONTAMINANT (DFoS GPD)

Due to the maturity levels of the systems entering the Technology Development (TD) phase, the Milestone Decision Authority (MDA) issued an Acquisition Decision Memorandum (ADM) which approved DFoS GPD to by-pass Milestone (MS) B and enter directly to MS C Low Rate Initial Production (LRIP). During the TD Phase, the DFoS GPD Program employed a Competitive Prototyping (CP) effort to facilitate the evaluation of Commercial Off The Shelf (COTS) technologies releasing a Request for Proposal (RFP) as a combined synopsis/solicitation for commercial and Non-Developmental Items (NDI), utilizing full and open competition. As the DFoS GPD Program entered the final phase of Technology Development (Developmental Test), the program continued to follow an evolutionary acquisition strategy. Following the MS C/LRIP decision, the program acquired the technical data package rights to DFoS GPD and is in the process of establishing an organic production line at Pine Bluff Arsenal (PBA) to produce DFoS GPD to meet production quantities.

JOINT BIOLOGICAL AGENT DECONTAMINATION SYSTEM (JBADS)

The JBADS acquisition approach is to leverage information and technology from the JBADS Joint Capability Technology Demonstration (JCTD) to support entry into the Engineering and Manufacturing Development (EMD) phase of the acquisition cycle. The EMD is supported by a Technology Readiness Assessment of 7 from the JCTD. Following testing, the JBADS will transition to Full-Rate Production. 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. In FY20 procurement, JBADS is purchasing 1 system for Production Verification Testing (PVT), modification/ refurbishment, and fielding activities through FY22.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DFoS CIDAS - HW S - SSA - Nerve	C/FPIF	FLIR Detection : Inc, Stillwater, OK	4.766	0.981	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
DFoS CIDAS - HW S - SSA - Blister	SS/FPIF	FLIR Detection : Inc, Stillwater, OK	0.000	0.000		0.496	Dec 2018	0.500	Nov 2019	-		0.500	Continuing	Continuing	0.000
DFoS CIDAS - HW S - Large Scale Applicators (Nerve and Blister)	MIPR	Various : Various	1.925	0.707	Nov 2017	0.467	Dec 2018	0.110	Nov 2019	-		0.110	Continuing	Continuing	0.000
JBADS - HW C - Aircraft Decontamination Units and scaled-down Aircraft Enclosure for MIL-STD 810-G Testing	C/CPIF	TBD : TBD	0.000	0.000		2.200	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	6.691	1.688		3.163		0.610		-		0.610	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - TD/D S - IPT and Technical Support	MIPR	Various : Various	0.000	0.000		0.000		0.976	Nov 2019	-		0.976	Continuing	Continuing	0.000
CHRS - TD/D S - Technical Manual and other Logistics Support	MIPR	TBD : TBD	0.000	0.000		0.000		0.250	Nov 2019	-		0.250	Continuing	Continuing	0.000
CHRS - TD/D S - Manufactuting and Technology Readiness Assessments and Physical Configuration Audit	MIPR	TBD : TBD	0.000	0.000		0.000		0.400	Nov 2019	-		0.400	Continuing	Continuing	0.000
MDAP - TD/D SB - IPT and Technical Support	MIPR	Various : Various	0.330	0.145	Mar 2018	0.870	Nov 2018	0.831	Nov 2019	-		0.831	Continuing	Continuing	0.000
DFoS CIDAS - TD/D S - IPT and Technical Support	MIPR	Various : Various	2.898	1.723	Nov 2017	0.968	Dec 2018	1.149	Nov 2019	-		1.149	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBADS - TD/D S - IPT and Technical Support	MIPR	Various : Various	2.360	1.469	Nov 2017	1.580	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	5.588	3.337		3.418		3.606		-		3.606	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - DTE S IPT Test & Evaluation Reporting	MIPR	Army Test and Evaluation Command (ATEC) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.075	Nov 2019	-		0.075	Continuing	Continuing	0.000
DFoS CIDAS - OTHT S - Live Agent / Lab, Developmental, and Operational Testing	MIPR	Various : Various	3.405	1.634	Nov 2017	1.541	Dec 2018	2.169	Nov 2019	-		2.169	Continuing	Continuing	0.000
DFoS GPD - DTE S - Developmental Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.819	0.545	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JBADS - Analysis/ Studies JBADS for applicability for other platforms (vehicles, aircraft)	C/CPFF	TBD : TBD	0.000	0.000		0.210	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBADS - Contractor Specification Testing/MIL-STD 810-G support	C/CPIF	TBD : TBD	0.000	0.000		1.800	Dec 2018	0.178	Nov 2019	-		0.178	Continuing	Continuing	0.000
JBADS - MIL-STD 810-G Test Planning/Testing	MIPR	Eglin AFB : Eglin Air Force Base, FL	0.000	0.004	Apr 2018	0.419	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBADS - Other TE activities	Various	Various : Various	0.064	0.480	Nov 2017	0.300	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JBADS - Vegetative Bacteria Decontamination Research	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	0.000	0.220	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	6.288	2.883		4.270		2.422		-		2.422	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CHRS - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	0.000	0.000		0.000		0.417	Nov 2019	-		0.417	Continuing	Continuing	0.000
MDAP - PM/MS SB - Program Management and Technical Support	MIPR	Various : Various	0.040	0.012	Jan 2018	0.255	Nov 2018	0.204	Nov 2019	-		0.204	Continuing	Continuing	0.000
DFoS CIDAS - SBIR/STTR - Reduction	Various	TBD : TBD	0.000	0.000		0.118	Oct 2018	0.000		-		0.000	Continuing	Continuing	0.000
DFoS CIDAS - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	0.794	1.566	Nov 2017	1.167	Dec 2018	0.964	Nov 2019	-		0.964	Continuing	Continuing	0.000
JBADS - SBIR/STTR - Reduction	Various	TBD : TBD	0.000	0.000		0.306	Oct 2018	0.000		-		0.000	Continuing	Continuing	0.000
JBADS - PM/MS S - Program Management & Tech Support	MIPR	Various : Various	2.655	0.676	Nov 2017	1.352	Dec 2018	0.044	Nov 2019	-		0.044	Continuing	Continuing	0.000
		Subtotal	3.489	2.254		3.198		1.629		-		1.629	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	22.056	10.162		14.049		8.267		-		8.267	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) DE5 / *DECONTAMINATION SYSTEMS (EMD)*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

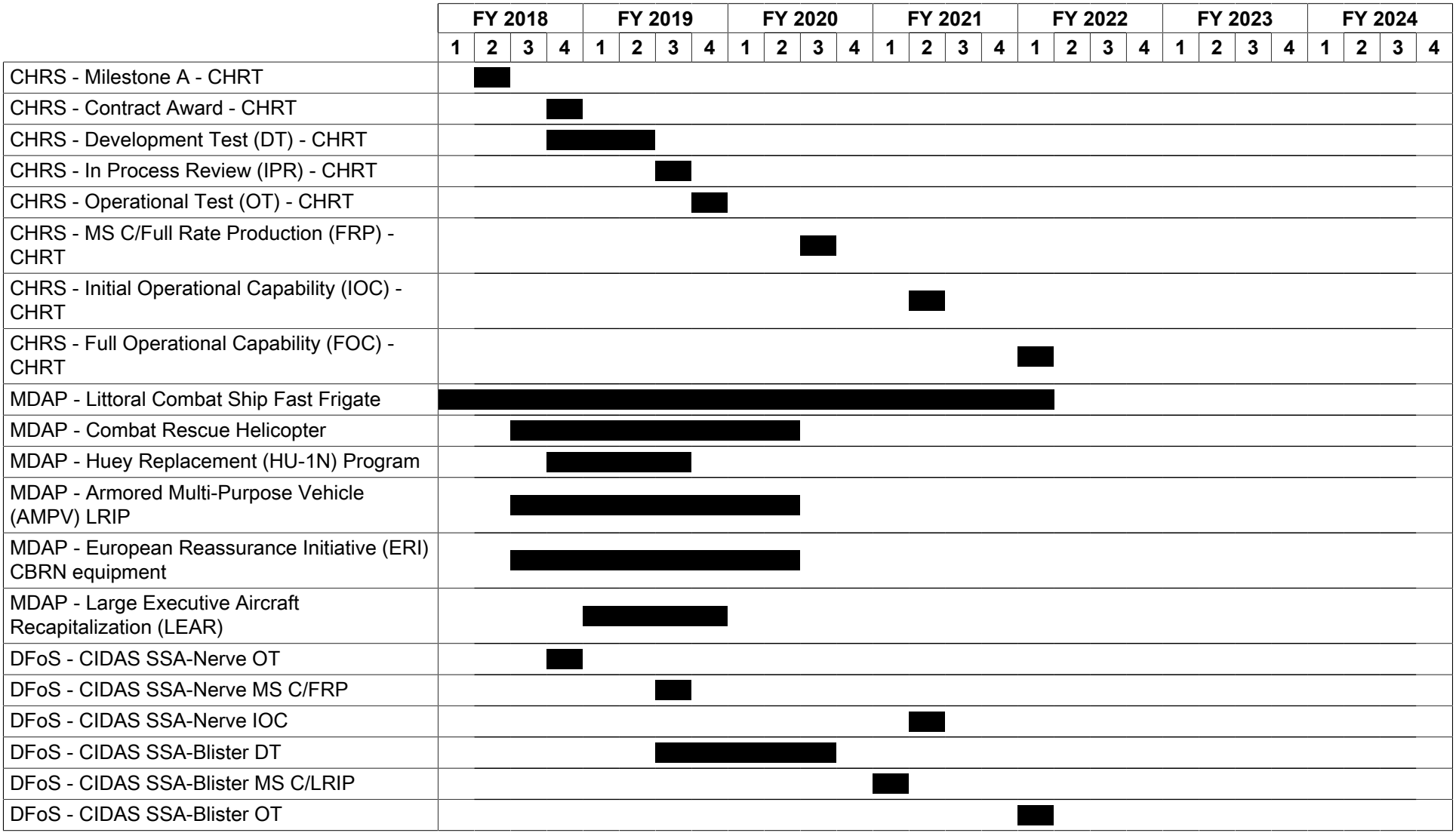

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

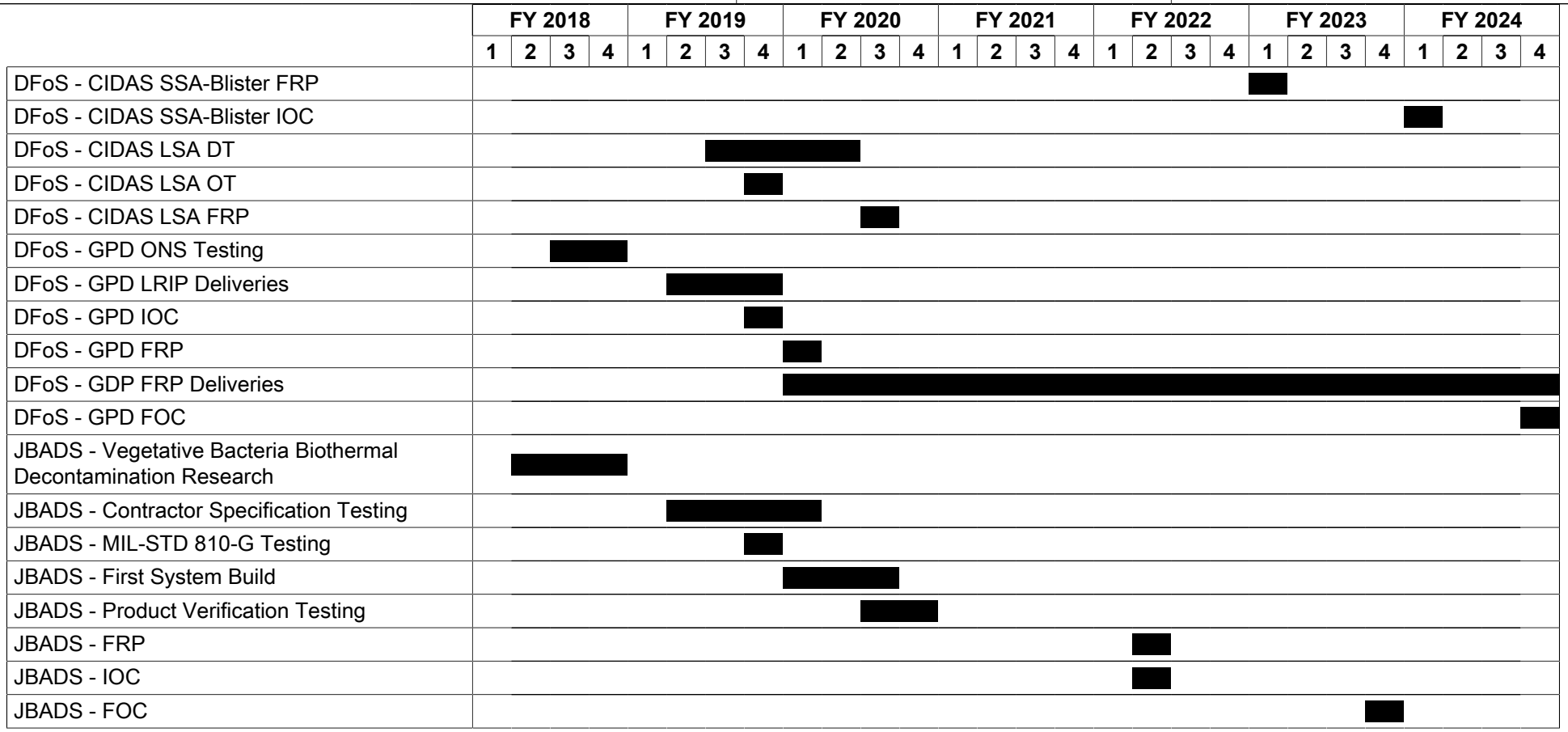

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CHRS - Milestone A - CHRT	2	2018	2	2018
CHRS - Contract Award - CHRT	4	2018	4	2018
CHRS - Development Test (DT) - CHRT	4	2018	2	2019
CHRS - In Process Review (IPR) - CHRT	3	2019	3	2019
CHRS - Operational Test (OT) - CHRT	4	2019	4	2019
CHRS - MS C/Full Rate Production (FRP) - CHRT	3	2020	3	2020
CHRS - Initial Operational Capability (IOC) - CHRT	2	2021	2	2021
CHRS - Full Operational Capability (FOC) - CHRT	1	2022	1	2022
MDAP - Littoral Combat Ship Fast Frigate	1	2018	1	2022
MDAP - Combat Rescue Helicopter	3	2018	2	2020
MDAP - Huey Replacement (HU-1N) Program	4	2018	3	2019
MDAP - Armored Multi-Purpose Vehicle (AMPV) LRIP	3	2018	2	2020
MDAP - European Reassurance Initiative (ERI) CBRN equipment	3	2018	2	2020
MDAP - Large Executive Aircraft Recapitalization (LEAR)	1	2019	4	2019
DFoS - CIDAS SSA-Nerve OT	4	2018	4	2018
DFoS - CIDAS SSA-Nerve MS C/FRP	3	2019	3	2019
DFoS - CIDAS SSA-Nerve IOC	2	2021	2	2021
DFoS - CIDAS SSA-Blister DT	3	2019	3	2020
DFoS - CIDAS SSA-Blister MS C/LRIP	1	2021	1	2021
DFoS - CIDAS SSA-Blister OT	1	2022	1	2022
DFoS - CIDAS SSA-Blister FRP	1	2023	1	2023
DFoS - CIDAS SSA-Blister IOC	1	2024	1	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** DE5 / *DECONTAMINATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
DFoS - CIDAS LSA DT	3	2019	2	2020
DFoS - CIDAS LSA OT	4	2019	4	2019
DFoS - CIDAS LSA FRP	3	2020	3	2020
DFoS - GPD ONS Testing	3	2018	4	2018
DFoS - GPD LRIP Deliveries	2	2019	4	2019
DFoS - GPD IOC	4	2019	4	2019
DFoS - GPD FRP	1	2020	1	2020
DFoS - GDP FRP Deliveries	1	2020	4	2024
DFoS - GPD FOC	4	2024	4	2024
JBADS - Vegetative Bacteria Biothermal Decontamination Research	2	2018	4	2018
JBADS - Contractor Specification Testing	2	2019	1	2020
JBADS - MIL-STD 810-G Testing	4	2019	4	2019
JBADS - First System Build	1	2020	3	2020
JBADS - Product Verification Testing	3	2020	4	2020
JBADS - FRP	2	2022	2	2022
JBADS - IOC	2	2022	2	2022
JBADS - FOC	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program											Date: March 2019	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*				Project (Number/Name) IP5 / *INDIVIDUAL PROTECTION (EMD)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
IP5: *INDIVIDUAL PROTECTION (EMD)*	-	13.529	9.324	12.663	-	12.663	13.013	11.162	11.343	11.342	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides Engineering & Manufacturing Development Phase and Low Rate Initial Production (EMD/LRIP) for individual protection equipment, with the goal of providing equipment that allows the individual Soldier, Sailor, Airman, or Marine to operate in a contaminated Nuclear, Biological and Chemical (NBC) environment with little or no degradation of his/her performance.

Efforts included in this project are:
(1) Special Purpose Unit (SPU) Rapid Capability Development and Deployment (RCDD)
(2) Joint Service Aircrew Mask (JSAM) Rotary Wing (RW), JSAM for Strategic Aircraft (SA), JSAM for Tactical Aircraft (TA)
(3) Uniform Integrated Protective Ensemble (UIPE) Family of Systems (FoS)

SPU RCDD will facilitate rapid JPEO-CBRND/JPL SOF RCDD response to near-term and emergent chemical-biological defensive capability requirements from elements of the Joint Special Operations Command (JSOC), 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. This funding directly underwrites operational relevance in a challenging geo-political landscape and within an ever-increasing threat environment. SPU RCDD mitigates risk across the CBDP by creating a portfolio of operationally-relevant CB capabilities that can be quickly transitioned to needed elements and formations of the joint force, in whole or part, 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) from the Joint Science and Technology Office (JSTO) and the Defense Advanced Research Projects Agency (DARPA) among others; 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) products along with novel redesign approaches to optimize existing solutions to new challenges supported by "buy-try-decide-acquire" acquisition strategies.

The JSAM RW, JSAM SA, and JSAM TA are Acquisition Category (ACAT) III programs developed to provide respiratory and ocular protection. The JSAM is a lightweight Chemical, Biological, Radiological and Nuclear (CBRN) protective mask for most United States Army (USA), Navy (USN), Air Force (USAF), and Marine Corps (USMC) rotary wing and fixed wing aircrew. All JSAM variants will be compatible with most Below-The-Neck (BTN) CB protection ensembles and existing Aircrew Life Support Equipment (ALSE). They will include a protective hood assembly, CB filter, blower assembly (except JSAM SA), and an intercom for ground communication. They will also provide flame protection, demist/emergency demist (except JSAM SA), and anti-drowning features. The goal of the JSAM programs is to develop, manufacture, field, and sustain an aircrew respirator system that, in conjunction with BTN clothing ensembles, will provide the capability for all aircrew to operate in an actual or perceived CB warfare environment.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

The JSAM RW mask is being developed for use by pilots and aircrew in the majority of DoD RW aircraft in the USA (H-60, H-6, H-47, H-72), USAF (H-1 and H-60), and USN/USMC (H-60, H-1, and H-53). The JSAM RW will integrate with most BTN CB ensembles, normal aircrew flight equipment, and RW flight helmets. The system contains a removable face plate, allowing the user to fly "face free" in Mission Oriented Protective Posture (MOPP) 3 (garment, boots, and mask) and easily install the face plate when the threat level dictates, thereby reducing physiological and psychological burden. If threat level warrants, the user can install their face plate into an already donned hood and enter MOPP 4 (garments, boots, gloves and mask) without removing their flight helmet.

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

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

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

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

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) Special Purpose Unit Rapid Capability Development & Deployment (SPU RCDD)	-	-	3.399
Description: Development of specialized detection equipment for agent specific threats.			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2020 Plans: Initiate rapid development and acquisition initiatives utilizing emergent chemical-biological defensive capabilities, decision support tools, and respiratory/ocular enhancements to support SOF counter-proliferation efforts and development of decontamination of SOF specialized equipment. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project is new start effort in FY 2020.			
Title: 2) JSAM RW ***Description:*** Multi-Service Operational Testing and Evaluation (MOT&E)	0.382	-	-
Title: 3) JSAM SA ***Description:*** Operational Testing and Evaluation ***FY 2019 Plans:*** Complete Operational Testing in the form of Integration and Airworthiness Certification testing on the KC-10 (USAF), C-17 (USAF), C-5 (USAF), C-9 (USMC), C-20 (USN/USMC) and C-26 (USA) aircraft. Conduct engineering studies to assess communication system adaptors and oxygen system adaptors for remaining aircraft. Update the Technical Manual to include specialized procedures for the various aircraft tested. ***FY 2020 Plans:*** Continue Developmental Testing, Integration Testing and Safe-to-Fly on various USAF aircraft. Continue engineering studies to assess communication system adaptors and oxygen system adaptors for various USAF aircraft. Update the Technical Manual to include specialized procedures for the various aircraft tested. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	2.787	1.708	1.127
Title: 4) JSAM TA ***Description:*** Integration Testing Events and Milestone C Preparation ***FY 2019 Plans:*** Develop final test reports. Conduct Joint Integrated Logistics Assessment, Production Readiness Review, and Manufacturer Readiness Assessment. Finalize design changes and receive configuration control board approval for engineering changes.	3.501	2.097	-

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Obtain final Safe-to-Fly certification for all platforms. Prepare for and conduct MS C decision review. Develop package for the production contract. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.			
Title: 5) UIPE - Increment 2 ***Description:*** System Development and Demonstration/Engineering and Manufacturing Development	6.859	-	-
Title: 6) UIPE FoS ***Description:*** System Development and Demonstration/Engineering and Manufacturing Development ***FY 2019 Plans:*** Air Mission Area: Complete material level swatch testing, conduct System Testing, conduct USN integration testing, complete prototype manufacturing, conduct Manufacturing Readiness Assessment (MRA), receive USAF Fielding Decision Point, and complete the Joint Independent Logistics Assessment (JILA). ***FY 2020 Plans:*** Air Mission Area: Receive Contract Award for production, receive USN/USMC Fielding Decision Point Conduct Initial Operational Test and Evaluation (IOT&E) for the Navy/Marine Corps, receive Operational Test Agency Evaluation Report (OER). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	-	5.519	8.137
Accomplishments/Planned Programs Subtotals	13.529	9.324	12.663

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• JI0002: *JS AIRCREW MASK (JSAM)*	25.086	54.775	69.416	-	69.416	72.863	67.612	50.622	8.280	Continuing	Continuing
• MA0401: *CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)*	10.508	13.064	9.984	-	9.984	13.415	3.553	0.000	0.000	0.000	50.524

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

D. Acquisition Strategy

SPU RAPID CAPABILITY DEVELOPMENT AND DEPLOYMENT (SPU RCDD)

SOF RCDD plans to execute non-traditional programs for capabilities identified by Joint Special Operations Command (JSOC), select elements from across the Special Operations Force (SOF) Enterprise, and other Joint Force enabling units. The SPU RCDD BA5 acquisition strategy for developmental efforts will allow rapid prototyping and testing of mission critical capabilities needed to enhance mission success. The SPU RCDD BA7 modernization effort will use technical and functional evaluations of currently-fielded items to introduce and incorporate operationally-relevant system developments. Both efforts will be accomplished by awarding an agreement through the Countering Weapons of Mass Destruction Other Transaction Authority (CWMD OTA) for the procurement of test assets. An OTA contracting approach will be used to procure test prototypes and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTAs, a Small Business Innovative Research contract, or a more traditional contracting vehicle.

JOINT SERVICE AIRCREW MASK ROTARY WING (JSAM RW)

The JSAM RW was developed under a competitive Cost Plus Fixed Fee (CPFF) contract, that included JSAM Apache and JSAM Apache Block III. A sole source Fixed Price Incentive (FPI) contract was awarded for LRIP. A Fixed Price modification to the sole source Low Rate Initial Production (LRIP) contract awarded June 2017 to complete USAF and initiate USA Total Package Fielding (TPF). Another Fixed Price modification will be awarded to the LRIP contract in September 2018. A competitive production contract with Firm Fixed Price (FFP) Production CLINs will be pursued for Full Rate Production (FRP). The Full Rate Production (FRP) contract will also include Cost Plus CLINS for the vendor to establish a production line at Pine Bluff Arsenal.

JOINT SERVICE AIRCREW MASK STRATEGIC AIRCRAFT (JSAM SA)

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

The overall acquisition strategy is to produce and field the JSAM SA masks incrementally. This approach allows the JSAM SA mask to be fielded to aircrew of the most applicable aircrafts in the shortest amount of time. At the end of all increments, the Services will have achieved their Full Operating Capability (FOC). The first increment will consist of fielding the JSAM SA mask to the USAF E-3 and USN P-8 aircrew. Based on technical difficulty and mission need, the JSAM SA program will work with the Services to determine which aircraft will be addressed in subsequent increments.

The overall test strategy involves four major phases. The first test phase consists of Design Verification Testing (DVT) which will evaluate developmental prototype masks prior to Critical Design Review (CDR). The second test phase is Developmental Testing (DT) to support Milestone C/LRIP. The third test phase is Operational

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Testing (OT) of assets to support Initial Operating Capability (IOC) fielding to USAF E-3, USN P-8, and USA MC-12 aircrew. The final test phase will consist of Integration and Airworthiness Certification (I&AC) testing for all remaining aircraft.

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

JOINT SERVICE AIRCREW MASK TACTICAL AIRCRAFT (JSAM TA)

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

CBRN UNIFORM INTEGRATED PROTECTION ENSEMBLE (UIPE)

Reference UIPE FOS acquisition strategy.

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

The UIPE FoS will develop a family of systems that will provide the Warfighter percutaneous protection from operationally relevant traditional and non-traditional CBRN threats. The family of systems will be developed based on Service mission profiles (Land, Sea, Air and Homeland Defense) with the goal being to minimize operational burden and provide improved form, fit, function, and integration with the current Warfighter kits compared to legacy systems. An Other Transaction Authority (OTA) contracting approach will be used to procure informational white papers during the Technology Maturation and Risk Reduction (TMRR) phase, prototypes, and test articles of possible solutions. The OTA consists of a consortium of all potential Industry, research institutions, and non-traditional government that could be potential solvers for the program. Procurement will be through either the OTA or a more traditional contracting vehicle. UIPE FoS and the Services identified a mature solution that may meet Air Mission Area suit requirements. The program will identify data gaps from the United States Air Force's (USAF) test and evaluation of the Chemical, Biological, Radiological Layer (CBRL) of the Integrated Aircrew Ensemble. There is high confidence in the CBRL meeting the requirements for the Services.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPU RCDD - HW C - Prototype Procurement	Various	Various : Various	0.000	0.000		0.000		1.510	Dec 2019	-		1.510	Continuing	Continuing	0.000
JSAM SA - HW S - Modified M53 - Design Modification and Development	SS/CPFF	AVON Protection Systems Inc. : Cadillac, MI	3.648	0.842	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM TA - HW S - Hardware and Support Equipment for Integration and Test	SS/FFP	Cam Lock Limited : Aldershot Hampshire, UK	0.110	0.250	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - HW S - Trade Space Analysis	MIPR	TBD : TBD	0.000	0.000		0.500	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - HW S - UIPE FoS Prototype Development	Various	Various : Various	0.000	0.000		0.000		1.250	Nov 2019	-		1.250	Continuing	Continuing	0.000
		Subtotal	3.758	1.092		0.500		2.760		-		2.760	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPU RCDD - TD/D C - Technical Support	Various	Various : Various	0.000	0.000		0.000		0.342	Nov 2019	-		0.342	Continuing	Continuing	0.000
SPU RCDD - ES C - Engineering Support	Various	Various : Various	0.000	0.000		0.000		0.300	Dec 2019	-		0.300	Continuing	Continuing	0.000
JSAM RW - ES S - Integrated Product Team/ Engineering/Technical Support	MIPR	Various : Various	6.503	0.143	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - TD/D S - Logistics and IPT Support	MIPR	Various : Various	0.116	0.000		0.000		0.197	Nov 2019	-		0.197	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM SA - ES S - Engineering and IPT Support	MIPR	Various : Various	3.333	0.342	Dec 2017	0.278	Dec 2018	0.230	Nov 2019	-		0.230	Continuing	Continuing	0.000
JSAM TA - ES S - Engineering Support	MIPR	Various : Various	4.262	1.990	Feb 2018	1.322	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
UIPE - ES S - Program Engineering/Technical IPT	Various	Various : Various	0.000	2.072	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - ILS S - Logistics Support	MIPR	Various : Various	0.170	0.334	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE - ES S - Engineering Support	MIPR	Various : Various	0.805	0.463	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - ES S - Program Eng/Tech IPT	Various	Various : Various	0.000	0.000		1.599	Dec 2018	2.616	Nov 2019	-		2.616	Continuing	Continuing	0.000
		Subtotal	15.189	5.344		3.199		3.685		-		3.685	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPU RCDD - DTE C - Testing and Evaluation	Various	Various : Various	0.000	0.000		0.000		0.700	Dec 2019	-		0.700	Continuing	Continuing	0.000
JSAM RW - OTE S - Multi-Service Operational Testing (USN/USMC)	MIPR	Various : Various	1.826	0.210	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - DTE S - Developmental Testing	MIPR	Various : Various	1.553	0.640	Nov 2017	0.000		0.459	Nov 2019	-		0.459	Continuing	Continuing	0.000
JSAM SA - OTE S - Operational Testing	MIPR	Various : Various	1.754	0.652	Nov 2017	1.084	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
JSAM TA - DTE/ OTE S - Integrated Testing (combined DT/OT)	MIPR	Navy Operational Test and Eval Force (OPTEVFOR) : Norfolk, VA	0.191	0.117	Feb 2018	0.150	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JSAM TA - DTE S -Testing and Integration	MIPR	Various : Various	3.530	0.649	Feb 2018	0.200	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
UIPE - DTE S - Design Phase Activities	MIPR	Various : Various	0.000	2.553	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - DTE S - Design Verification Testing	MIPR	TBD : TBD	0.000	0.000		1.959	Dec 2018	2.530	Nov 2019	-		2.530	Continuing	Continuing	0.000
		Subtotal	8.854	4.821		3.393		3.689		-		3.689	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SPU RCDD - PM/MS C - Program Management Support	Various	Various : Various	0.000	0.000		0.000		0.547	Nov 2019	-		0.547	Continuing	Continuing	0.000
JSAM RW - PM/MS S - Program Management and Technical Support	Various	Various : Various	4.008	0.029	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JSAM SA - PM/MS S - Program Management and Technical Support Services	MIPR	Various : Various	0.663	0.311	Nov 2017	0.282	Dec 2018	0.241	Nov 2019	-		0.241	Continuing	Continuing	0.000
JSAM SA - SBIR/STTR - reduction	Various	TBD : TBD	0.000	0.000		0.064	Oct 2018	0.000		-		0.000	Continuing	Continuing	0.000
JSAM TA - SBIR/STTR - reduction	Various	TBD : TBD	0.000	0.000		0.079	Oct 2018	0.000		-		0.000	Continuing	Continuing	0.000
JSAM TA - PM/MS S - Program Management and Technical Support	MIPR	Various : Various	1.578	0.495	Nov 2017	0.346	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
UIPE - PM/MS S - PM/ SME Prog Mgt	MIPR	Various : Various	0.000	1.437	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
UIPE FOS - SBIR/STTR Reduction	Various	TBD : TBD	0.000	0.000		0.280	Oct 2018	0.000		-		0.000	Continuing	Continuing	0.000
UIPE FOS - MS S - PM/ SME Prog Mgt	MIPR	Various : Various	0.000	0.000		1.181	Dec 2018	1.741	Nov 2019	-		1.741	Continuing	Continuing	0.000
		Subtotal	6.249	2.272		2.232		2.529		-		2.529	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	34.050	13.529		9.324		12.663		-		12.663	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

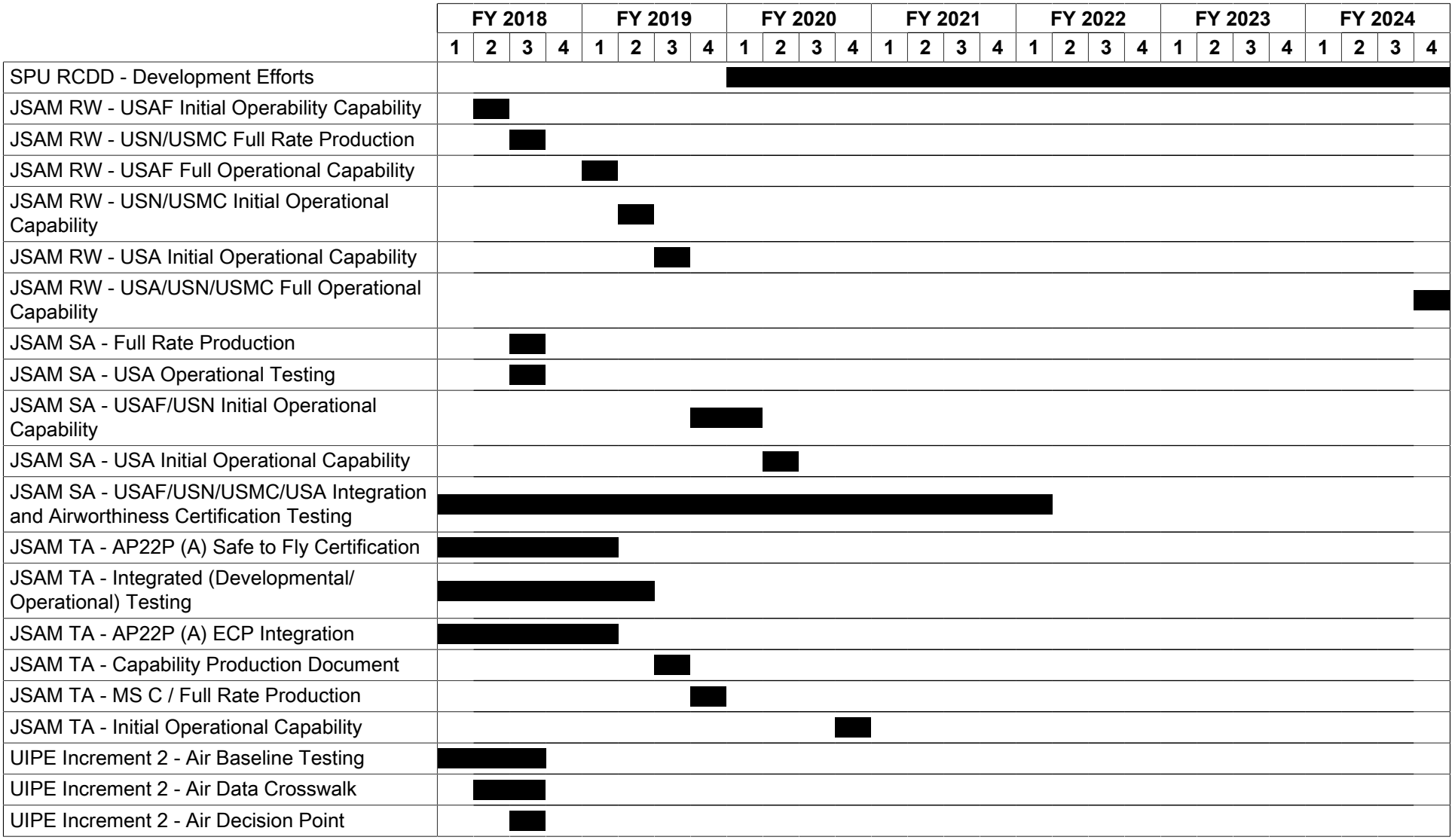

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

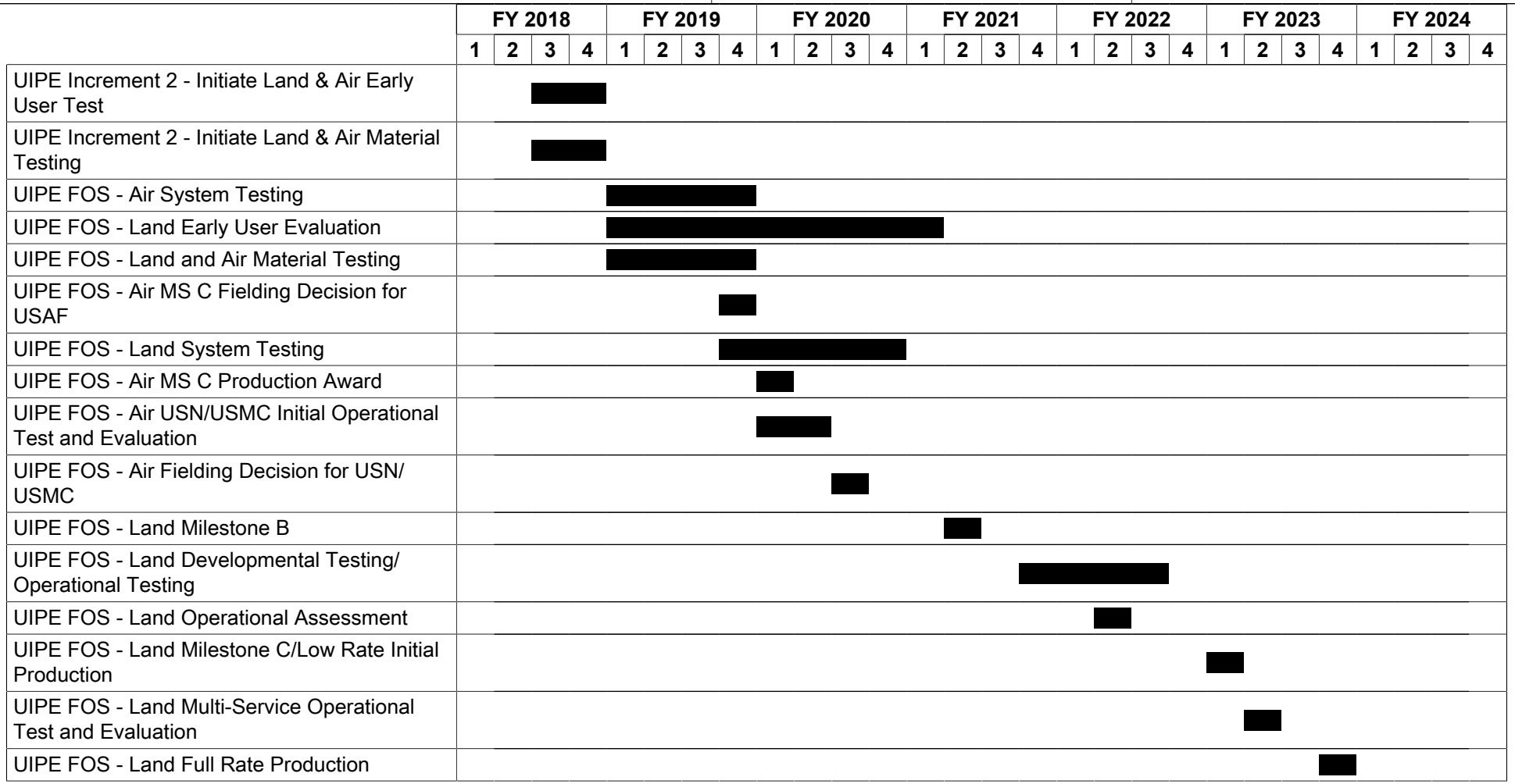

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SPU RCDD - Development Efforts	1	2020	4	2024
JSAM RW - USAF Initial Operability Capability	2	2018	2	2018
JSAM RW - USN/USMC Full Rate Production	3	2018	3	2018
JSAM RW - USAF Full Operational Capability	1	2019	1	2019
JSAM RW - USN/USMC Initial Operational Capability	2	2019	2	2019
JSAM RW - USA Initial Operational Capability	3	2019	3	2019
JSAM RW - USA/USN/USMC Full Operational Capability	4	2024	4	2024
JSAM SA - Full Rate Production	3	2018	3	2018
JSAM SA - USA Operational Testing	3	2018	3	2018
JSAM SA - USAF/USN Initial Operational Capability	4	2019	1	2020
JSAM SA - USA Initial Operational Capability	2	2020	2	2020
JSAM SA - USAF/USN/USMC/USA Integration and Airworthiness Certification Testing	1	2018	1	2022
JSAM TA - AP22P (A) Safe to Fly Certification	1	2018	1	2019
JSAM TA - Integrated (Developmental/Operational) Testing	1	2018	2	2019
JSAM TA - AP22P (A) ECP Integration	1	2018	1	2019
JSAM TA - Capability Production Document	3	2019	3	2019
JSAM TA - MS C / Full Rate Production	4	2019	4	2019
JSAM TA - Initial Operational Capability	4	2020	4	2020
UIPE Increment 2 - Air Baseline Testing	1	2018	3	2018
UIPE Increment 2 - Air Data Crosswalk	2	2018	3	2018
UIPE Increment 2 - Air Decision Point	3	2018	3	2018
UIPE Increment 2 - Initiate Land & Air Early User Test	3	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IP5 / *INDIVIDUAL PROTECTION (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
UIPE Increment 2 - Initiate Land & Air Material Testing	3	2018	4	2018
UIPE FOS - Air System Testing	1	2019	4	2019
UIPE FOS - Land Early User Evaluation	1	2019	1	2021
UIPE FOS - Land and Air Material Testing	1	2019	4	2019
UIPE FOS - Air MS C Fielding Decision for USAF	4	2019	4	2019
UIPE FOS - Land System Testing	4	2019	4	2020
UIPE FOS - Air MS C Production Award	1	2020	1	2020
UIPE FOS - Air USN/USMC Initial Operational Test and Evaluation	1	2020	2	2020
UIPE FOS - Air Fielding Decision for USN/USMC	3	2020	3	2020
UIPE FOS - Land Milestone B	2	2021	2	2021
UIPE FOS - Land Developmental Testing/Operational Testing	4	2021	3	2022
UIPE FOS - Land Operational Assessment	2	2022	2	2022
UIPE FOS - Land Milestone C/Low Rate Initial Production	1	2023	1	2023
UIPE FOS - Land Multi-Service Operational Test and Evaluation	2	2023	2	2023
UIPE FOS - Land Full Rate Production	4	2023	4	2023

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) IS5 / *INFORMATION SYSTEMS (EMD)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
IS5: *INFORMATION SYSTEMS (EMD)*	-	21.789	22.215	22.111	-	22.111	17.935	13.781	7.695	7.694	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP). During this phase, efforts will execute development, cybersecurity hardening, testing and evaluation of capabilities to meet the defined requirements.

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

CBRN IS will support the implementation and integration of Integrated Early Warning (IEW) capabilities that allow users to access netted sensor information, data fusion, disease modeling, biosurveillance data, source term estimation data, incident management tools, and planning and analysis capabilities. CBRN IS will expand cloud-based capability to Korean Peninsula and other Areas of Responsibility, as required. Additionally, it will continue to expand and provide the environment, net centric, cloud based tools and capabilities that are aligned with the current and future DoD IT/Cyber computing environments including Army Common Operating Environment (COE) and the Joint Information Environment (JIE). This will be integrated into a collaborative environment that allows users to collect and disseminate CBRN warning and reporting data, provide detailed CBRN hazard predictions, aid in decision support, and make relevant CBRN defense information available in near-real time.
G-BSP will conduct Developmental and Operational Testing, and develop both a SIPR version and an International version of G-BSP. This will be integrated into a web-based enterprise environment that facilitates collaboration, communication, and information sharing in support of the detection, management, and mitigation of man-made and naturally occurring biological hazards. This will result in a set of tools and capabilities that facilitate the timely identification and detection of CBRN events in order to minimize operational impacts to the local and global populations.

JEM 2 will continue to develop, integrate, and test emerging capability defined in Requirements Definition Package 4. JEM 2 will continue to conduct user feedback events to ensure capability aligns with warfighter needs and perform independent operational test and evaluation to verify operation of the JEM 2 software in service command and control environments. This will be integrated into a web-based software application that supplies the Department of Defense (DoD) with the only operationally tested and accredited tool to effectively model and simulate the effects of Chemical, Biological, Radiological and Nuclear (CBRN) weapon strikes and incidents. This will provide warfighters with the ability to accurately model and predict the time-phased impact of CBRN and Toxic Industrial Chemical/Material (TIC/TIM) events and effects. Additionally, this will support planning efforts to mitigate the effects of Weapons of Mass Destruction (WMD) and to provide rapid estimates of hazards and effects integrated into the Common Operational Picture (COP).

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

JWARN 2 will to continue develop, integrate, and test emerging capability defined in Requirements Definition Packages 1 and 2 and integrate CBRN sensor/detector data/input with JWARN software baseline. JWARN 2 will continue to coordinate with operational forces for User Feedback Events, improving user interface and creating more efficient operational experience and conduct Multiservice Operational Test and Evaluation to verify operation of the JWARN 2 software in service command and control environments. This will be integrated into an accredited DoD warning and reporting system that enables an immediate and integrated response to threats of contamination by WMD, CBRN and TIM incidents. This will provide a digital display of CBRN 1-6 reports on the COP, displayed through Service provided C4I systems resident at all echelons of command. Commanders will be provided with enhanced situational awareness throughout the area of operation, supports warfighter battle management and continuity of operations in a contaminated environment.

As software-intensive systems, JEM 2, JWARN 2, and G-BSP have no separately identifiable unit production components; unit cost calculations including Program Acquisition Unit Cost/Average Procurement Unit Cost (PAUC/APUC) and Operations and Sustainment (O&S) average annual per unit costs are not applicable.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) Global-BSP	6.064	3.787	3.047
Description: Product Development ***FY 2019 Plans:*** Develop SIPR version of Global-BSP to satisfy SOCOM-defined user requirements. Develop International version of Global-BSP to allow foreign partner access to system. This development work will include system changes to allow access by NATO, United Nations, and FVEY nations while safeguarding US interests. ***FY 2020 Plans:*** Continue to develop SIPR version of Global-BSP to satisfy SOCOM-defined user requirements. Continue to develop International version of Global-BSP to allow foreign partner access. Continue the development and integration of Global-BSP capabilities as required by the operational users, delivered in Capability Drops. Global-BSP will achieve Full Operational Capability (FOC).			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue improvements in architecture development, system design, key system tools, third party developed models, access to external data sources, cybersecurity and information assurance, and host platform design. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 2) Global-BSP ***Description:*** Developmental Test and Evaluation ***FY 2019 Plans:*** Global BSP will conduct a Developmental End-to-End Test following the release of two Capability Drops. ***FY 2020 Plans:*** Conduct Developmental Testing associated with two Capability Drops. Conduct Cybersecurity Penetration Test in conjunction with cloud host provider and Joint Interoperability Test Command (JITC) requirements. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.910	0.358	0.295
Title: 3) Global-BSP ***Description:*** Program Management Support ***FY 2019 Plans:*** Global-BSP Program Management Office will continue to manage and conduct oversight of all aspects of Global-BSP program development and testing, to include Technical Exchange Meetings with warfighters, Developmental/Operational Testing, and Administration and execution of budgeted funding. ***FY 2020 Plans:*** Manage and conduct oversight of all aspects of Global-BSP program development and testing. Tasks include planning, budgeting, execution oversight, risk management, test and user feedback coordination, scheduling, training and administration. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.753	0.793	0.466
Title: 4) Global-BSP ***Description:*** Operational Testing and Evaluation ***FY 2019 Plans:***	1.065	0.928	0.655

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Global-BSP will conduct Operational Testing with Special Operations Command units to further fulfill SOCOM-defined requirements and identify areas for increased capabilities. ***FY 2020 Plans:*** Conduct Final Operational Test & Evaluation (FOT&E) associated with Full Operational Capability. Conduct Operational Testing of Global-BSP with one Production Capability Drop End-to-End test to validate capabilities prior to delivery to the Warfighter. Support will consist of test, engineering, and operational personnel support. Conduct multiple User Feedback Events (UFEs). UFEs provide a crucial link between the Program Managers, Engineers, and Operators. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 5) Global-BSP ***Description:*** Training and Logistics Support ***FY 2020 Plans:*** Perform Training Development, Integrated Logistic Support, and Configuration Management. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	0.199
Title: 6) CBRN IS ***Description:*** Technical Guidance ***FY 2019 Plans:*** Provide management and system engineering oversight for all aspects of the CBRN IS program. CBRN IS will initially integrate appropriate JPEO-CBD products into a Family of Systems (FoS) framework (to begin with JWARN, JEM and BSP). Align validated requirements into an enterprise approach. Provide strategy for integration of future capabilities and emerging requirements including advanced technology demonstrations (ATDs), experimental capability demonstrations (ECDs) for Integrated Early Warning, Decision Support/ Consequence and Incident Management, Data Analytics and other analytical and situational awareness tools. ***FY 2020 Plans:***	0.224	0.226	0.217

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Provide the management and systems engineering for Integrated Early Warning, Decision Support/ Consequence and Incident Management, Data Analytics and other situational understanding and awareness tools. Ensure adherence to the Joint Operational Environment standards and Cyber Security requirements. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 7) CBRN IS ***Description:*** Standardization ***FY 2019 Plans:*** Provide guidance and direction to ensure new capabilities meet industry and program standards for integration. Ensure development and integration efforts are compliant and compatible with the Joint Information Environment (JIE) and Service common operational and common computing environments. Comply with DoD and Service specified Cybersecurity and Net Ready Key Performance Parameters. ***FY 2020 Plans:*** Provide guidance and direction to ensure new capabilities meet industry and program standards for integration. Ensure development and integration efforts are compliant and compatible with the Joint Information Environment (JIE) and Service common operational and common computing environments. Comply with DoD and Service specified Cybersecurity and Net Ready Key Performance Parameters. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.573	0.362	0.575
Title: 8) CBRN IS ***Description:*** Cybersecurity / Information Assurance ***FY 2019 Plans:*** Provide guidance and direction for the implementation of ongoing cybersecurity requirements and policies and DoD information assurance vulnerability alerts (IAVAs) to mitigate system vulnerabilities and avoid serious compromise of the CBRN IS environment that would potentially degrade mission performance. ***FY 2020 Plans:***	0.202	0.210	0.203

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue the implementation of ongoing cybersecurity requirements and policies and DoD information assurance vulnerability alerts (IAVAs) to mitigate system vulnerabilities and avoid serious compromise of the CBRN IS environment that would potentially degrade mission performance. Continue adversarial and cooperative vulnerability testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 9) CBRN IS ***Description:*** Product Development ***FY 2019 Plans:*** Transition to production and deployment phase efforts, post IOC. Continue coordination with Services and integrated early warning (IEW) advanced technology demonstration (ATD) and integrated early warning (IEW) experimental capability demonstration (ECD) projects to determine prioritization of CBRN and IEW capabilities to be developed, transitioned and integrated into CBRN IS through subsequent capability drops. These capability drops will continue throughout the production and deployment phase with two capability drops planned per FY. ***FY 2020 Plans:*** Continue to develop additional capabilities, applications and implementations to support the National Defense priorities for combatting weapons of mass destruction. Continue to integrate JPEO CBRND products into a family-of-systems (FOS) framework. Rapidly transition select DoD Components or agencies to the acquired cloud solution, and, to the maximum extent possible, operationalize its mission using the security, software, and machine learning capabilities that cloud technology provides. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.936	1.059	1.025
Title: 10) CBRN IS ***Description:*** Operational Assessments ***FY 2019 Plans:*** Conduct operational test and evaluations and user feedback events in accordance with product and application test plans to assess and validate capabilities prior to implementing in the production enterprise environment. Tests will assess accessibility, bandwidth/throughput, and reliability to meet program KPPs and KSAs. ***FY 2020 Plans:***	0.470	0.695	0.480

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue operational test and evaluations and user feedback events in accordance with product and application test plans to assess and validate capabilities prior to implementing in the production enterprise environment. Tests will assess accessibility, bandwidth/throughput, and reliability to meet program KPPs and KSAs. Continue cyber security and vulnerability testing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 11) JEM 2 ***Description:*** Developmental Test and Evaluation ***FY 2019 Plans:*** Continue Government Development Test of software deliveries in Command and Control (C2) environments. Perform verification, validation, and accreditation of new hazard prediction models provided by the S&T community as defined in Requirements Definition Package 4 (RDP-4), Emerging Capability. ***FY 2020 Plans:*** Continue Government Development Test of software deliveries in preparation for Initial Operational Test & Evaluation (IOT&E) for development to C2 systems. Continue to perform VV&A of new hazard prediction models provided by the S&T community as defined in RDP-4. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	0.509	0.407	0.420
Title: 12) JEM 2 ***Description:*** Product Development ***FY 2019 Plans:*** Continue development of JEM 2 software and perform integration into Command and Control (C2) systems. Integrate new hazard prediction models provided by the S&T community into the JEM 2 baseline software and develop/transition new S&T capabilities as defined in Requirements Definition Package 4 (RDP-4), Emerging Capability. ***FY 2020 Plans:*** Continue development of JEM 2 software and perform integration into C2 systems. Integrate new hazard prediction models provided by the S&T community into the JEM 2 baseline software and develop/transition new S&T capabilities as defined in Requirements Definition Package RDP-4. ***FY 2019 to FY 2020 Increase/Decrease Statement:***	1.557	1.130	1.443

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Minor change due to routine program adjustments.			
Title: 13) JEM 2 ***Description:*** Program Management ***FY 2019 Plans:*** Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM 2. Continue development and execution of JEM 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics Demonstration (LOG DEMO) in order to deploy JEM 2 to the services and to the Science and Technology Community. ***FY 2020 Plans:*** Continue to perform program/financial management, costing, contracting, scheduling and acquisition oversight support for JEM 2. Continue development and execution of JEM 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics Demonstration (LOG DEMO) in order to deploy JEM 2 to the services and to the Science and Technology Community. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.541	0.269	0.521
Title: 14) JEM 2 ***Description:*** Operational Test and Evaluation ***FY 2019 Plans:*** Develop operational test plans and conduct lab based OT and limited scope service specific IOT&E to support fielding decisions for the JEM 2 software. ***FY 2020 Plans:*** Develop operational test plans and conduct lab based OT and limited scope service specific IOT&E to support fielding decisions for the JEM 2 software which will allow for additional CDs with added JEM capabilities and functionality to be deployed to the services. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.826	0.896	0.782
Title: 15) JEM 2 ***Description:*** Training and Logistics Support	-	-	0.842

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2020 Plans: Perform Training Development, Integrated Logistics Support and Configuration Management for upgraded fielded capabilities. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 16) JWARN 2 ***Description:*** Management Support ***FY 2019 Plans:*** Provide program/financial management, costing, contracting, scheduling and acquisition oversight for JWARN 2. Continue development and execution of Build Decisions (BDs) for JWARN 2 while working within the agile development process, to include performing a Joint Integrated Logistics Assessment (JILA) and Logistics' Demonstration (LOG DEMO) in preparation for test and deployment of JWARN 2 to the services. ***FY 2020 Plans:*** Provide program/financial management, costing, contracting, scheduling, acquisition and deployment oversight for JWARN. Continue software development, integration, and deployment of JWARN capabilities in the milCloud CBRN IS enterprise environment (CD 2.1), Army BCCS and COE v3 host systems (CD 2.2), DISA GCCS-J environment (CD 2.3), Navy CANES afloat architecture and Maritime Operations Centers (MOCs) (CD 2.5), and National Guard host systems (CD 2.6). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.561	0.921	0.834
Title: 17) JWARN 2 ***Description:*** Product Development ***FY 2019 Plans:*** Continue JWARN 2 software development and perform integration into Command and Control (C2) systems and integration of CBRN sensor/detector data/input with JWARN software baseline. JWARN 2 software development and perform integration into the Army's Common Operational Environment version 3 (COE v3) to provide convergence with other Army COE services. Complete Information Assurance Certification and accreditation to support Multiservice Operation Test and Evaluation (MOT&E). Initiating transitioning False Sensor Alert Reduction prototyping into JWARN software development. ***FY 2020 Plans:***	2.928	5.239	5.002

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue JWARN RDP-1 CD 1.5 development and integration of CBRN sensor/detector data/input with JWARN software baseline including the integration of below integration threshold detection with sensor networking for improved false alarm reduction. Continue Information Assurance Certification and accreditation to support cybersecurity of deployed JWARN RDP-1 CDs in the milCloud CBRN IS enterprise environment (CD 2.1), Army BCCS and COE v3 host systems (CD 2.2), DISA GCCS-J environment (CD 2.3), Navy CANES afloat architecture and Maritime Operations Centers (MOCs) (CD 2.5), and National Guard host systems (CD 2.6). Continue software development in preparation for Initial Operational Test and Evaluation (IOT&E) of JWARN RDP-1 capabilities on National Guard host systems. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 18) JWARN 2 ***Description:*** Developmental Test and Evaluation ***FY 2019 Plans:*** Continue Government development test and evaluation of software deliveries in preparation for annual Multiservice Operational Test and Evaluation (MOT&E) which will allow for Initial Operational Capability of JWARN 2 to be deployed to the services. Conduct development test and evaluation of JWARN 2 in preparation for OT&E for development to COE v3. ***FY 2020 Plans:*** Perform Government development test and evaluation, including software delivery acceptance testing, of improved JWARN baseline software capabilities, and verify continued interoperability with Joint and Service C2 host systems. Conduct developmental test and evaluation of JWARN in preparation for IOT&E on RDP-2 CD 2.6 National Guard C2 systems. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.674	0.742	0.567
Title: 19) JWARN 2 ***Description:*** Operational Test and Evaluation ***FY 2019 Plans:*** Conduct Multiservice Operational Test and Evaluation (MOT&E) which will allow for additional Capability Drops (CDs) with added JWARN 2 capabilities and functionality to be deployed to the services. Conduct a OT&E of JWARN 2 in preparation for deployment to COE v3. ***FY 2020 Plans:***	0.956	1.097	0.850

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Conduct Multiservice Operational Test & Evaluation (MOT&E), which will allow for additional capability drops (CDs) with added JWARN capabilities and functionality to be deployed to the services. Conduct IOT&E of JWARN RDP-1 CDs in preparation for deployment to RDP-2 CD 2.6 National Guard C2 systems. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 20) JWARN 2 ***Description:*** Training and Logistics Support ***FY 2020 Plans:*** Provide New Equipment Training to operational users in US Army, Air Force, Navy, and Marine Corps in accordance with services? Fielding and Training Plans, as JWARN approaches Full Operational Capability across all services. Continue to coordinate with operational forces for User Feedback Events, improving user interface and creating more efficient operational experience. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	-	1.084
Title: 21) SSA ***Description:*** Policies, Standards and Guidelines ***FY 2019 Plans:*** Continue updates to acquisition documentation for CBRN IT systems based on changes in policy, procedures, and guidelines. Perform surveillance of Federal Information Security Management Act (FISMA) and DoD Acquisition policies necessary to maintain certification on deployed service platforms. Provide M&S strategic and accreditation support. ***FY 2020 Plans:*** Provides standards, formats, templates, training and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices. Helps programs achieve a mandated net-centric environment by providing enabling tools for data management. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.200	0.343	0.100
Title: 22) SSA ***Description:*** Integrated Architecture	0.251	0.403	0.118

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2019 Plans: Continue to perform required modifications to the Integrated Architecture on host platforms and document the infrastructure and technical standards. Conduct Net-Centric Assessments for programs. Review and update the Common CBRN Interface standards on operational systems, including a Common CBRN Sensor Integration Standard (CCSI). ***FY 2020 Plans:*** Continue to create, implement, validate, maintain, and continually shape a set of standard, enterprise-wide integrated CBRN Family of Systems architectures. Assists in development of acquisition program documents by providing early architecture products for inclusion and assists in the analysis and management of acquisition programs by producing architectural products that visualize system and program interdependencies, which help to expose gaps and requirements. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 23) SSA ***Description:*** Enterprise Support and Services ***FY 2019 Plans:*** Continue to support processes and services for Cybersecurity/Information Assurance, Architectures, Modeling and Simulation, Science and Technology, and Standards and Policy. Modify support processes and services necessary to maintain relevancy in accordance with DoD standards, policies, and guidelines. ***FY 2020 Plans:*** Provides technical expertise in managing information-related risks in enterprise architectures, acquisition strategies, testing and evaluation, and in achieving cybersecurity certification and accreditation. SSA cybersecurity SMEs assist with the development of cybersecurity strategies, project plans and required documentation. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.165	0.287	0.347
Title: 24) SSA ***Description:*** Chemical, Biological, Radiological, Nuclear (CBRN) Data Model ***FY 2019 Plans:*** Continue to develop and update CBRN data model and define the structure and content of information exchange "Extensible	0.597	0.323	0.700

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Markup Language"(XML) schemas that support interoperability between CBD programs. ***FY 2020 Plans:*** Assists programs and vendors in interpreting and implementing the CCSI standard. This XML-based specification enables standardized and repeatable integration and interoperability between CBRN sensors, network, and C2 systems. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 25) SSA ***Description:*** Cybersecurity / Information Assurance ***FY 2019 Plans:*** Continue to employ Information Systems Security Engineering (Cybersecurity) efforts to develop or modify the Cybersecurity/ Information Assurance (CS/IA) component of a system architecture to ensure it is in compliance with the IA component of the Global Information Grid architecture, and makes maximum use of enterprise CS/IA capabilities and services. ***FY 2020 Plans:*** Continue to employ Information Systems Security Engineering (Cybersecurity) efforts to develop or modify the CS/IA component of a system architecture to ensure it is in compliance with the IA component of the Global Information Grid architecture, and makes maximum use of enterprise CS/IA capabilities and services. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.476	0.743	0.693
Title: 26) SSA ***Description:*** Policy and Standards Repository ***FY 2019 Plans:*** Continue to provide standards, formats, templates, training, and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices. ***FY 2020 Plans:***	0.200	0.578	0.200

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Provides standards, formats, templates, training and best practices to support practical compliance with laws, regulations, and policy for acquisition, certification, and sustainment of net-centric, interoperable, and spectrum dependent systems and devices. Helps programs achieve a mandated net-centric environment by providing enabling tools for data management. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Title: 27) SSA ***Description:*** Technology Transition Support ***FY 2019 Plans:*** Continue to perform Technology Transition support services (common components and services) for CBD programs. ***FY 2020 Plans:*** Continue to provide innovation, management and implementation of science and technology initiatives in support of JPEO CBRND systems across the enterprise to improve warfighter capability. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	0.151	0.419	0.446
Accomplishments/Planned Programs Subtotals	21.789	22.215	22.111

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• IS7: *INFORMATION SYSTEMS (OP SYS DEV)*	11.923	15.051	16.811	-	16.811	16.133	14.916	12.993	12.993	Continuing	Continuing
• G47101: *JOINT WARNING & REPORTING NETWORK (JWARN)*	0.933	0.502	0.442	-	0.442	0.394	0.370	0.375	0.375	Continuing	Continuing
• JC0208: *JOINT EFFECTS MODEL (JEM)*	0.880	0.911	0.689	-	0.689	0.720	0.735	0.749	0.749	Continuing	Continuing
• JS5230: *SOFTWARE SUPPORT ACTIVITY (SSA)*	0.092	0.094	0.081	-	0.081	0.074	0.070	0.067	0.067	Continuing	Continuing

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

D. Acquisition Strategy

BIOSURVEILLANCE PORTAL (BSP)

The Global-Biosurveillance Portal (Global-BSP) program will continue to meet the requirements as set forth in the USSOCOM Information Systems Capability Development Document (IS CDD), 19 May 2014. The Global-BSP program will utilize the JROC's "IT Box" construct for program requirements, management, and development. The intent is to provide the next generation of capability with current and future technologies in less time and fielding products to the DoD utilizing an incremental delivery approach. IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Capabilities will be developed and delivered in a series of Capability Drops (CDs). There are two planned Production Capability Drops and two Engineering Capability Drops planned in each FY. Developmental Testing (DT) and end-to-end tests (E2E) will be conducted for each CD to verify capabilities prior to delivery to the Warfighter. User Feedback Events (UFEs) will be conducted with identified Users to elicit feedback on developed capabilities and input on required adjustments to address new technologies. Initial Operational Capability (IOC) was achieved in July 2016. A Full Operational Test & Evaluation will be conducted prior to Final Operational Capability to be delivered in 3QFY20. The maintenance/sustainment of the capability as an IT system will continue within CBRN IS in FY23.

CBRN INFORMATION SYSTEMS

CBRN-IS acquisition strategy utilizes a Family-of-Systems (FoS) approach to align multiple programs of record capabilities to the CBRN-IS architecture and operational environment. CBRN-IS enterprise will initially integrate appropriate JPEO-CBD products into a FoS framework beginning with the Joint Warning and Reporting (JWARN) and Joint Effects Model (JEM) program capabilities. CBRN-IS leverages the concepts of CBRN Hazard Awareness and Understanding and DISA Enterprise Services to integrate current CBRN capabilities, and other information and intelligence services, applications, and systems to provide increased situational awareness and decision support to commanders for CBRN defense. The strategy supports the implementation of integrated early warning capabilities by incorporating the inclusion of mature science and technology products and emerging technologies from existing ATD and experimental capability demonstrations (ECD). CBRN-IS utilizes the Agile software development process with the IT Box acquisition strategy to provide for the spiral development and fielding of modular capability packages.

JOINT EFFECTS MODEL (JEM)

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

IT Box enables programs to tailor the incrementally fielded software program model in the DODI 5000.02 to conduct multiple, more frequent fielding events in lieu of a single fielding event. Programs conduct a single Milestone B (MS B) decision by the Milestone Decision Authority (MDA) that covers the entire program. MS B is followed by a series of supporting Build Decisions (BDs) associated with each RDP as they are released. The supporting BDs will ensure incorporation of mature technology and development efforts culminating in incremental deliveries of capability to Joint and Service Command and Control (C2) architectures. Instead of a single Milestone C (MS C) decision and fielding event for one increment, the program will return to the MDA for more frequent fielding decisions, as often as annually, as

portions of capability are determined suitable and operationally effective. These multiple fielding efforts are based on providing capabilities with the most value to the operators based on Warfighter priorities/needs, maturation of the technology being incorporated and available resources supporting the effort.

As part of this strategy a single JEM 2 integrator, General Dynamics Information Technology (GDIT), was selected as the prime development contract in March 2017.

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

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

The maintenance/sustainment of the capability as an IT system will continue within CBRN IS in FY23.

JOINT WARNING & REPORTING NETWORK (JWARN)

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

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

The JWARN 2 Program will find an appropriate Sensor Connectivity Capability (SCC) to facilitate the transfer of CBRN sensor information from legacy CBRN sensors to DoD networks. This solution will be external to the CBRN Sensors and Service-identified network transmission device(s).

The current contractor for JWARN 2, Northrup Grumman, will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1) and RDP-2 documents.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

As part of the strategy for a single JWARN 2 integrator, a follow-on contract was awarded in December 2018. The follow-on contractor, DCS Corp, for JWARN 2 will provide all capabilities defined in the Requirement Definition Package 1 (RDP-1), Capability Drop 1.1 (CD 1.1), Capability Drop 1.2 (CD 1.2), and RDP-2 / CD 2.1 documents. It is anticipated that the JRO will release further RDP-1 CDs, RDP-3, and RDP-4 prior to contract completion. The follow-on contract in FY18 will include scope for developing the remaining capabilities under the JWARN contract. The JWARN 2 follow-on contract will utilize full and open competition and will be referred to as the JWARN 2 software development and maintenance contract.

The maintenance/sustainment of the capability as an IT system will continue within CBRN IS in FY23.

SOFTWARE SUPPORT ACTIVITY (SSA)

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

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - SW S - software -Global-BSP software development	FFRDC	Johns Hopkins University - Applied Physics Lab : Laurel, MD	14.636	6.064	Mar 2018	3.787	Dec 2018	2.797	Dec 2019	-		2.797	Continuing	Continuing	0.000
CBRN IS - SW S - software - integration with BSP, JEM, JWARN	MIPR	Various : Various	0.942	0.936	Dec 2017	1.058	Dec 2018	1.025	Dec 2019	-		1.025	Continuing	Continuing	0.000
JEM - SW SB -2 - Hazard Prediction Model Development and Integration	C/CPAF	General Dynamics Information Technologies : Fairfax, VA	12.519	1.277	Apr 2018	1.682	Apr 2019	1.964	Apr 2020	-		1.964	Continuing	Continuing	0.000
JWARN - 2- SW S - Soft Dev Follow-On	C/CPAF	DCS Corps : Alexandria, VA	0.000	0.000		5.239	Dec 2018	5.002	Dec 2019	-		5.002	Continuing	Continuing	0.000
JWARN - 1&2- SW S - Software Development	C/CPAF	Northrop Grumman Corp. : Winter Park, FL	6.978	3.657	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
SSA - SW S - CBRN Data Model	C/CPAF	Various : Various	7.656	0.597	Mar 2018	1.003	Mar 2019	0.700	Mar 2020	-		0.700	Continuing	Continuing	0.000
		Subtotal	42.731	12.531		12.769		11.488		-		11.488	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBRN IS - ES S - Support Costs - Cybersecurity and IA updates, architecture documentation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	1.313	0.572	Dec 2017	0.565	Dec 2018	0.672	Dec 2019	-		0.672	Continuing	Continuing	0.000
JEM - ILS C - Training and Logistics Support	Various	Various : Various	0.000	0.000		0.000		0.321	Apr 2020	-		0.321	Continuing	Continuing	0.000
JWARN - ILS C - Training and Logistics Support	Various	Various : Various	0.000	0.000		0.000		1.084	Apr 2020	-		1.084	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - ES S - Support Costs	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	9.069	0.535	Dec 2017	0.946	Dec 2018	1.804	Dec 2019	-		1.804	Continuing	Continuing	0.000
		Subtotal	10.382	1.107		1.511		3.881		-		3.881	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - DTE S - Software	MIPR	Various : Various	2.315	0.910	Dec 2017	0.358	Dec 2018	0.488	Dec 2019	-		0.488	Continuing	Continuing	0.000
BSP - OTE S - Software - MOT&E	MIPR	Various : Various	2.679	1.065	Dec 2017	0.928	Dec 2018	0.911	Dec 2019	-		0.911	Continuing	Continuing	0.000
CBRN IS - OTE S - Operational Test - service-specific testing, joint test	MIPR	Various : Various	0.706	0.598	Dec 2017	0.679	Dec 2018	0.675	Dec 2019	-		0.675	Continuing	Continuing	0.000
JEM - DTE SB - 2 - Hazard Prediction Model Development Test	MIPR	Naval Surface Warfare Center (NSWC) - Dahlgren Center : Dahlgren, VA	9.834	0.350	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
JEM - OTHT C - Increment 2 - OT&E Hazard Prediction Modeling software	MIPR	Various : Various	2.821	0.832	Dec 2017	0.440	Dec 2018	1.202	Dec 2019	-		1.202	Continuing	Continuing	0.000
JWARN - 2- DTE S - Completed Development Test and Evaluation of JWARN 2 in support of JWARN 2 IOT&E	MIPR	Various : Various	1.123	0.382	Dec 2017	1.839	Dec 2018	0.567	Dec 2019	-		0.567	Continuing	Continuing	0.000
JWARN - 2 - OTE S - Multi-service Operational Test and Evaluation of JWARN 2 software	MIPR	Various : Various	2.555	0.519	Jan 2018	0.000		0.850	Dec 2019	-		0.850	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
SSA - DTE S - Test and Evaluation	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	4.180	0.757	Dec 2017	0.751	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	26.213	5.413		4.995		4.693		-		4.693	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BSP - PM/MS S - Program Management	Various	Various : Various	2.167	0.753	Dec 2017	0.793	Dec 2018	0.466	Dec 2019	-		0.466	Continuing	Continuing	0.000
CBRN IS - PM/MS S - Program Management - Planning, Programming, and Budgeting	MIPR	Various : Various	0.250	0.299	Dec 2017	0.250	Dec 2018	0.128	Dec 2019	-		0.128	Continuing	Continuing	0.000
JEM - PM/MS S - Program Office - Planning and Programming	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	7.748	0.974	Dec 2017	0.580	Dec 2018	0.521	Dec 2019	-		0.521	Continuing	Continuing	0.000
JWARN - 2- PM/MS C - Program Management Support	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	1.469	0.561	Dec 2017	0.921	Nov 2018	0.834	Dec 2019	-		0.834	Continuing	Continuing	0.000
SSA - PM/MS S - Management Services	MIPR	Space and Naval Warfare (SPAWAR) Systems Center : San Diego, CA	3.202	0.151	Dec 2017	0.396	Dec 2018	0.100	Dec 2019	-		0.100	Continuing	Continuing	0.000
		Subtotal	14.836	2.738		2.940		2.049		-		2.049	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	94.162	21.789		22.215		22.111		-		22.111	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) IS5 / *INFORMATION SYSTEMS (EMD)*	

	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

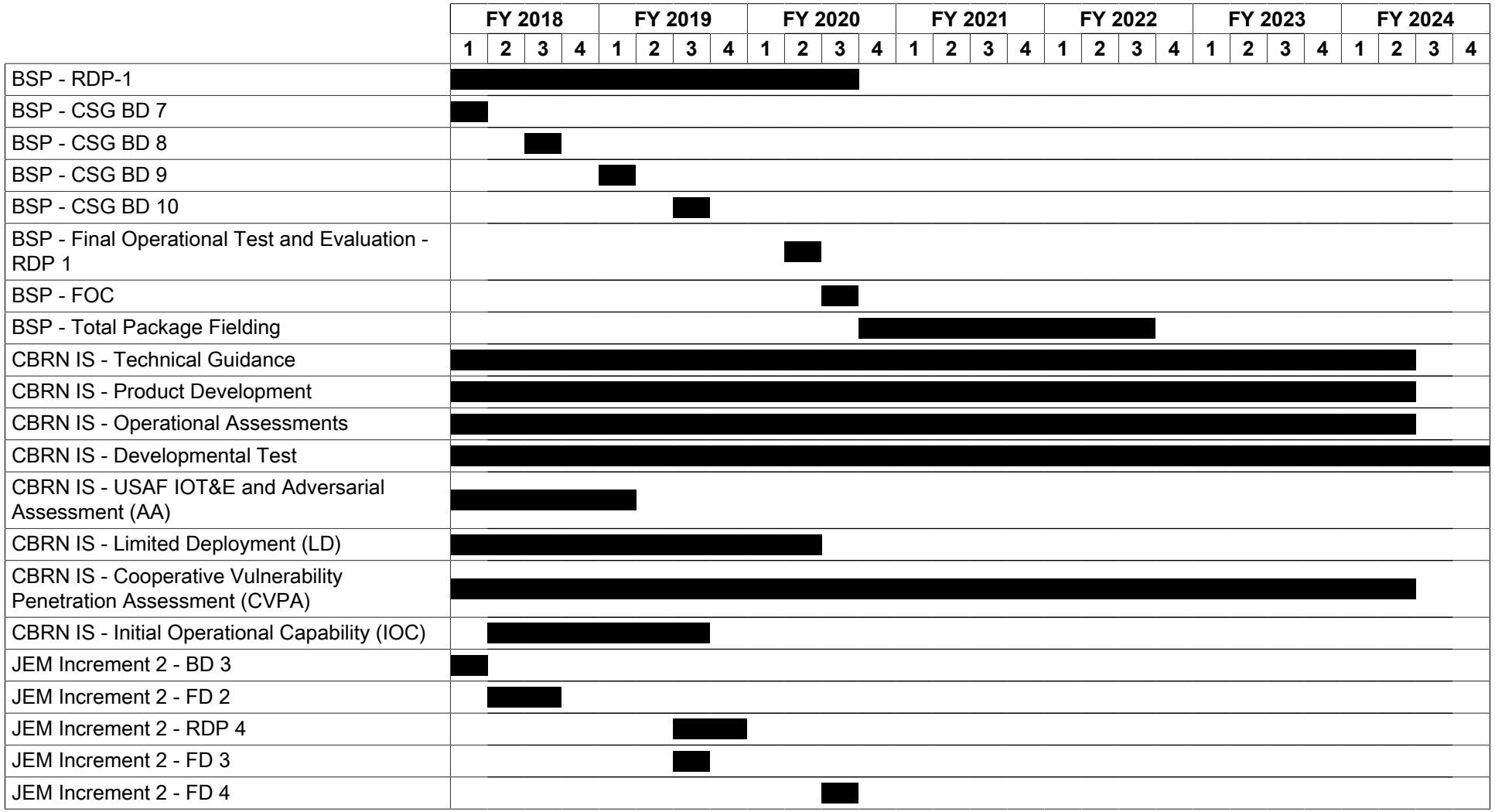

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

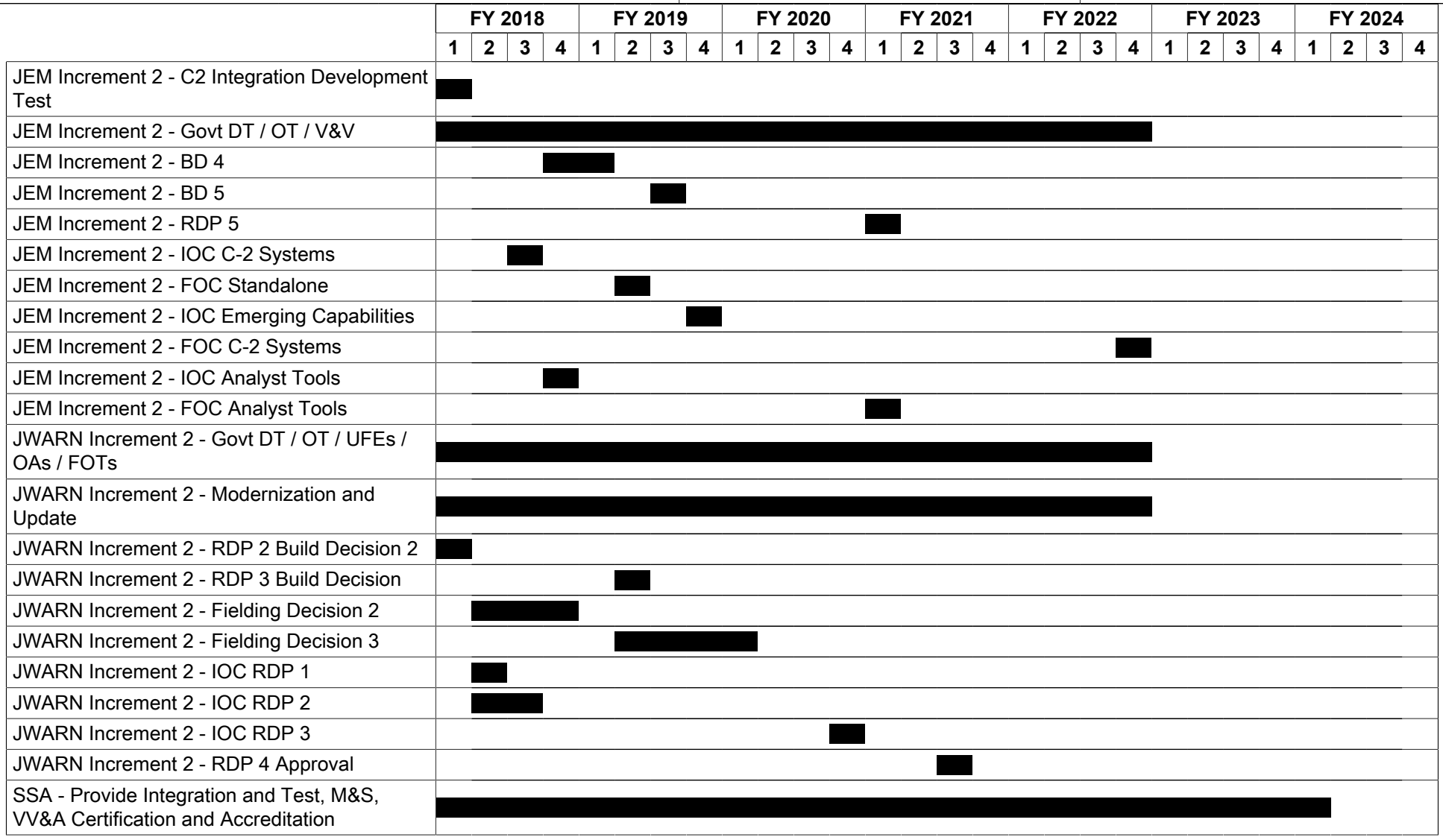

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

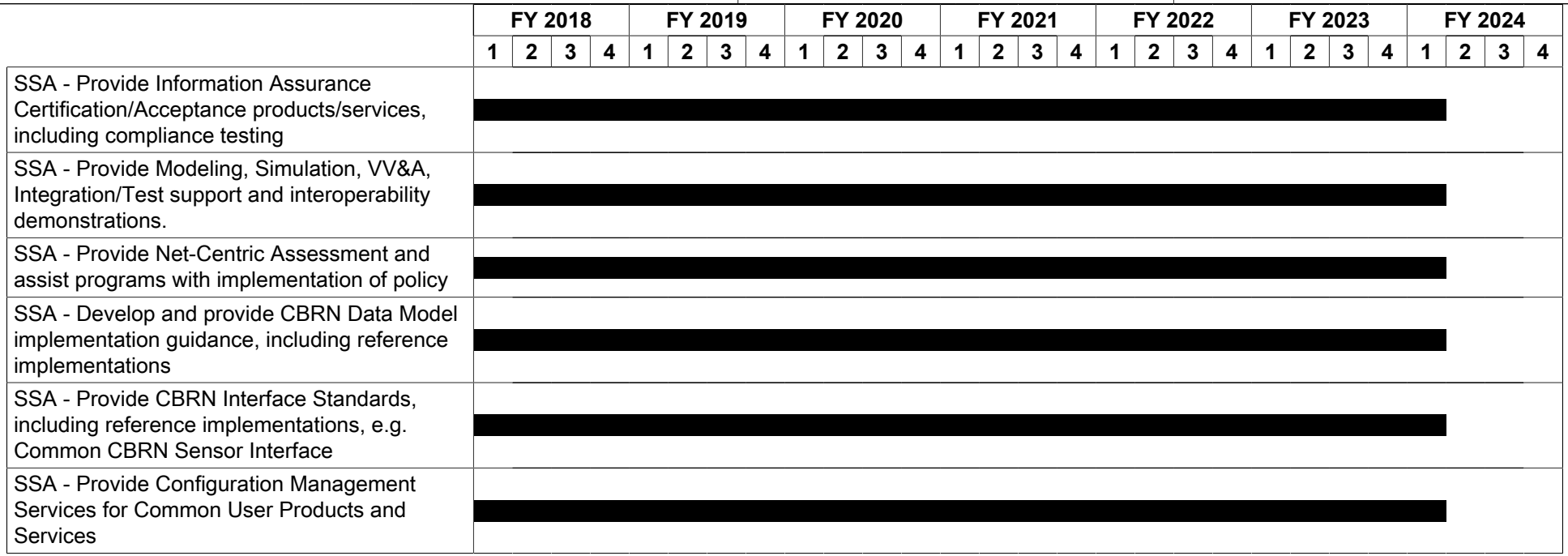

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
BSP - RDP-1	1	2018	3	2020
BSP - CSG BD 7	1	2018	1	2018
BSP - CSG BD 8	3	2018	3	2018
BSP - CSG BD 9	1	2019	1	2019
BSP - CSG BD 10	3	2019	3	2019
BSP - Final Operational Test and Evaluation - RDP 1	2	2020	2	2020
BSP - FOC	3	2020	3	2020
BSP - Total Package Fielding	4	2020	3	2022
CBRN IS - Technical Guidance	1	2018	2	2024
CBRN IS - Product Development	1	2018	2	2024
CBRN IS - Operational Assessments	1	2018	2	2024
CBRN IS - Developmental Test	1	2018	4	2024
CBRN IS - USAF IOT&E and Adversarial Assessment (AA)	1	2018	1	2019
CBRN IS - Limited Deployment (LD)	1	2018	2	2020
CBRN IS - Cooperative Vulnerability Penetration Assessment (CVPA)	1	2018	2	2024
CBRN IS - Initial Operational Capability (IOC)	2	2018	3	2019
JEM Increment 2 - BD 3	1	2018	1	2018
JEM Increment 2 - FD 2	2	2018	3	2018
JEM Increment 2 - RDP 4	3	2019	4	2019
JEM Increment 2 - FD 3	3	2019	3	2019
JEM Increment 2 - FD 4	3	2020	3	2020
JEM Increment 2 - C2 Integration Development Test	1	2018	1	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
JEM Increment 2 - Govt DT / OT / V&V	1	2018	4	2022
JEM Increment 2 - BD 4	4	2018	1	2019
JEM Increment 2 - BD 5	3	2019	3	2019
JEM Increment 2 - RDP 5	1	2021	1	2021
JEM Increment 2 - IOC C-2 Systems	3	2018	3	2018
JEM Increment 2 - FOC Standalone	2	2019	2	2019
JEM Increment 2 - IOC Emerging Capabilities	4	2019	4	2019
JEM Increment 2 - FOC C-2 Systems	4	2022	4	2022
JEM Increment 2 - IOC Analyst Tools	4	2018	4	2018
JEM Increment 2 - FOC Analyst Tools	1	2021	1	2021
JWARN Increment 2 - Govt DT / OT / UFEs / OAs / FOTs	1	2018	4	2022
JWARN Increment 2 - Modernization and Update	1	2018	4	2022
JWARN Increment 2 - RDP 2 Build Decision 2	1	2018	1	2018
JWARN Increment 2 - RDP 3 Build Decision	2	2019	2	2019
JWARN Increment 2 - Fielding Decision 2	2	2018	4	2018
JWARN Increment 2 - Fielding Decision 3	2	2019	1	2020
JWARN Increment 2 - IOC RDP 1	2	2018	2	2018
JWARN Increment 2 - IOC RDP 2	2	2018	3	2018
JWARN Increment 2 - IOC RDP 3	4	2020	4	2020
JWARN Increment 2 - RDP 4 Approval	3	2021	3	2021
SSA - Provide Integration and Test, M&S, VV&A Certification and Accreditation	1	2018	1	2024
SSA - Provide Information Assurance Certification/Acceptance products/services, including compliance testing	1	2018	1	2024
SSA - Provide Modeling, Simulation, VV&A, Integration/Test support and interoperability demonstrations.	1	2018	1	2024

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** IS5 / *INFORMATION SYSTEMS (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
SSA - Provide Net-Centric Assessment and assist programs with implementation of policy	1	2018	1	2024
SSA - Develop and provide CBRN Data Model implementation guidance, including reference implementations	1	2018	1	2024
SSA - Provide CBRN Interface Standards, including reference implementations, e.g. Common CBRN Sensor Interface	1	2018	1	2024
SSA - Provide Configuration Management Services for Common User Products and Services	1	2018	1	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
MB5: *MEDICAL BIOLOGICAL DEFENSE (EMD)*	-	130.240	117.331	119.227	-	119.227	97.501	71.221	78.435	82.815	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports Engineering and Manufacturing Development and Low Rate Initial Production (EMD/LRIP) of medical countermeasures, development of reagents, assays, diagnostic equipment, biosurveillance and supporting efforts.

Efforts included in this project are:
(1) Medical Countermeasure Platform Technologies (MCMPT)
(2) Joint Mobile Emerging Disease Intervention Clinical Capability (JMEDICC)
(3) Advanced Development and Manufacturing (ADM) facility
(4) Countermeasures for Multi-Drug Resistance-Bacterial (CMDR-B)
(5) Next Generation Diagnostic System (NGDS)
(6) Defense Biological Products Assurance Program (DBPAP)
(7) Antiviral Therapeutic Program (AV TX)
(8) Botulinum Vaccine (VAC BOT)
(9) Antiviral Prophylaxis Studies (Congressional Interest Item)
(10) Next Generation Anthrax Vaccine (VAC NGA)
(11) Plague Vaccine (VAC PLG)
(12) Special Immunizations Program (VAC SIP)

The MCMPT will leverage platform technologies to streamline and accelerate the MCM delivery to the Force by reducing developmental risk. A subset of these technologies will be adapted to deliver a rapid response capability to novel and emerging threats. The first platform being established as part of an Advanced Technology Demonstration (ATD) is the Advanced Development and Manufacturing Antibody Technologies (ADAMANT). A second platform technology will be established which will focus on a vaccine platform capability. The Agile Medical Paradigm (AMP) is the CBDP's strategic framework to accelerate the delivery of MCMs. To achieve this goal the DOD is establishing a MCMPT capability. The goal of the MCMPT is to counter a variety of threat agents using standardized discovery, design, manufacturing, and testing processes to reduce the MCM development risks. Efforts will center on leveraging the DoD's Advanced Development Manufacturing (ADM) facility and developing robust manufacturing processes.

The JMEDICC is a collaboration between United States and Ugandan research and outbreak response entities intended to enable clinical trials for filovirus (Ebola and Marburg) therapeutics during an outbreak. The JMEDICC effort provides a platform of advanced supportive care, scientific rigor, laboratory and logistical capacity,

mobility, and rapid response to test new therapeutics or MCM in a filovirus outbreak setting. The JMEDICC effort is a project currently under the Antiviral Therapeutic Program (AV TX) whose resulting capability offers a mechanism to greatly accelerate the development of life-saving products for future outbreaks.

The capability building effort at the DoD ADM will establish and enhance proven biopharmaceutical and vaccine manufacturing technologies to accelerate the delivery of medical countermeasures as part of a medical integrated layered defense. The return on investment is an increased level of preparedness and responsiveness to counter current and emerging chemical and biological threats. By establishing and enhancing proven enabling technologies, the DoD ADM will accelerate development of MCMs at all stages of development, enhance preparedness for existing threats, and accelerate response to emerging threats. MCMs impacted by these efforts include: Vaccines for Viral Agents, Vaccines for Bacterial Agents and Toxins, Monoclonal antibodies, antibody fragments, and antibody conjugates for therapeutic and prophylactic use across all agent classes, and Adjuvants. Funds to support the state of readiness were previously provided through individual product development and manufacturing funding lines. In FY20 the Department is providing dedicated funds to support operational availability.

The CMDR-B program develops medical countermeasures (MCMs) for Service members for protection against MDR bacteria, including Biological Warfare Agents (BWAs) and organisms that are genetically modified to be MDR and resulting bio-toxins. The resulting product(s) will be US Food and Drug Administration (FDA)-approved to prevent or minimize effects of MDR bacterial exposures. The candidate drug was approved by the FDA in Oct 18 for Community Acquired Bacterial Pneumonia (CAPB) that was required as part of the acquisition strategy for the antibiotic repurposing program from S&T to advanced development.

The NGDS is a family of systems providing increments of diagnostic capabilities over time that address varied CBR threats across the different echelons of the Combat Health Support System. The mission of the NGDS is to provide CBR threat and infectious disease identification and FDA-cleared diagnostics to inform individual patient treatment and CBR situational awareness and disease surveillance. NGDS Increment 1 improves diagnostic capabilities in deployable and laboratory-based combat health support units. NGDS Inc 1 offers improved operational suitability and affordability over legacy systems by developing FDA cleared biological warfare agent (BWA) and infectious disease IVD assays on an existing commercial diagnostic device with a well established FDA regulatory history and pipeline of commercial non-BWA infectious disease diagnostic tests. NGDS 2 will complement NGDS Increment 1 by developing diagnostics for unmet biological pathogen and toxin threats, chemical and radiological exposures, and to provide capability to lower echelons of care. NGDS 2 will provide additional capability for diagnosis of CBR-induced diseases, suitable for use in far forward environments, by developing lightweight, portable, and simple-to-use instruments and test kits.

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

The AV TX will develop and deliver FDA approved antiviral therapeutics for the warfighter. Initial drug product will be developed targeting Ebola Virus Disease. Development of models to test for alphavirus therapeutics are also in work. Other pathogens on the biological warfare threat lists, including viruses of interest from Filoviridae, Arenaviridae, Bunyaviridae, and Flaviviridae, are targets of future interest. Developed antiviral therapeutics will be employed after suspected or confirmed

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

exposure to the relevant threat agents and AV TX MCMs will ameliorate the effect of threat agents to the warfighter. In the event of a natural occurring outbreak, antiviral therapeutics can be provided to ensure freedom of operation.

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

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) MCMPT	9.573	3.074	0.199
Description: ADAMANT BOT A/B ***FY 2019 Plans:*** Continue the establishment phase of the ADAMANT platform capability. ***FY 2020 Plans:*** Complete establishment phase of the ADAMANT platform capability. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 2) JMEDICC	-	-	3.398
Description: Enabling Technologies ***FY 2020 Plans:*** Continue Readiness Activities for OCONUS clinical capabilities. ***FY 2019 to FY 2020 Increase/Decrease Statement:***			

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Program/project funding transferred from another funding line.			
Title: 3) DoD ADM Support ***Description:*** ADM Infrastructure ***FY 2020 Plans:*** Continue activities to maintain the DoD ADM's capabilities in a state of readiness to support Medical Countermeasure (MCM) development and manufacturing. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	-	-	10.000
Title: 4) CMDR-B ***Description:*** Clinical ***FY 2020 Plans:*** Execute Advanced Development Contract(s) for mature drug products. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Advanced Development.	-	-	8.385
Title: 5) NGDS 2 ***Description:*** Man Portable Diagnostic System (MPDS) ***FY 2019 Plans:*** Continue Engineering & Manufacturing Development for Man Portable Diagnostics System (MPDS). Down-select to one candidate system. ***FY 2020 Plans:*** Continue Engineering & Manufacturing Development, conduct test activities and initiate clinical trials for Man Portable Diagnostics System (MPDS). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule. Initiation of Clinical Trials	18.446	6.124	10.368
Title: 6) NGDS 2 ***Description:*** Chemical Diagnostic (ChemDx)	-	-	2.697

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2020 Plans: Begin Engineering & Manufacturing Development for the Chemical Diagnostic (ChemDx). ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.			
Title: 7) DBPAP ***Description:*** Development ***FY 2019 Plans:*** Continued development/expansion of biological threat agents reference materials to known and emerging threats. Continued development of assays and nucleic acid based genomic assays to support fielded and developmental systems. Continued QA/QC testing to encompass the transition and fielding of biological detection assays. Continued to maintain yearly accreditation audits such as ISO 9001, 17025, and Guide 34 certifications. Continued quality actions throughout to maintain the quality managed systems. Continued development of prototypes/information for strains contained in Unified Culture Collection. ***FY 2020 Plans:*** Continued development/expansion of biological threat agents reference materials to known and emerging threats. Continued development of assays and nucleic acid based genomic assays to support fielded and developmental systems. Continued QA/QC testing to encompass the transition and fielding of biological detection assays. Continued to maintain yearly accreditation audits such as ISO 9001, 17025, and Guide 34 certifications. Continued quality actions throughout to maintain the quality managed systems. Continued development of prototypes/information for strains contained in Unified Culture Collection. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	8.770	7.917	6.865
Title: 8) DBPAP ***Description:*** Establishment of advanced platform technologies.	6.544	-	-
Title: 9) AV TX ***Description:*** Enabling Technologies ***FY 2019 Plans:*** Non-clinical: Continue efficacy studies with Non Human Primates infected with Ebola virus. ***FY 2020 Plans:***	24.888	5.475	7.095

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Non-clinical: Continue efficacy studies with Non-Human Primates infected with Ebola virus. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to fact of life change in the program/project.			
Title: 10) VAC BOT - Recombinant Botulinum Vaccine ***Description:*** Manufacturing ***FY 2019 Plans:*** Continue manufacturing efforts. ***FY 2020 Plans:*** Continue manufacturing efforts. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule. Decrease due to change in program/project schedule.	19.765	29.758	18.500
Title: 11) VAC BOT - Recombinant Botulinum Vaccine ***Description:*** Non Clinical and Clinical ***FY 2019 Plans:*** Continue non clinical and clinical efforts. ***FY 2020 Plans:*** Continue non clinical and clinical efforts. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project schedule.	19.361	4.891	21.999
Title: 12) Cong Mark #230 ***Description:*** Antiviral Prophylaxis Studies ***FY 2019 Plans:*** Continue antiviral prophylaxis studies. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to fact of life change in the program/project.	5.000	12.000	-
Title: 13) VAC NGA	-	1.385	-

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: NonClinical ***FY 2019 Plans:*** Conduct and finalize initial species-neutral assay development and qualification to support the anthrax program. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule. Funding not required in FY20.			
Title: 14) VAC PLG ***Description:*** Nonclinical and Clinical ***FY 2019 Plans:*** Continue nonclinical and clinical efforts. ***FY 2020 Plans:*** Continue nonclinical and clinical efforts. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	11.287	27.427	17.149
Title: 15) VAC PLG ***Description:*** Manufacturing ***FY 2019 Plans:*** Continue manufacturing efforts. ***FY 2020 Plans:*** Continue manufacturing efforts. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.	3.951	17.488	9.807
Title: 16) VAC SIP ***Description:*** Storage, Distribution, Potency Testing ***FY 2019 Plans:***	2.655	1.792	2.765

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program and support product availability for Interim Fielding Capabilities. ***FY 2020 Plans:*** Continue storage, distribution, potency testing, and biosurety compliance activities in support of the Special Immunization Program. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.			
Accomplishments/Planned Programs Subtotals	130.240	117.331	119.227

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• MB7: *MEDICAL BIOLOGICAL DEFENSE (OP SYS DEV)*	11.195	9.021	3.720	-	3.720	3.365	2.887	2.179	7.552	Continuing	Continuing
• JM8788: *NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)*	6.498	6.563	4.905	-	4.905	9.156	8.067	9.064	7.744	Continuing	Continuing
• JX0005: *DOD BIOLOGICAL VACCINE PROCUREMENT (VACCINES)*	0.183	0.183	3.674	-	3.674	22.752	24.735	22.269	32.158	Continuing	Continuing
• JX0210: *DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)*	0.980	0.975	2.961	-	2.961	2.857	2.771	2.747	2.747	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 DoD's Advanced Development Manufacturing (ADM) facility 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.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

JOINT MOBILE EMERGING DISEASE INTERVENTION CLINICAL CAPABILITY (JMEDICC)

The Joint Mobile Emerging Disease Intervention Clinical Capability (JMEDICC) is a collaboration between United States and Ugandan research and outbreak response entities. It currently is a joint effort with The United States Army Medical Research Institute of Infectious Diseases (USAMRIID) and The Naval Medical Research Center (NMRC) to enable clinical trials for filovirus (i.e., Ebola and Marburg) therapeutics during an outbreak. Prior to Fiscal Year 2020, this effort was funded under the Antiviral Therapeutics (AV TX) Program. The JMEDICC effort is currently focused on filovirus, but is an adaptable capability that can incorporate multiple different medical countermeasures (MCM) in parallel and accommodate multiple site activities. This will maximize JMEDICC's current response capability and infrastructure by expanding as the endemic situation warrants. A cost sharing plan is currently being explored with other government and nongovernment agencies to determine interest and relevance levels. Antiviral Therapeutics program funded JMEDICC effort through FY19.

ADVANCED DEVELOPMENT & MANUFACTURING (ADM)

A contract was awarded to Ology Bioservices on 20 March 2013 (then Nanotherapeutics, Inc.) to establish a Department of Defense (DoD) ADM Facility to rapidly develop, approve (through FDA approval), and manufacture MCMs. The contract was structured to be executed in two (2) phases:

Phase 1-Establish, commission and validate (facility(ies)/ equipment) for two (2) advanced development and manufacturing suites that use agile, flexible (single use, disposable), modular and multi-product technologies for MCM advanced development and manufacturing. Both suites must meet Biological Safety Level-3 (BSL-3) standards. Phase 1 was completed on 31 March 2017.

Phase 2-Support and maintain that capability in a state of readiness to support MCM development (under the animal rule as applicable) and manufacturing and assist in training personnel in its use. This includes transition and integration of new technologies, from Pre-Investigational New Drug Application phase with readiness to support simultaneous operations, through FDA licensure. The first option is scheduled for completion in 2QFY19, proceeded by a second, 2-year option.

COUNTERMEASURES FOR DRUG RESISTANT BACTERIA (CMDR-B)

The CMDR-B program develops MCMs for Service members for protection against MDR bacteria, including Biological Warfare Agents (BWAs) and organisms that are genetically modified to be MDR and resulting bio-toxins. The resulting product(s) will be US Food and Drug Administration (FDA)-approved to prevent or minimize effects of MDR bacterial exposures. The candidate is a transitional product from S&T that showed efficacy against plague, anthrax, and other BW agents. The regulatory approach of the program is to pursue development of products to FDA approval under the Animal Rule. The program will conduct non-human primate studies to initial efficacy. The performer will submit Supplemental New Drug Application for the therapeutic during the EMD Phase. In FY18 PK study on non-human primates was completed for the plague indication. MS B for the program is planned for 4QFY20.

NEXT GENERATION DIAGNOSTICS SYSTEM (NGDS)

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

The NGDS Increment 1 program was a MS A to MS C - acquisition strategy, with MS C approval granted in Dec 2016 for limited production and fielding. NGDS 1 is replacing the legacy Joint Biological Agent Identification and Diagnostic System (JBAIDS) beginning in FY17. NGDS 1 Full Rate Production was approved in Aug 2018.

The NGDS 2 program addresses CBR agents and COEs that the NGDS 1 Film Array does not address. More than one materiel solution is required to expand the scope of CBR agent diagnostics across multiple echelons of care. NGDS 2 will employ a family of systems approach to bridge identified capability gaps for man-portable diagnostics, immunoassay diagnostics, and chemical diagnostics systems. NGDS 2 initiated prototyping of a man-portable diagnostic capability in FY17, while continuing to conduct risk reduction efforts for the other capabilities. NGDS 2 initiated prototyping of a chemical diagnostic capability in FY18. Separate decisions will be utilized to proceed with further development and production for each capability, based on individual determinations of technology maturity to meet user requirements. Development efforts are anticipated to be cost-plus awards using Other Transactions Authority (OTA) agreements to take advantage of nontraditional Defense contractor offerings.

DEFENSE BIOLOGICAL PRODUCTS ASSURANCE PROGRAM (DBPAP)

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 biothreat agent detection that shall be used across multiple detection and diagnostic platforms. In addition, this strategy includes a formal, validated advanced development process for transitioning new assays into production and subsequent integration with the appropriate detection/diagnostic platform.

ANTI-VIRAL THERAPEUTICS (AV TX)

The Anti-viral Therapeutics program acquisition strategy supports the development of multiple therapeutics through the Technology Maturation and Risk Reduction (TMRR) phase against the Ebola (Zaire), Marburg, Sudan and alpha virus bio warfare threats. The initial therapeutic candidate is for the Ebola Zaire that is scheduled for a Milestone B decision review in FY19. The overall regulatory approach of the program remains to pursue development of products to FDA approval under the Animal Rule. The program will conduct pilot and pivotal animal efficacy, and toxicology studies for FDA approval. The acquisition strategy for each indication will have the performers submitting New Drug applications for the therapeutics during the Engineering, Manufacturing and Development (EMD) phases.

BOTULINUM VACCINE (VAC BOT)

The Prime System Contractor (Dynport Vaccine Company/DVC LLC, Frederick MD) will function as the FDA regulatory sponsor and will perform all ancillary, regulatory, quality assurance, and data management as required by the FDA. The current budget supports development through FDA licensure of a recombinant bivalent (A and B) botulinum vaccine. Other serotypes will be developed through an evolutionary approach, as funding becomes available. The Advanced Component Development and Prototypes (ACD&P) phase included the manufacture of candidate current Good Manufacturing Practices (cGMP) lots, animal safety testing, and initial clinical trials. During this phase, the vaccine was evaluated for safety and immunogenicity in a small human clinical trial (Phase 1). During the Engineering Manufacturing Development (EMD) Phase, the prime contractor stabilized the vaccine formulation, validated the manufacturing process and testing protocols, optimized the delivery systems and manufactured consistency lots. Phase 2 clinical trials were performed and provided additional safety data. The evaluation of efficacy in pivotal animal

studies to satisfy FDA requirements for the Animal Rule has been completed. The remaining efforts to be conducted during the EMD phase include the Phase 3 clinical trial to demonstrate safety in an expanded volunteer population. The Low Rate Initial Production (LRIP) decision will be conducted after the manufacturing process has been validated and consistency lots have been produced. A Biologics License Application (BLA) is be submitted to the FDA including all clinical, nonclinical, and manufacturing data. The FDA grants licensure to products that are determined to be safe and efficacious.

CONGRESSIONAL INTEREST ITEMS

CONGRESSIONAL INTEREST ITEM #230
Antiviral prophylaxis studies are being performed. Suitable performers for this type of non-human primate work have been solicited for and the study result will inform potential future studies.

NEXT GENERATION ANTHRAX VACCINE (VAC NGA)

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

PLAGUE VACCINE (VAC PLG)

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

SPECIAL IMMUNIZATION PROGRAM (VAC SIP)

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

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

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - HW S - ADAMANT BOT A/B establishment	C/CPFF	Ology : Alachua, FL	0.000	9.573	Jan 2018	2.187	Jan 2019	0.175	Jan 2020	-		0.175	Continuing	Continuing	0.000
JMEDICC - Readiness	Various	Various : Various	0.000	0.000		0.000		2.369	Nov 2019	-		2.369	Continuing	Continuing	0.000
CMDR-B - Advanced Development Contract	C/CPIF	TBD : TBD	0.000	0.000		0.000		6.303	Oct 2019	-		6.303	Continuing	Continuing	0.000
NGDS - HW C - Man Portable Diagnostic System	C/CPFF	Cepheid : Sunnyvale, CA	0.000	7.165	Jul 2018	4.163	Nov 2018	6.662	Dec 2019	-		6.662	Continuing	Continuing	0.000
NGDS - HW C - Chemical Diagnostic (ChemDx)	C/CPFF	MRI Global : Palm Bay, FL	0.000	0.000		0.000		1.076	Dec 2019	-		1.076	Continuing	Continuing	0.000
NGDS - HW C - Man Portable Diagnostic System #2	C/CPFF	MRI Global : Palm Bay, FL	5.168	5.511	Dec 2017	0.500	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - HW S - ADMAMANT BOT A/B	C/CPFF	20th Support Command : Aberdeen Proving Ground, MD	0.000	6.544		0.000		0.000		-		0.000	Continuing	Continuing	0.000
DBPAP - HW C - Development of Select Biological Threat Agent Reference Materials and Assays	MIPR	Various : Various	0.000	1.826	Mar 2018	1.662	Jun 2019	1.400	Mar 2020	-		1.400	Continuing	Continuing	0.000
AV TX - HW GFPP - Joint Mobile Emerging Disease Intervention Clinical Capability	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	0.804	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AV TX - Enabling Technologies (Joint Mobile Emerging Disease Intervention Clinical Capability)	Various	Various : Various	5.124	7.800	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AV TX - Gilead Filo Candidate	C/FP	Gilead Sciences : San Francisco, CA	0.000	0.000		5.475	Nov 2018	4.946	Nov 2019	-		4.946	Continuing	Continuing	0.000
VAC BOT - Manufacturing, Validation and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	38.462	32.756	Dec 2017	27.033	Dec 2018	30.394	Dec 2019	-		30.394	Continuing	Continuing	0.000
CONG - Antiviral prophylaxis studies - OTA	C/FP	TBD : TBD	0.000	2.213	Nov 2018	10.754	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
CONG - Antiviral prophylaxis studies	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	2.787	Sep 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - HW S - Manufacturing, Validation, and Consistency Lot Production	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	19.263	11.408	Dec 2017	28.000	Nov 2018	17.549	Dec 2019	-		17.549	Continuing	Continuing	0.000
VAC PLG - HW S - - Manufacturing Validation	MIPR	Battelle Memorial Institute : Columbus, OH	0.200	2.570	Dec 2017	0.553	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	68.217	90.957		80.327		70.874		-		70.874	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ADM - Infrastructure	C/CPFF	Ology : Alachua, FL	0.000	0.000		0.000		8.383	Dec 2019	-		8.383	Continuing	Continuing	0.000
NGDS - ES C - Studies and WIPT Support	MIPR	John Hopkins University : Laurel, MD	0.000	0.000		0.000		0.302	Oct 2019	-		0.302	Continuing	Continuing	0.000
DBPAP - ES C - Select Biological Threat Agent Reference Material Support	MIPR	Various : Various	0.000	1.620	Mar 2018	1.920	Jun 2019	1.500	Mar 2020	-		1.500	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DBPAP - ES C - Select Biological Threat Agent Reference Material Regulatory/Quality Assurance (QA) Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	1.580	Mar 2018	1.361	Jun 2019	1.482	Mar 2020	-		1.482	Continuing	Continuing	0.000
VAC BOT - Regulatory Integration (Environmental and FDA Documentation) and Delivery System	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	27.728	5.470	Dec 2017	5.136	Dec 2018	1.310	Dec 2019	-		1.310	Continuing	Continuing	0.000
VAC SIP - Storage and Distribution of Vaccines	SS/FP	Fisher BioServices : Rockville, MD	1.323	0.467	Dec 2017	0.437	Feb 2019	0.453	Jan 2020	-		0.453	Continuing	Continuing	0.000
		Subtotal	29.051	9.137		8.854		13.430		-		13.430	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - OTHT C - Test and evaluate interagency	MIPR	Various : Various	0.300	0.060	Jul 2018	0.095	Dec 2018	0.500	Oct 2019	-		0.500	Continuing	Continuing	0.000
NGDS - DTE C - Virus Strain Production & Testing	MIPR	Various : Various	0.000	0.432	Oct 2017	0.250	Nov 2018	0.500	Oct 2019	-		0.500	Continuing	Continuing	0.000
VAC BOT - DTE C - Battelle	Allot	Battelle Memorial Institute : Columbus, OH	0.000	0.900	Dec 2018	1.480	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
VAC BOT - DTE C - T & E Clinical Trials	Allot	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	0.000	0.000		0.000		7.295	Dec 2019	-		7.295	Continuing	Continuing	0.000
VAC BOT - DTE C - Clinical Trials - Nonclinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	81.485	0.000		1.000	Dec 2018	1.500	Dec 2019	-		1.500	Continuing	Continuing	0.000
VAC NGA - DTE C - TBD	Various	TBD : TBD	0.000	0.000		1.385	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
VAC PLG - DTE C - Clinical Trials/Non-Clinical Studies	C/CPAF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	91.008	0.806	Dec 2017	3.920	Dec 2018	9.407	Dec 2019	-		9.407	Continuing	Continuing	0.000
VAC PLG - DTE C - USAMRIID T&E	Allot	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	0.000	0.294	Dec 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
VAC SIP - OTHT C - Potency Testing of Vaccines	MIPR	US Army Medical Research Institute of Infectious Disease (USAMRIID) : Fort Detrick, MD	10.269	1.834	Dec 2017	1.000	Dec 2019	2.170	Jan 2020	-		2.170	Continuing	Continuing	0.000
		Subtotal	183.062	4.326		9.130		21.372		-		21.372	Continuing	Continuing	N/A

Remarks

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

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MCMPT - PM/MS C - Program Management	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.388	Dec 2018	0.024	Dec 2019	-		0.024	Continuing	Continuing	0.000
MCMPT - PM/MS C - ADMC Support	C/CPFF	Ology : Alachua, FL	0.000	0.000		0.499	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
JMEDICC - PM/MS SB - Management Support	C/FP	Various : Various	0.000	0.000		0.000		0.370	Feb 2020	-		0.370	Continuing	Continuing	0.000
JMEDICC - PM/MS SB - JPEO	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.246	Jan 2020	-		0.246	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
JMEDICC - PM/MS SB - Management Support #2	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		0.224	Jan 2020	-		0.224	Continuing	Continuing	0.000
JMEDICC - PM/MS SB - - Management Support	Allot	JPM Medical Countermeasures Systems (JPM MCS) : BioDefense Therapeutics, Frederick, MD	0.000	0.000		0.000		0.189	Jan 2020	-		0.189	Continuing	Continuing	0.000
ADM - PM/MS C - Program Management Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.700	Dec 2019	-		0.700	Continuing	Continuing	0.000
ADM - PM/MS C - Program Management Support #2	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.000		0.917	Dec 2019	-		0.917	Continuing	Continuing	0.000
CMDR-B - PM/MS S - Program Management/ Program Manager Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.608	Jan 2020	-		0.608	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		0.553	Jan 2020	-		0.553	Continuing	Continuing	0.000
CMDR-B - PM/MS SB - Contractor Systems Engineering/Program Management Support	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Belvoir, VA	0.000	0.000		0.000		0.921	Jan 2020	-		0.921	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
NGDS - PM/MS S - Product Management Support	MIPR	Various : Various	2.938	0.068	Oct 2017	0.871	Nov 2018	1.887	Dec 2019	-		1.887	Continuing	Continuing	0.000
NGDS - PM/MS C - Program Management Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.170	Nov 2018	0.329	Dec 2019	-		0.329	Continuing	Continuing	0.000
NGDS - PM/MS S - Product Management Support #2	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	4.425	4.460	Dec 2017	0.075	Dec 2018	0.947	Dec 2019	-		0.947	Continuing	Continuing	0.000
NGDS - PM/MS SB - Product Management Systems Support	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.686	0.750	Dec 2017	0.000		0.862	Dec 2019	-		0.862	Continuing	Continuing	0.000
DBPAP - PM/MS C - Product Management Contractor Support	SS/FFP	Various : Various	0.000	1.123	Feb 2018	0.849	Feb 2019	0.860	Feb 2020	-		0.860	Continuing	Continuing	0.000
DBPAP - PM/MS C - Product Management Support	Allot	JPM Guardian : Aberdeen Proving Ground, MD	0.000	2.621	Jan 2018	2.125	Jan 2019	1.623	Jan 2020	-		1.623	Continuing	Continuing	0.000
AV TX - PM/MS - S - Program Management/ Program Manager Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	2.432	6.551	Jan 2018	0.000		0.514	Jan 2020	-		0.514	Continuing	Continuing	0.000
AV TX - PM/MS SB -	C/CPFF	Ology : Alachua, FL	0.000	6.564	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
AV TX - PM/MS - SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.326	1.478	Jan 2018	0.000		0.468	Jan 2020	-		0.468	Continuing	Continuing	0.000
AV TX - PM/MS - S - Management Support	Allot	JPM Medical Countermeasure Systems (JPM	0.000	0.304	Jan 2018	0.000		0.395	Jan 2020	-		0.395	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		MCS) : Fort Belvoir, VA													
AV TX - PM/MS - SB - Management Support #2	C/FP	Various : Various	2.051	1.387	Jan 2018	0.000		0.772	Jan 2020	-		0.772	Continuing	Continuing	0.000
CONG - PM/MS SB - Management Support	Allot	JPM Chem/Bio Medical Systems (JPM CBMS) : Fort Detrick, MD	0.000	0.000		0.220	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
CONG - PM/MS SB - Contractor Systems Engineering/Program Management Support	Allot	Various : Various	0.000	0.000		1.026	Nov 2019	0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - PM/MS S - Joint Vaccine Acquisition Program Management Office	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	25.636	0.150	Dec 2017	1.428	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - PM/MS S - Program Management Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	42.923	0.010	Dec 2017	4.517	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
VAC PLG - ADMC Support	C/CPFF	Ology : Alachua, FL	1.800	0.000		6.497	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
VAC SIP - PM/MS SB - Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.215	0.300	Mar 2018	0.355	Mar 2019	0.142	Mar 2020	-		0.142	Continuing	Continuing	0.000
VAC SIP - SBIR/STTR - SBIR/STTR Tax	Allot	USA Research Dev & Engr Cmd (RDECOM) : Aberdeen Proving Ground, MD	0.000	0.054	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	88.432	25.820		19.020		13.551		-		13.551	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*	

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	368.762	130.240		117.331		119.227		-		119.227	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

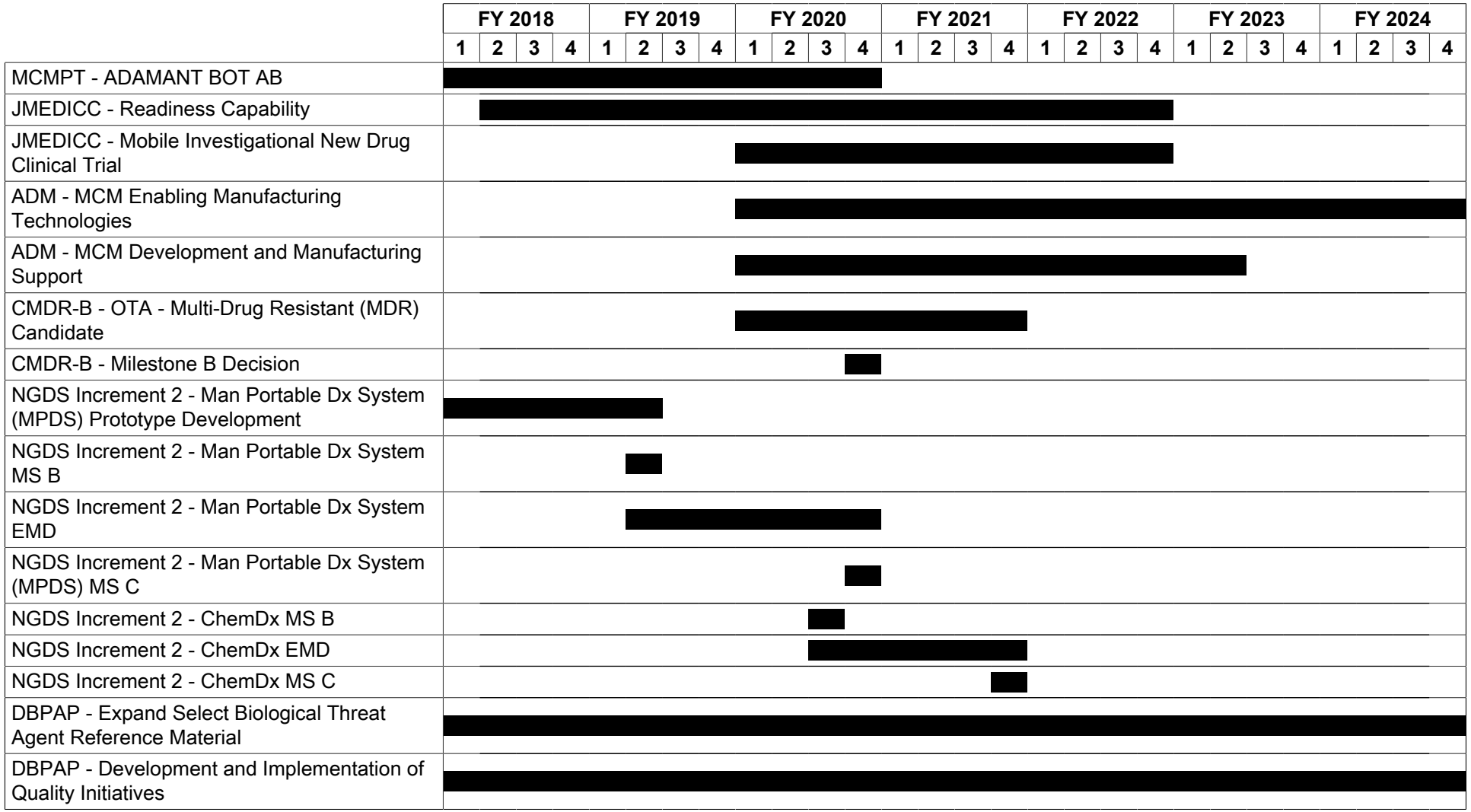

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

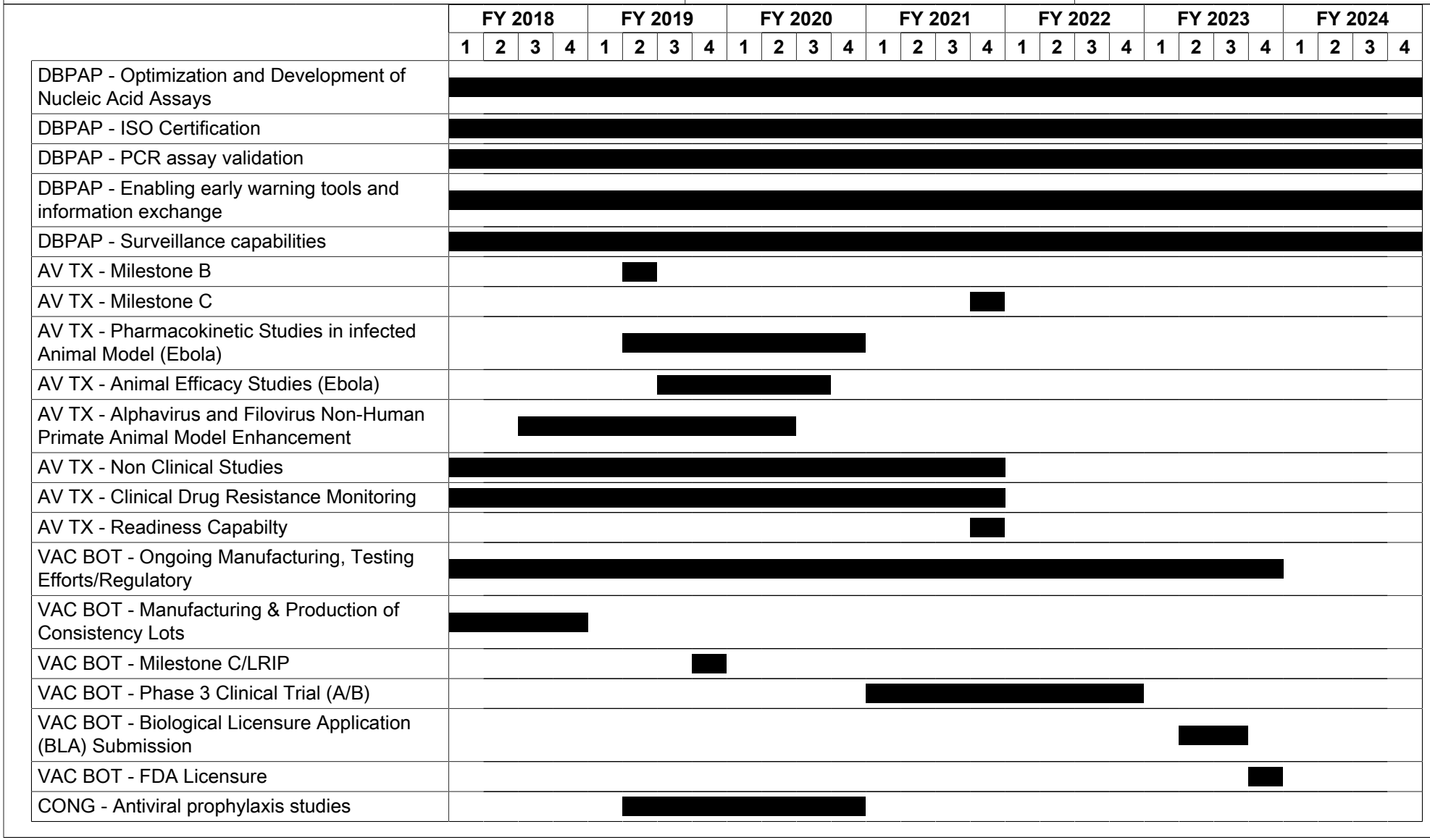

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

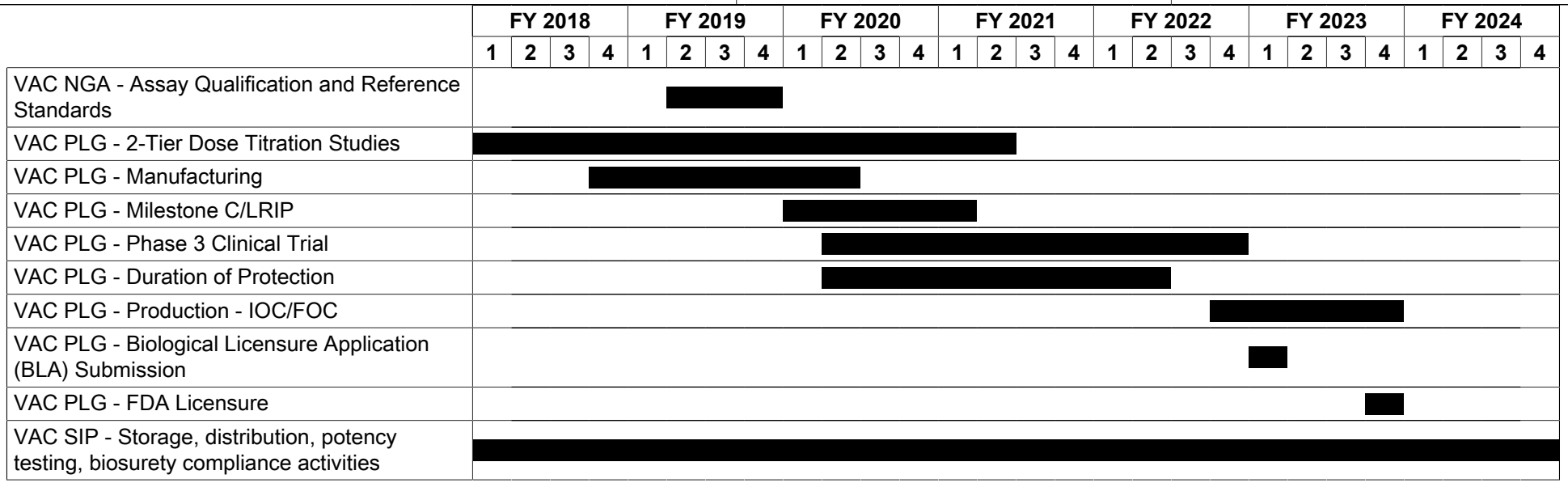

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
MCMPT - ADAMANT BOT AB	1	2018	4	2020
JMEDICC - Readiness Capability	2	2018	4	2022
JMEDICC - Mobile Investigational New Drug Clinical Trial	1	2020	4	2022
ADM - MCM Enabling Manufacturing Technologies	1	2020	4	2024
ADM - MCM Development and Manufacturing Support	1	2020	2	2023
CMDR-B - OTA - Multi-Drug Resistant (MDR) Candidate	1	2020	4	2021
CMDR-B - Milestone B Decision	4	2020	4	2020
NGDS Increment 2 - Man Portable Dx System (MPDS) Prototype Development	1	2018	2	2019
NGDS Increment 2 - Man Portable Dx System MS B	2	2019	2	2019
NGDS Increment 2 - Man Portable Dx System EMD	2	2019	4	2020
NGDS Increment 2 - Man Portable Dx System (MPDS) MS C	4	2020	4	2020
NGDS Increment 2 - ChemDx MS B	3	2020	3	2020
NGDS Increment 2 - ChemDx EMD	3	2020	4	2021
NGDS Increment 2 - ChemDx MS C	4	2021	4	2021
DBPAP - Expand Select Biological Threat Agent Reference Material	1	2018	4	2024
DBPAP - Development and Implementation of Quality Initiatives	1	2018	4	2024
DBPAP - Optimization and Development of Nucleic Acid Assays	1	2018	4	2024
DBPAP - ISO Certification	1	2018	4	2024
DBPAP - PCR assay validation	1	2018	4	2024
DBPAP - Enabling early warning tools and information exchange	1	2018	4	2024
DBPAP - Surveillance capabilities	1	2018	4	2024
AV TX - Milestone B	2	2019	2	2019

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MB5 / *MEDICAL BIOLOGICAL DEFENSE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
AV TX - Milestone C	4	2021	4	2021
AV TX - Pharmacokinetic Studies in infected Animal Model (Ebola)	2	2019	4	2020
AV TX - Animal Efficacy Studies (Ebola)	3	2019	3	2020
AV TX - Alphavirus and Filovirus Non-Human Primate Animal Model Enhancement	3	2018	2	2020
AV TX - Non Clinical Studies	1	2018	4	2021
AV TX - Clinical Drug Resistance Monitoring	1	2018	4	2021
AV TX - Readiness Capabilty	4	2021	4	2021
VAC BOT - Ongoing Manufacturing, Testing Efforts/Regulatory	1	2018	4	2023
VAC BOT - Manufacturing & Production of Consistency Lots	1	2018	4	2018
VAC BOT - Milestone C/LRIP	4	2019	4	2019
VAC BOT - Phase 3 Clinical Trial (A/B)	1	2021	4	2022
VAC BOT - Biological Licensure Application (BLA) Submission	2	2023	3	2023
VAC BOT - FDA Licensure	4	2023	4	2023
CONG - Antiviral prophylaxis studies	2	2019	4	2020
VAC NGA - Assay Qualification and Reference Standards	2	2019	4	2019
VAC PLG - 2-Tier Dose Titration Studies	1	2018	2	2021
VAC PLG - Manufacturing	4	2018	2	2020
VAC PLG - Milestone C/LRIP	1	2020	1	2021
VAC PLG - Phase 3 Clinical Trial	2	2020	4	2022
VAC PLG - Duration of Protection	2	2020	2	2022
VAC PLG - Production - IOC/FOC	4	2022	4	2023
VAC PLG - Biological Licensure Application (BLA) Submission	1	2023	1	2023
VAC PLG - FDA Licensure	4	2023	4	2023
VAC SIP - Storage, distribution, potency testing, biosurety compliance activities	1	2018	4	2024

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program											Date: March 2019	
Appropriation/Budget Activity 0400 / 5					R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*				Project (Number/Name) MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*			
COST ($ in Millions)	**Prior Years**	**FY 2018**	**FY 2019**	**FY 2020 Base**	**FY 2020 OCO**	**FY 2020 Total**	**FY 2021**	**FY 2022**	**FY 2023**	**FY 2024**	**Cost To Complete**	**Total Cost**
MC5: *MEDICAL CHEMICAL DEFENSE (EMD)*	-	58.419	57.545	62.051	-	62.051	64.331	56.641	28.559	26.976	Continuing	Continuing
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).

Efforts included in the project are:
(1) Emerging Threats (EMRT)
(2) Alternative Autoinjector (AUTOINJ)
(3) Advanced Anticonvulsant System (AAS)
(4) Bioscavenger - Plasma (BSCAV-P)
(5) The Improved Nerve Agent Treatment System (INATS)

The EMRT program is now referred to as the Rapid Opioid Countermeasure System (ROCS) and is specifically supporting the discovery, characterization, development, and fielding of FDA-approved therapeutic 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.

AUTOINJ consists of investigating an FDA approved alternative source(s), beyond the single current DoD source, for autoinjectors that deliver DoD nerve agent antidote and treatment capabilities to the warfighter; mitigates capability fielding and operational readiness risks. This resulted from the manufacturing and quality issues for the fielded ATNAA product, the oxime (2-PAM) and atropine in a dual chambered autoinjector.

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

The BSCAV-P is a new capability, to be used as a prophylaxis against nerve agents.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

INATS advanced development provides an enhanced capability treatment regimen offering greater protection over a broader spectrum of toxic nerve agent threats. Components of the development effort include (1) a new and improved oxime (replacing 2-pralidoxime chloride (2-PAM) to treat current and emerging threats and 2) the insertion of a Centrally-Acting (CA) anticholinergic agent to the treatment regimen to increase survivability and decrease morbidity. Based on recent guidance from the FDA there is no longer a need to expand the pretreatment indications for pyridostigmine bromide beyond the nerve agent soman. Therefore, the Joint Project Manager for Chemical Defense Pharmaceuticals (JPdM CDP) will execute nonclinical studies to demonstrate the safety of pyridostigmine bromide when used as a pretreatment should agents other than soman be encountered. This is no longer a BA5 but BA7 work effort. The INATS treatment regimen both improves the performance of, and eventually replaces the Antidote Treatment Nerve Agent Auto-injector (ATNAA).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) Rapid Opioid Countermeasure System (ROCS) ***Description:*** Manufacturing ***FY 2020 Plans:*** Initiate manufacturing activities. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project funding transferred from another funding line. Program is changing names from EMRT.	-	-	6.166
Title: 2) Rapid Opioid Countermeasure System (ROCS) ***Description:*** Clinical Studies ***FY 2020 Plans:*** Initiate Phase 1 human clinical studies. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project funding transferred from another funding line. Program is changing names from EMRT.	-	-	5.269
Title: 3) Rapid Opioid Countermeasure System (ROCS) ***Description:*** Development ***FY 2020 Plans:*** Initiate naloxone formulation studies. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project funding transferred from another funding line. Funding transferred from EMRT, Project Medical Chemical Defense, Budget Activity 4 (MC4) starting in FY20.	-	-	2.304
Title: 4) AUTOINJ	2.896	1.000	4.800

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Description: Manufacturing ***FY 2019 Plans:*** Continue manufacturing of autoinjector consistency lots. ***FY 2020 Plans:*** Complete manufacturing of autoinjector consistency lots; initiate prototype tooling for dual chambered autoinjector; initiate manufacturing, validation for dual chamber auto-injector ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.			
Title: 5) AUTOINJ ***Description:*** Testing ***FY 2019 Plans:*** Continue storage stability and bioequivalency testing for atropine, 2PAM, diazepam & dual drug delivery autoinjectors. Initiate reliability, Human Factors, and stability studies for atropine.Continue prototype development of single autoinjector. ***FY 2020 Plans:*** Complete reliability, HF, continue stability studies for atropine. Initiate functional testing for dual chamber auto injector. Continue prototype development of single autoinjector. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Increase due to change in program/project technical parameters.	11.598	8.605	17.000
Title: 6) AUTOINJ ***Description:*** FDA ***FY 2019 Plans:*** Continue FDA preparation, filing, and meetings for single and dual drug autoinjectors. ***FY 2020 Plans:*** Continue FDA preparation, filing, and meetings for single and dual drug autoinjectors. ***FY 2019 to FY 2020 Increase/Decrease Statement:***	2.183	0.500	2.068

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Increase due to change in program/project technical parameters.			
Title: 7) AUTOINJ ***Description:*** Clinical ***FY 2019 Plans:*** Continue human factors and environmental testing for single and dual drug autoinjectors. ***FY 2020 Plans:*** Continue human factors and environmental testing for single and dual drug autoinjectors.	2.651	1.000	1.000
Title: 8) AAS ***Description:*** NDA Resubmission ***FY 2019 Plans:*** NDA resubmission activities. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Production and Deployment Phase.	-	9.640	-
Title: 9) BSCAV-P ***Description:*** Non-Clinical	9.889	-	-
Title: 10) BSCAV-P ***Description:*** Manufacturing ***FY 2019 Plans:*** Continue cGMP manufacturing for the current product batch. ***FY 2020 Plans:*** Complete cGMP manufacturing for the current product batch. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.	15.519	23.001	0.500
Title: 11) INATS - Scopolamine ***Description:*** Manufacturing & Non-Clinical & Clinical	13.683	13.799	2.810

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
FY 2019 Plans: Initiate manufacturing activities and non-clinical studies. ***FY 2020 Plans:*** Initiate clinical efforts and continue manufacturing and non-clinical. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project schedule.			
Title: 12) INATS - Oxime ***Description:*** Non-Clinical, Clinical & Manufacturing ***FY 2020 Plans:*** Continue non-clinical trials. Initiate manufacturing and clinical efforts. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Program/project transitioned to Engineering and Manufacturing Development Phase.	-	-	20.134
Accomplishments/Planned Programs Subtotals	58.419	57.545	62.051

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• JM6677: *ADVANCED ANTICONVULSANT SYSTEM (AAS)*	0.000	0.360	5.352	-	5.352	2.696	2.694	3.991	0.000	0.000	15.093

Remarks

D. Acquisition Strategy

RAPID OPIOID COUNTERMEASURE SYSTEM (ROCS)

The Emerging Threats program is now called the Rapid Opioid Countermeasure System (ROCS). The ROCS program is considering existing naloxone autoinjector capabilities identified from focused Market Research and Small Business Innovative Research and Small Business Technology Transfer (SBIR/STTR) information to rapidly transition a candidate into advanced development and future production and fielding. ROCS is also considering, with the joint service users, an accelerated requirements and acquisition structure. Other Transaction Authority (OTA) Agreements will be utilized to the extent possible in the development.

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

ALTERNATE AUTOINJECTOR MANUFACTURER CAPABILITY (AUTOINJ)

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

ADVANCED ANTICONVULSANT SYSTEM (AAS)

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

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

BIOSCAVENGER (BSCAV)

The Bioscavenger program employed a serial evaluation of candidates to achieve competitive prototyping in the Technology Maturation and Risk Reduction (TM&RR) phase, culminating in a down-select decision. The Bioscavenger program then issued a Request for Proposal (RFP) to select the best value for the government for a prophylaxis to support an initial limited user group. During the Engineering and Manufacturing Development (EMD) phase, the program continued to meet its performance objectives and produced a current Good Manufacturing Practice (cGMP) drug product for use in further development. The program will end current licensure activity in FY20. In FY20, the program will obtain the technical data package and intellectual property from the contractor in order to continue future

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

development of the same or similar product. The program will continue with the ongoing collaborations with the international partners under the Chemical, Biological, and Radiological Memorandum of Understanding (CBR-MOU) to develop a treatment indication for Bioscavenger. The Bioscavenger program will also conduct an analysis of alternative manufacturing technologies, continue to evaluate alternative candidates, and monitor technologies that may lead to a full force solution.

IMPROVED NERVE AGENT TREATMENT SYSTEM (INATS)

Oxime Component - The development of a new and improved oxime, MMB4, (replacing 2-PAM) to treat current and emerging nerve agent threats, is one component of the INATS Development Program. Both the oxime and the centrally acting components are required to address the current and emerging nerve agent threat and to mitigate their effects. MMB4 is a relatively new chemical entity transitioning from Science and Technology Development. MMB4 requires the conduct of studies to resume the Phase 1 Clinical Trial, preparation for the Phase 2 clinical trials, the manufacturing of the drug product for both these trials, the conduct of non-clinical studies to determine toxicity, and the conduct of premonitory studies to determine the impact of nerve transmissions.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ROCS - 1. Initiate naloxone formulation studies	C/CPFF	TBD : TBD	0.000	0.000		0.000		1.860	Nov 2019	-		1.860	Continuing	Continuing	0.000
ROCS - 2. Initiate development of autoinjector and large scale manufacturing process	C/CPFF	TBD : TBD	0.000	0.000		0.000		4.979	Feb 2020	-		4.979	Continuing	Continuing	0.000
ROCS - 4. Initiate Human clinical studies	C/CPFF	TBD : TBD	0.000	0.000		0.000		4.255	Aug 2020	-		4.255	Continuing	Continuing	0.000
AUTOINJ - HW S - Autoinjector - Manufacturing of Consistency Lots	C/CPFF	Battelle Memorial Institute : Columbus, OH	2.236	1.262	Dec 2017	0.353	Dec 2018	3.000	Dec 2019	-		3.000	Continuing	Continuing	0.000
AUTOINJ - HW C - Prototype Development	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	1.785	Oct 2017	0.250	Nov 2018	4.343	Nov 2019	-		4.343	Continuing	Continuing	0.000
AUTOINJ - HW C - Dual Drug Delivery Device (D4) Prototype Development	C/CPFF	Emergent Biosolutions : Gaithersburg/ Rockville, MD	0.500	8.698	Dec 2017	5.000	Nov 2018	5.213	Nov 2019	-		5.213	Continuing	Continuing	0.000
AAS - SW C - Resubmission of NDA	C/CPIF	Meridian Medical Technologies Inc. : Columbia, MD	1.630	0.000		6.181	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - HW S - cGMP Manufacturing and Process Validation	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	35.738	10.944	Jan 2018	14.492	Jan 2019	0.500		-		0.500	Continuing	Continuing	0.000
INATS - HW C - Large-Scale Manufacturing	C/CPFF	TBD : TBD	0.000	0.000		0.000		3.033	Nov 2020	-		3.033	Continuing	Continuing	0.000
INATS - HW C - Animal Efficacy Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		2.888	Nov 2020	-		2.888	Continuing	Continuing	0.000

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

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - HW C - Oxime & Centrally-Acting AutoInjector Efforts	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		0.000		8.352	Nov 2020	-		8.352	Continuing	Continuing	0.000
INATS - HW C - Scopolamine cGMP Efforts and Manufacture of Material	C/CPFF	Various : Various	7.439	1.904	Dec 2017	3.000	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
INATS - HW C - Reformulation Efforts & Bridging Studies	C/CPFF	Various : Various	0.000	4.972	Oct 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	47.543	29.565		29.276		38.423		-		38.423	Continuing	Continuing	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - TD/D S - Autoinjector - FDA NDA coordination	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.190	0.165	Oct 2017	0.200	Nov 2018	4.868	Nov 2019	-		4.868	Continuing	Continuing	0.000
INATS - ILS S - Regulatory Support	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.924	0.086	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
		Subtotal	1.114	0.251		0.200		4.868		-		4.868	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - DTE S - Autoinjector - Stability Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	1.760	1.449	Oct 2017	0.500	Nov 2018	3.000	Nov 2019	-		3.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AUTOINJ - DTE C - Human Factors Testing	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.795	Oct 2017	0.313	Nov 2018	1.000	Nov 2019	-		1.000	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Nonclinical Studies to evaluate drug-drug interactions	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	1.870	1.471	Jan 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - OTHT S - Pilot Nonclinical PK Efficacy Studies	C/CPFF	DynPort Vaccine Company (DVC) LLC. : Frederick, MD	14.003	4.990	Jan 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE S - Oxime Phase 2 Clinical Trials	C/CPFF	TBD : TBD	0.000	0.000		0.000		2.292	Nov 2020	-		2.292	Continuing	Continuing	0.000
INATS - DTE S - Scopolamine Centrally Acting Phase 1 Clinical Trial	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		2.000	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE S - Scopolamine Centrally Acting Animal & Efficacy Studies	C/CPFF	Battelle Memorial Institute : Columbus, OH	0.000	0.000		3.034	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
INATS - DTE S - Centrally Acting Phase 2 Trial	C/CPFF	Various : Various	2.240	0.000		0.000		2.140	Nov 2020	-		2.140	Continuing	Continuing	0.000
		Subtotal	19.873	8.705		5.847		8.432		-		8.432	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ROCS - PM/MS C - Program Management Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.000		0.996	Nov 2019	-		0.996	Continuing	Continuing	0.000

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

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ROCS - PM/MS C - Product Management	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.000		0.907	Nov 2019	-		0.907	Continuing	Continuing	0.000
ROCS - PM/MS C - ADMC Support	PO	Ology : Alachua, FL	0.000	0.000		0.000		0.742	Nov 2019	-		0.742	Continuing	Continuing	0.000
AUTOINJ - PM/MS C - Autoinjector - Program Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	1.277	Dec 2017	1.622	Dec 2018	1.803	Dec 2019	-		1.803	Continuing	Continuing	0.000
AUTOINJ - PM/MS C - Autoinjector - ADMC Support	C/CPFF	Ology : Alachua, FL	0.000	3.661	Dec 2017	2.221	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
AUTOINJ - PM/MS S - Autoinjector - Product Support	PO	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.358	0.236	Dec 2017	0.000		1.641	Nov 2019	-		1.641	Continuing	Continuing	0.000
AUTOINJ - PM/MS C - OPETS	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.646	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
AAS - PM/MS C - OPETS	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.527	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
AAS - PM/MS C - Medical Countermeasure Systems (MCS)	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	1.727	0.000		1.600	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
AAS - PM/MS C - MCS Federal Pay	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.190	Nov 2018	0.000		-		0.000	Continuing	Continuing	0.000
AAS - PM/MS S - Program Management Support	PO	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.370	0.000		1.142	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - MCS Management Support	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	5.943	1.031	Mar 2018	3.481	Mar 2019	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS C - Federal Pay	Allot	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	0.000	0.000		0.775	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS C - BSCAV - ADMC Support	PO	Ology : Alachua, FL	0.000	3.080	Dec 2017	0.300	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - Product Management Support (OPETS)	C/FFP	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	5.779	1.210	Jun 2018	1.054	Jun 2019	0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS S - Product Management Support	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	1.636	0.240	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
BSCAV-P - PM/MS C - Program Management Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	6.559	2.442	Mar 2018	2.899	Mar 2019	0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
INATS - PM/MS S - Product Management Support (OHD)	Various	JPM Medical Countermeasure Systems (JPM MCS) : Fort Detrick, MD	2.435	3.828	Dec 2017	3.786	Dec 2018	2.576	Dec 2019	-		2.576	Continuing	Continuing	0.000
INATS - PM/MS S - ADMC Support	C/CPFF	Ology : Alachua, FL	0.000	1.401	Dec 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
INATS - PM/MS S - Program Management Support	Various	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	1.478	1.492	Mar 2018	1.979	Dec 2018	1.663	Mar 2020	-		1.663	Continuing	Continuing	0.000
		Subtotal	26.285	19.898		22.222		10.328		-		10.328	Continuing	Continuing	N/A

	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	94.815	58.419		57.545		62.051		-		62.051	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

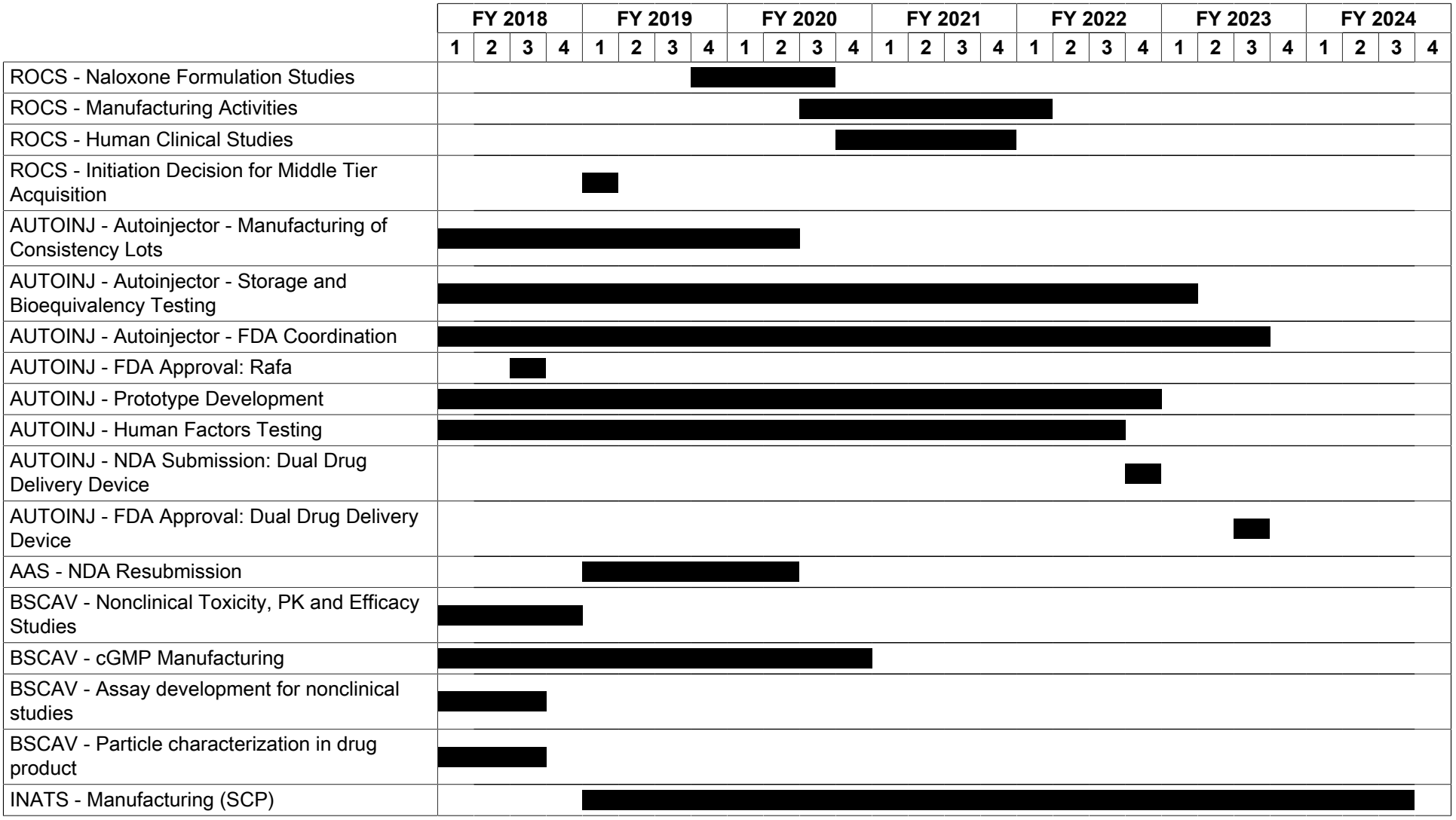

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

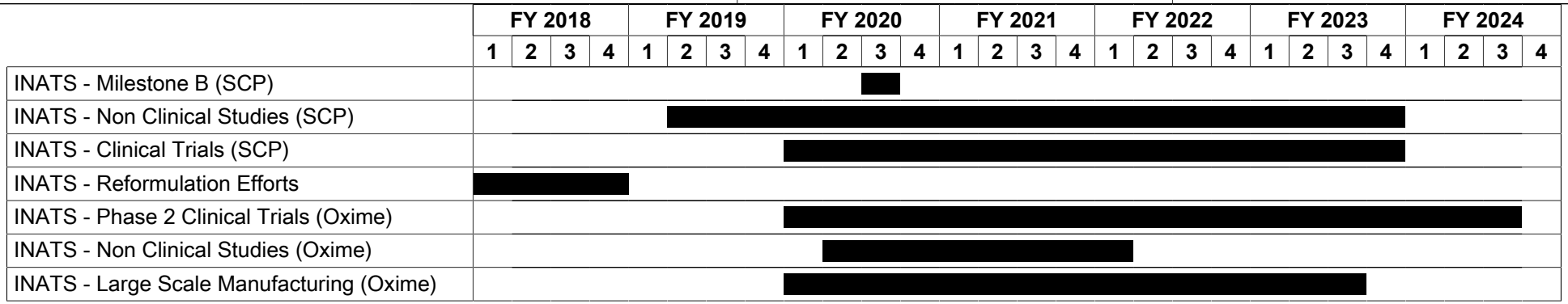

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
ROCS - Naloxone Formulation Studies	4	2019	3	2020
ROCS - Manufacturing Activities	3	2020	1	2022
ROCS - Human Clinical Studies	4	2020	4	2021
ROCS - Initiation Decision for Middle Tier Acquisition	1	2019	1	2019
AUTOINJ - Autoinjector - Manufacturing of Consistency Lots	1	2018	2	2020
AUTOINJ - Autoinjector - Storage and Bioequivalency Testing	1	2018	1	2023
AUTOINJ - Autoinjector - FDA Coordination	1	2018	3	2023
AUTOINJ - FDA Approval: Rafa	3	2018	3	2018
AUTOINJ - Prototype Development	1	2018	4	2022
AUTOINJ - Human Factors Testing	1	2018	3	2022
AUTOINJ - NDA Submission: Dual Drug Delivery Device	4	2022	4	2022
AUTOINJ - FDA Approval: Dual Drug Delivery Device	3	2023	3	2023
AAS - NDA Resubmission	1	2019	2	2020
BSCAV - Nonclinical Toxicity, PK and Efficacy Studies	1	2018	4	2018
BSCAV - cGMP Manufacturing	1	2018	4	2020
BSCAV - Assay development for nonclinical studies	1	2018	3	2018
BSCAV - Particle characterization in drug product	1	2018	3	2018
INATS - Manufacturing (SCP)	1	2019	3	2024
INATS - Milestone B (SCP)	3	2020	3	2020
INATS - Non Clinical Studies (SCP)	2	2019	4	2023
INATS - Clinical Trials (SCP)	1	2020	4	2023
INATS - Reformulation Efforts	1	2018	4	2018

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** MC5 / *MEDICAL CHEMICAL DEFENSE (EMD)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
INATS - Phase 2 Clinical Trials (Oxime)	1	2020	3	2024
INATS - Non Clinical Studies (Oxime)	2	2020	1	2022
INATS - Large Scale Manufacturing (Oxime)	1	2020	3	2023

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) TE5 / *TEST & EVALUATION (EMD)*	

COST ($ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
TE5: *TEST & EVALUATION (EMD)*	-	14.532	9.056	7.775	-	7.775	7.975	7.377	7.376	7.375	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The project identifies critical test capabilities, planning, and infrastructure improvements/modifications necessary to evaluate CBRN Defense systems in realistic operating environments.

Efforts included in this project are:
(1) Product Director, Test, Equipment, Strategy, and Support (PD TESS)
(2) Chemical Biological Material Assessment Infrastructure (CBMAI)

PD TESS and CBMAI determine test infrastructure needs across the Chemical Biological Defense Portfolio (CBDP) and prioritizes RDT&E resources to support test planning and schedules/milestones for programs of record. Infrastructure improvements, modifications, or new development provide critical test capabilities for chemical, biological, and emerging threat products. CBMAI conducts studies and prototyping to enable rapid integration to support testing of detection, protection, and decontamination equipment.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: 1) PD TESS ***Description:*** Government Integrated Product Team program management and IPT Support to all JPEO programs and external partners.	3.108	-	-
Title: 2) PD TESS ***Description:*** PD TESS provides test infrastructure upgrades 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 improvements, upgrades, and modernization efforts allow test facilities to expand productivity and reduce costs while providing critical test data.	11.424	-	-
Title: 3) CBMAI ***Description:*** CBMAI provides test infrastructure upgrades and integration to address detection, protection, and decontamination requirements and milestone schedules. Provide analysis and testing of innovative technologies and rapid prototyping of	-	6.629	4.744

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
equipment to expedite the infrastructure development process. Execution of improvements, upgrades, and modernization efforts allow test facilities to expand productivity and reduce costs while providing critical test data. ***FY 2019 Plans:*** Complete implementation of upgrades to NTA infrastructure to meet POR test requirements. Complete implementation of CBRN training facility enhancements and reopen facility for soldier training. Continue validation of aerosol biological agent chamber at Dugway and transition to ECBC. Continued integration of data management upgrades. Complete transition of Chem/Bio outdoor test range (Test Grid) to Dugway. ***FY 2020 Plans:*** Complete validation and accreditation of aerosol biological agent chamber. Complete integration of upgraded data management system and transition to Dugway. Initiate infrastructure upgrades to address additional PBAs and emerging threat. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Decrease due to change in program/project technical parameters.			
Title: 4) CBMAI ***Description:*** Government Integrated Product Team program management and IPT Support to all JPEO programs and external partners. ***FY 2019 Plans:*** Initiate Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2020 Plans:*** Continue Program Management including Government system engineering, program/financial management, costing, personnel support, travel and overhead. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Minor change due to routine program adjustments.	-	2.427	3.031
Accomplishments/Planned Programs Subtotals	14.532	9.056	7.775

Exhibit R-2A, RDT&E Project Justification: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
• TE7: *TEST & EVALUATION (OP SYS DEV)*	6.475	6.318	5.403	-	5.403	5.720	5.716	5.716	5.716	Continuing	Continuing

Remarks

D. Acquisition Strategy

TEST EQUIPMENT, STRATEGY & SUPPORT (PD TESS)

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

CHEMICAL BIOLOGICAL MATERIEL ASSESSMENT INFRASTRUCTURE (CBMAI)

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

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - HW S - Chemical Defense Training Facility (CDTF) Enhancements	C/CPFF	MRIGlobal : Kansas City, MO	0.000	4.500	Jun 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW C - Product Contractor Development Team	C/FFP	Patricio Enterprises : Inc., Woodbridge, VA	0.000	0.215	Feb 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HWS - NTA Defense Test System Design/Fabrication/ Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	3.598	0.930	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Test Grid	C/CPFF	MRIGlobal : Kansas City, MO	0.000	1.395	Jul 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Test Grid #2	C/CPFF	Harris : Inc, Herdnon, VA	0.754	0.859	Apr 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - Test Infrastructure - HW S - Test Grid	MIPR	Various : Various	0.608	0.088	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades	C/CPFF	MRIGlobal : Kansas City, MO	0.000	1.385	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - JABT Component Upgrades #2	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.204	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Open Architecture Data Management System (OADMS)	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.045	May 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Open Architecture Data Management System (OADMS) #2	C/CPFF	MRIGlobal : Kansas City, MO	0.000	1.044	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Chemical Defense	MIPR	Edgewood Chemical Biological Center	0.000	0.309	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program			Date: March 2019
Appropriation/Budget Activity 0400 / 5	R-1 Program Element (Number/Name) PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	Project (Number/Name) TE5 / *TEST & EVALUATION (EMD)*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Training Facility (CDTF) Enhancements #2		(ECBC) : Aberdeen Proving Ground, MD													
PD TESS - Test Infrastructure - HW S - WSLAT	MIPR	West Desert Test Center : Dugway, UT	0.436	0.147	Mar 2018	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Integrated Early Warning	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.518	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
PD TESS - HW S - Government SE & Technical Management Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	1.050	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - Joint Ambiant Breeze Tunnel (JABT)	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.194	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - SW C - Open Architecture Data Management Systems (OADMS)	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.156	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - SW S - Test Grid Transition Activities	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.147	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - Chemical Defense Training Facility (CDTF) Enhancements	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.426	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - Test Grid	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		1.242	Dec 2018	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - HW S - Upgrades, V&V, Transition	Various	Various : Various	0.000	0.000		0.000		1.000	Dec 2019	-		1.000	Continuing	Continuing	0.000
CBMAI - HW S - NTA Defense Test System Fabrication/Installation	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		0.300	Nov 2018	0.270	Jan 2020	-		0.270	Continuing	Continuing	0.000
CBMAI - HW S - Open Architecture Data	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		2.641	Dec 2018	1.100	Dec 2019	-		1.100	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Management System (OADMS) Software Modifications															
CBMAI - HW S - Ballistic Gas Chromatograph (GC)	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.286	Dec 2018	1.474	Dec 2019	-		1.474	Continuing	Continuing	0.000
CBMAI - HW S - Government SE & Technical Management Team	MIPR	Edgewood Chemical Biological Center (ECBC) : Aberdeen Proving Ground, MD	0.000	0.000		1.131	Dec 2018	1.538	Nov 2019	-		1.538	Continuing	Continuing	0.000
		Subtotal	5.396	12.689		6.523		5.382		-		5.382	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CBMAI - OTHT C - JABT Support	MIPR	Dugway Proving Ground (DPG) : Dugway, UT	0.000	0.000		0.042	Jan 2019	0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - OTHT C - Whole System Live Agent Test (WSLAT) Chamber	MIPR	West Desert Test Center : Dugway, UT	0.000	0.000		0.500	Jan 2019	0.400	Dec 2019	-		0.400	Continuing	Continuing	0.000
CBMAI - OTE S - Test Grid Sustainment	C/CPFF	MRIGlobal : Kansas City, MO	0.000	0.000		0.659	Feb 2019	0.500	Dec 2019	-		0.500	Continuing	Continuing	0.000
		Subtotal	0.000	0.000		1.201		0.900		-		0.900	Continuing	Continuing	N/A

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PD TESS - PD TESS - PM/MS S - IPT Support/ Program Management	MIPR	JPEO Chem/Bio Defense (JPEO-	10.078	1.735	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2018 Cost	FY 2018 Award Date	FY 2019 Cost	FY 2019 Award Date	FY 2020 Base Cost	FY 2020 Base Award Date	FY 2020 OCO Cost	FY 2020 OCO Award Date	FY 2020 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		CBD) : Aberdeen Proving Ground, MD													
PD TESS - PM/MS C - Core Support	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.108	Nov 2017	0.000		0.000		-		0.000	Continuing	Continuing	0.000
CBMAI - PM/MS S - IPT Support/Program Management	MIPR	JPM NBC Contamination Avoidance (JPM NBC CA) : JPEO, Aberdeen Proving Ground, MD	0.000	0.000		1.286	Jan 2019	1.343	Dec 2019	-		1.343	Continuing	Continuing	0.000
CBMAI - PM/MS C - Core Support	MIPR	JPEO Chem/Bio Defense (JPEO-CBD) : Aberdeen Proving Ground, MD	0.000	0.000		0.046	Dec 2018	0.150	Dec 2019	-		0.150	Continuing	Continuing	0.000
		Subtotal	10.078	1.843		1.332		1.493		-		1.493	Continuing	Continuing	N/A

	Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	15.474	14.532		9.056		7.775		-		7.775	Continuing	Continuing	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

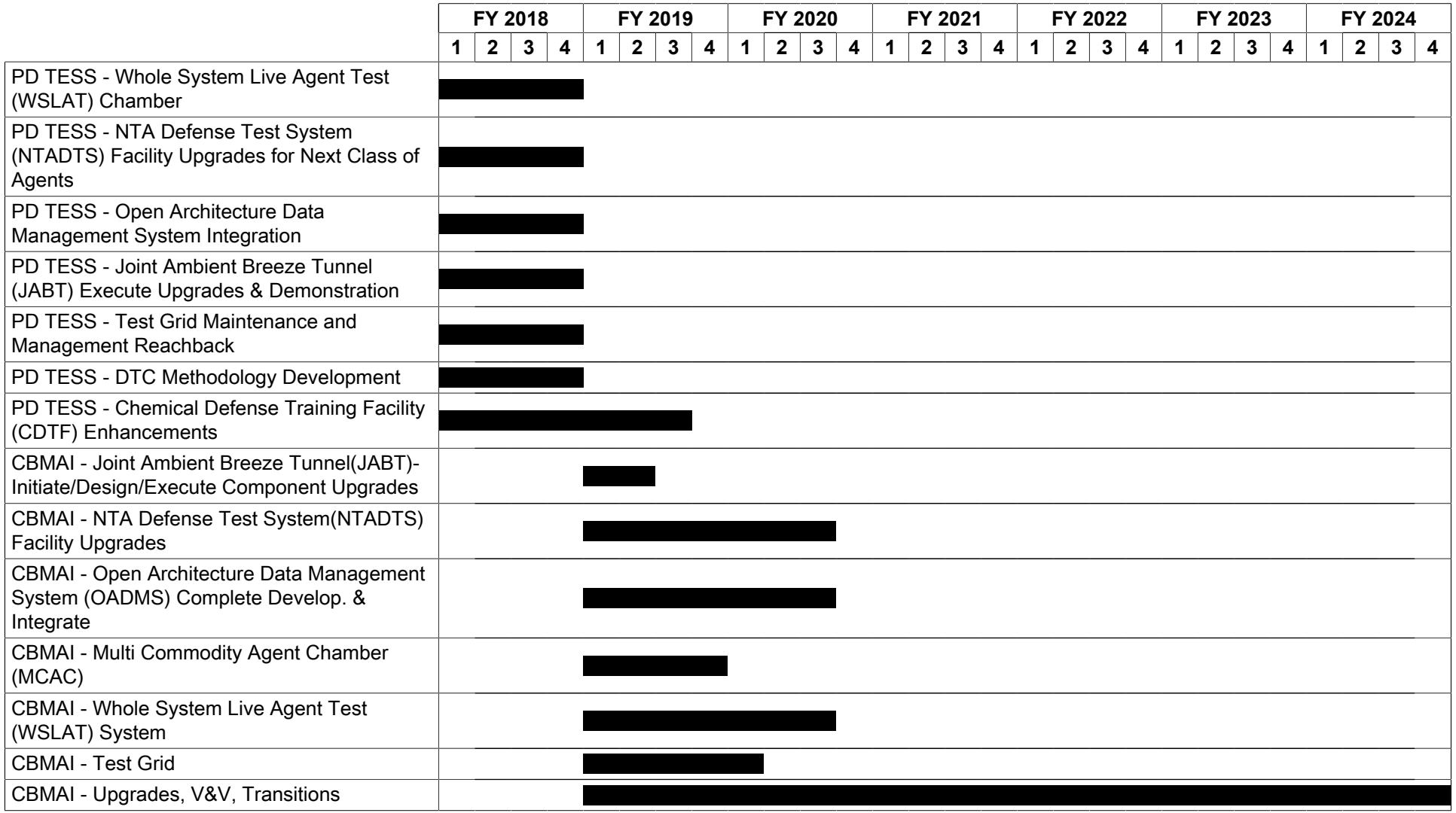

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Chemical and Biological Defense Program		Date: March 2019
Appropriation/Budget Activity 0400 / 5	**R-1 Program Element (Number/Name)** PE 0604384BP / *CHEMICAL/BIOLOGICAL DEFENSE (EMD)*	**Project (Number/Name)** TE5 / *TEST & EVALUATION (EMD)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
PD TESS - Whole System Live Agent Test (WSLAT) Chamber	1	2018	4	2018
PD TESS - NTA Defense Test System (NTADTS) Facility Upgrades for Next Class of Agents	1	2018	4	2018
PD TESS - Open Architecture Data Management System Integration	1	2018	4	2018
PD TESS - Joint Ambient Breeze Tunnel (JABT) Execute Upgrades & Demonstration	1	2018	4	2018
PD TESS - Test Grid Maintenance and Management Reachback	1	2018	4	2018
PD TESS - DTC Methodology Development	1	2018	4	2018
PD TESS - Chemical Defense Training Facility (CDTF) Enhancements	1	2018	3	2019
CBMAI - Joint Ambient Breeze Tunnel(JABT)- Initiate/Design/Execute Component Upgrades	1	2019	2	2019
CBMAI - NTA Defense Test System(NTADTS) Facility Upgrades	1	2019	3	2020
CBMAI - Open Architecture Data Management System (OADMS) Complete Develop. & Integrate	1	2019	3	2020
CBMAI - Multi Commodity Agent Chamber (MCAC)	1	2019	4	2019
CBMAI - Whole System Live Agent Test (WSLAT) System	1	2019	3	2020
CBMAI - Test Grid	1	2019	1	2020
CBMAI - Upgrades, V&V, Transitions	1	2019	4	2024